the Capacitor book

Passive Components Volume 2

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An invaluable resource for buyers and engineers

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the Capacitor book

An invaluable resource for buyers and engineers

This particular book presents Anglia's primary capacitor product lines sourced from eleven key suppliers. Compiled in a convenient format to assist both buyers and engineers, it provides all the essential data and part numbers to aid the selection and ordering process for ease of design and manufacturing. The lines detailed are those considered to offer the best in terms of performance, cost and availability.

The Capacitor book is Volume 2 of a series of 3 books specifically covering passive components and published exclusively by Anglia.

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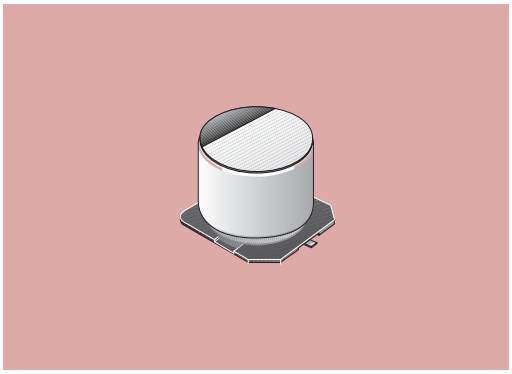
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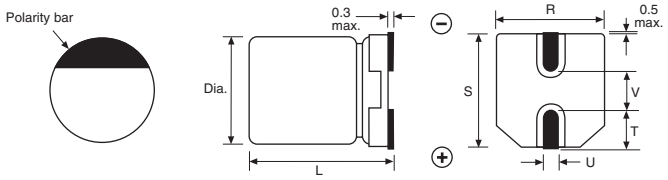


NOVER type VE

Surface mount, aluminium electrolytic capacitors giving an excellent operational specification within a small package and designed for general purpose use. The VE series has an endurance test of 2000 hours at 85°C and is available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **Standard range**
- Endurance **2000 hours at 85°C**
- Excellent performance/size characteristics
- Ideal for general purpose use
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
3.0 x 5.3	3.0	5.3	3.3	3.3	1.5	0.60	0.8
4.0 x 5.3	4.0	5.3	4.3	4.3	2.0	0.65	1.0
5.0 x 5.3	5.0	5.3	5.3	5.3	2.3	0.65	1.5
6.3 x 5.3	6.3	5.3	6.6	6.6	2.7	0.65	2.0
6.3 x 7.7	6.3	7.7	6.6	6.6	2.7	0.65	2.0
8.0 x 6.5	8.0	6.5	8.4	8.4	3.4	0.65	2.3
8.0 x 10.0	8.0	10.0	8.4	8.4	3.0	0.90	3.1
10.0 x 10.0	10.0	10.0	10.4	10.4	3.3	0.90	4.7

Specification

	VE
Endurance test	2000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	4V	6.3V	10V	16V	25V	35V	50V	63V	100V
Case size 3.0 x 5.3	0.42	0.30	0.24	0.22	0.16	0.14	0.12	–	–
Case size 6.3 x 7.7	0.42	0.42	0.32	0.26	0.18	0.14	0.12	–	–
All other case sizes	0.42	0.28	0.24	0.20	0.14	0.12	0.10	0.10	0.10

Marking and Packaging

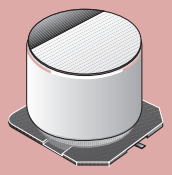
Marking	Printed on top surface of case, except largest case sizes which may be printed on a case sleeve around the body. Capacitance value, Voltage, Bar to indicate negative terminal
Tape	
Case Size	
3.0 x 5.3	12mm width, 8mm pitch
4.0 x 5.3	12mm width, 8mm pitch
5.0 x 5.3	12mm width, 12mm pitch
6.3 x 5.3	16mm width, 12mm pitch
6.3 x 7.7	16mm width, 12mm pitch
8.0 x 6.5	16mm width, 12mm pitch
8.0 x 10.0	24mm width, 16mm pitch
10.0 x 10.0	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
4 Volt			
22	14	3.0 x 5.3	*VG220*
33	26	4.0 x 5.3	*VG330*
47	34	4.0 x 5.3	*VG470*
100	61	5.0 x 5.3	*VG101*
220	95	6.3 x 5.3	*VG221*
330	102	6.3 x 7.7	*VG331*
470	150	6.3 x 7.7	*VG471*
6.3 Volt			
22	31	4.0 x 5.3	*VJ220*
33	39	5.0 x 5.3	*VJ330*
47	47	5.0 x 5.3	*VJ470*
100	71	6.3 x 5.3	*VJ101*
220	95	6.3 x 7.7	*VJ221*
220	155	8.0 x 6.5	*VJ229*
330	150	6.3 x 7.7	*VJ331*
330	155	8.0 x 6.5	*VJ339*
470	300	8.0 x 10.0	*VJ471*
1000	458	10.0 x 10.0	*VJ102*
10 Volt			
10	23	4.0 x 5.3	*VA100*
22	35	5.0 x 5.3	*VA220*
33	43	5.0 x 5.3	*VA330*
47	59	6.3 x 5.3	*VA470*
100	76	6.3 x 5.3	*VA101*
220	150	6.3 x 7.7	*VA221*
220	155	8.0 x 6.5	*VA229*
330	280	8.0 x 10.0	*VA331*
470	360	8.0 x 10.0	*VA471*

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
16 Volt			
10	18	3.0 x 5.3	*VC109*
10	25	4.0 x 5.3	*VC100*
22	39	5.0 x 5.3	*VC220*
33	57	6.3 x 5.3	*VC330*
47	68	6.3 x 5.3	*VC470*
100	86	6.3 x 5.3	*VC101*
220	150	6.3 x 7.7	*VC221*
330	280	8.0 x 10.0	*VC331*
470	458	10.0 x 10.0	*VC471*
25 Volt			
4.7	11	3.0 x 5.3	*VE478*
4.7	19	4.0 x 5.3	*VE4R7*
10	28	5.0 x 5.3	*VE100*
22	52	6.3 x 5.3	*VE220*
33	63	6.3 x 5.3	*VE330*
47	68	6.3 x 5.3	*VE470*
100	130	6.3 x 7.7	*VE101*
100	155	8.0 x 6.5	*VE109*
220	250	8.0 x 10.0	*VE221*
330	458	10.0 x 10.0	*VE331*
35 Volt			
2.2	8	3.0 x 5.3	*VX2R2*
3.3	9	3.0 x 5.3	*VX3R3*
4.7	20	4.0 x 5.3	*VX4R7*
10	30	5.0 x 5.3	*VX100*
22	54	6.3 x 5.3	*VX220*
33	60	6.3 x 5.3	*VX330*
47	70	6.3 x 5.3	*VX470*
47	155	8.0 x 6.5	*VX479*
100	252	8.0 x 10.0	*VX109*
220	458	10.0 x 10.0	*VX221*

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
50 Volt			
0.1	1	3.0 x 5.3	*VH018*
0.1	1	4.0 x 5.3	*VH0R1*
0.22	2	3.0 x 5.3	*VH228*
0.22	2.3	4.0 x 5.3	*VHR22*
0.33	3	3.0 x 5.3	*VH338*
0.33	3.5	4.0 x 5.3	*VHR33*
0.47	4	3.0 x 5.3	*VH478*
0.47	5	4.0 x 5.3	*VHR47*
1.0	6	3.0 x 5.3	*VH108*
1.0	10	4.0 x 5.3	*VH1R0*
2.2	15	4.0 x 5.3	*VH2R2*
3.3	18	4.0 x 5.3	*VH3R3*
4.7	23	5.0 x 5.3	*VH4R7*
10	34	6.3 x 5.3	*VH100*
22	45	6.3 x 5.3	*VH220*
33	85	6.3 x 7.7	*VH330*
33	155	8.0 x 6.5	*VH339*
47	90	6.3 x 7.7	*VH470*
100	200	8.0 x 10.0	*VH101*
63 Volt			
22	139	8.0 x 10.0	*VF220*
33	139	8.0 x 10.0	*VF330*
47	226	10.0 x 10.0	*VF470*
100 Volt			
10	94	8.0 x 10.0	*VT100*
22	189	10.0 x 10.0	*VT220*
33	189	10.0 x 10.0	*VT330*

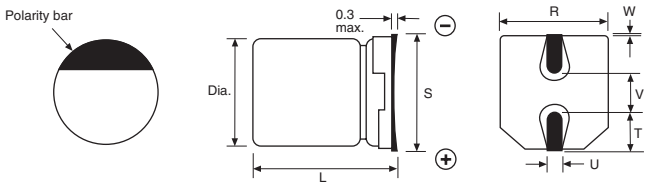


PANASONIC S Series, type V

Surface mount, aluminium electrolytic capacitors giving an excellent operational specification within a small package and designed for general purpose use. The S series offers long life with an endurance test of 2000 hours at 85°C and available in a wide range of values and voltages, which are listed on the following page. Supplied taped and reeled.

- **Standard range**
- Endurance **2000 hours at 85°C**
- Excellent performance/size characteristics
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V	W
A	3.0	5.4	3.3	4.5 max.	1.5	0.55	0.6	0.35
B	4.0	5.4	4.3	5.5 max.	1.8	0.65	1.0	0.35
C	5.0	5.4	5.3	6.5 max.	2.2	0.65	1.5	0.35
D	6.3	5.4	6.6	7.8 max.	2.6	0.65	1.8	0.35
D8	6.3	7.7	6.6	7.8 max.	2.6	0.65	1.8	0.35
E	8.0	6.2	8.3	9.5 max.	3.4	0.65	2.2	0.35
F	8.0	10.2	8.3	10.0 max.	3.4	0.90	3.1	0.70
G	10.0	10.2	10.3	12.0 max.	3.5	0.90	4.6	0.70

Specification

	S (V)
Endurance test	2000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C
Tan δ (as listed)	measured at 120Hz, 20°C
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Marking and Packaging

Marking		Capacitance value, Voltage code + series code Bar to indicate negative terminal
Tape		
	Case Size	
	A	12mm width, 8mm pitch
	B	12mm width, 8mm pitch
	C	12mm width, 12mm pitch
	D	16mm width, 12mm pitch
	D8	16mm width, 12mm pitch
	E	16mm width, 12mm pitch
	F	24mm width, 16mm pitch
	G	24mm width, 16mm pitch
Reel		380mm dia.

Panasonic S Series

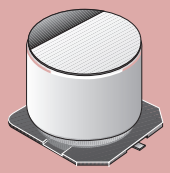
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ORDER CODES

Value (µF)	Ripple Current (mA)	Tan δ (max.)	Case Size	Order Code
4 Volt				
22	19	0.37	A	*EEE0GS220SR*
33	28	0.35	B	*EEE0GA330SR*
47	34	0.35	B	*EEE0GA470SR*
100	61	0.35	C	*EEE0GA101SR*
220	96	0.35	D	*EEE0GA221SP*
330	80	0.50	D	*EEE0GA331WP*
470	200	0.35	D8	*EEE0GA471XP*
6.3 Volt				
22	21	0.35	A	*EEE0JA220WR*
22	29	0.26	B	*EEE0JA220SR*
33	34	0.35	B	*EEE0JA330WR*
47	40	0.35	B	*EEE0JA470WR*
47	46	0.26	C	*EEE0JA470SR*
100	47	0.35	C	*EEE0JA101WR*
100	71	0.26	D	*EEE0JA101SP*
220	74	0.35	D	*EEE0JA221WP*
330	188	0.26	D8	*EEE0JA331XP*
330	300	0.35	E	*EEE0JA331P*
470	380	0.35	F	*EEE0JA471P*
1000	500	0.35	F	*EEE0JA102UP*
1000	700	0.35	G	*EEE0JA102P*
1500	750	0.35	G	*EEE0JA152P*
10 Volt				
22	30	0.30	B	*EEE1AA220WR*
33	34	0.30	B	*EEE1AA330WR*
33	43	0.20	C	*EEE1AA330SR*
47	47	0.30	C	*EEE1AA470WR*
100	54	0.30	C	*EEE1AA101WR*
100	76	0.26	D	*EEE1AA101SP*
220	173	0.20	D8	*EEE1AA221XP*
220	250	0.26	E	*EEE1AA221P*
330	330	0.26	F	*EEE1AA331P*
470	330	0.26	F	*EEE1AA471UP*
470	400	0.26	G	*EEE1AA471P*
1000	580	0.26	G	*EEE1AA102P*
16 Volt				
10	20	0.18	A	*EEE1CS100SR*
10	28	0.16	B	*EEE1CA100SR*
22	30	0.26	B	*EEE1CA220WR*
22	39	0.16	C	*EEE1CA220SR*
33	44	0.26	C	*EEE1CA330WR*
47	52	0.26	C	*EEE1CA470WR*
47	70	0.16	D	*EEE1CA470SP*
100	86	0.26	D	*EEE1CA101WP*
100	200	0.20	E	*EEE1CA101P*
220	162	0.16	D8	*EEE1CA221XP*
220	280	0.20	F	*EEE1CA221P*
330	320	0.20	F	*EEE1CA331UP*
330	380	0.20	G	*EEE1CA331P*
470	350	0.20	F	*EEE1CA471UP*
470	420	0.20	G	*EEE1CA471P*
25 Volt				
4.7	12	0.16	A	*EEE1ES4R7SR*
4.7	22	0.14	B	*EEE1EA4R7SR*
10	24	0.20	B	*EEE1EA100WR*
10	28	0.14	C	*EEE1EA100SR*
22	38	0.20	C	*EEE1EA220WR*
22	55	0.14	D	*EEE1EA220SP*
33	46	0.20	C	*EEE1EA330WR*
33	65	0.14	D	*EEE1EA330SP*
47	70	0.20	D	*EEE1EA470WP*
100	143	0.14	D8	*EEE1EA101XP*
100	91	0.16	E	*EEE1EA101UP*
100	180	0.16	F	*EEE1EA101P*
220	230	0.16	F	*EEE1EA221UP*
220	310	0.16	G	*EEE1EA221P*
330	270	0.16	F	*EEE1EA331UP*
330	340	0.16	G	*EEE1EA331P*
470	380	0.16	G	*EEE1EA471P*

Value (µF)	Ripple Current (mA)	Tan δ (max.)	Case Size	Order Code
35 Volt				
2.2	8.4	0.14	A	*EEE1VS2R2SR*
3.3	10	0.14	A	*EEE1VS3R3SR*
4.7	24	0.12	B	*EEE1VA4R7SR*
10	22	0.16	B	*EEE1VA100WR*
10	30	0.12	C	*EEE1VA100SR*
22	39	0.16	C	*EEE1VA220WR*
22	60	0.12	D	*EEE1VA220SP*
33	60	0.16	D	*EEE1VA330WP*
33	130	0.14	E	*EEE1VA330P*
47	70	0.16	D	*EEE1VA470WP*
47	165	0.14	E	*EEE1VA470P*
100	132	0.12	D8	*EEE1VA101XP*
100	140	0.14	F	*EEE1VA101UP*
100	210	0.14	G	*EEE1VA101P*
220	200	0.14	F	*EEE1VA221UP*
220	310	0.14	G	*EEE1VA221P*
330	350	0.14	G	*EEE1VA331P*
50 Volt				
0.1	1	0.14	A	*EEE1HS0R1SR*
0.1	1	0.12	B	*EEE1HA0R1SR*
0.22	2	0.14	A	*EEE1HSR22SR*
0.22	2	0.12	B	*EEE1HAR22SR*
0.33	3	0.14	A	*EEE1HSR33SR*
0.33	3	0.12	B	*EEE1HAR33SR*
0.47	5	0.14	A	*EEE1HSR47SR*
0.47	5	0.12	B	*EEE1HAR47SR*
1.0	8	0.14	A	*EEE1HS010SR*
1.0	10	0.12	B	*EEE1HA010SR*
2.2	16	0.12	B	*EEE1HA2R2SR*
3.3	17	0.12	B	*EEE1HA3R3SR*
4.7	18	0.14	B	*EEE1HA4R7WR*
4.7	23	0.12	C	*EEE1HA4R7SR*
10	30	0.14	C	*EEE1HA100WR*
10	35	0.12	D	*EEE1HA100SP*
22	43	0.14	D	*EEE1HA220WP*
22	65	0.12	E	*EEE1HA220P*
33	110	0.12	E	*EEE1HA330UP*
33	110	0.12	F	*EEE1HA330P*
47	105	0.12	D8	*EEE1HA470XP*
47	110	0.12	F	*EEE1HA470UP*
47	130	0.12	G	*EEE1HA470P*
100	200	0.12	F	*EEE1HA101UP*
100	250	0.12	G	*EEE1HA101P*
220	300	0.12	G	*EEE1HA221P*
63 Volt				
22	40	0.18	F	*EEE1JA220P*
33	45	0.18	F	*EEE1JA330P*
47	45	0.18	F	*EEE1JA470UP*
47	60	0.18	G	*EEE1JA470P*
100	60	0.18	G	*EEE1JA101P*
100 Volt				
3.3	50	0.18	E	*EEE2AA3R3P*
4.7	80	0.18	F	*EEE2AA4R7P*
10	85	0.18	F	*EEE2AA100P*
22	85	0.18	G	*EEE2AA220P*
33	90	0.18	G	*EEE2AA330P*

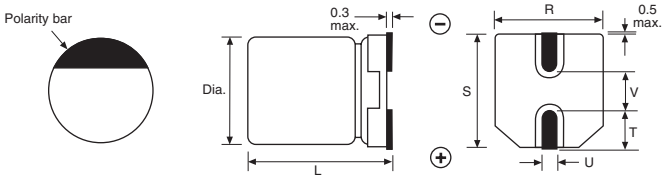


NOVER type VH

Surface mount, aluminium electrolytic capacitors with an extended upper temperature limit of 105°C. The VH series has an endurance test of 2000 hours at 105°C and is available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **High temperature**
- Endurance **2000 hours at 105°C**
- Excellent performance/size characteristics
- Designed for higher ambient conditions
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
4.0 x 5.8	4.0	5.8	4.3	4.3	2.0	0.65	1.0
5.0 x 5.8	5.0	5.8	5.3	5.3	2.3	0.65	1.5
6.3 x 5.8	6.3	5.8	6.6	6.6	2.7	0.65	2.0
8.0 x 6.5	8.0	6.5	8.4	8.4	3.4	0.65	2.3
8.0 x 10.0	8.0	10.0	8.4	8.4	3.0	0.90	3.1
10.0 x 10.0	10.0	10.0	10.4	10.4	3.3	0.90	4.7

Specification

	VH
Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	4V	6.3V	10V	16V	25V	35V	50V	63V	100V
All case sizes	0.37	0.30	0.26	0.22	0.17	0.14	0.13	0.11	0.10

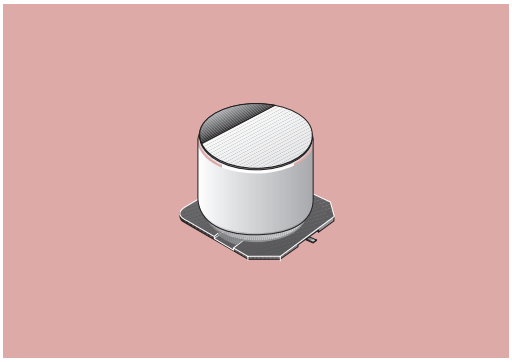
Marking and Packaging

Marking	Printed on top surface of case, except largest case sizes which may be printed on a case sleeve around the body. Capacitance value, Voltage, Bar to indicate negative terminal
Tape	
Case Size	
4.0 x 5.8	12mm width, 8mm pitch
5.0 x 5.8	12mm width, 12mm pitch
6.3 x 5.8	16mm width, 12mm pitch
8.0 x 6.5	16mm width, 12mm pitch
8.0 x 10.0	24mm width, 16mm pitch
10.0 x 10.0	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
4 Volt			
22	22	4.0 x 5.8	*ZP220*
33	27	5.0 x 5.8	*ZP330*
47	33	5.0 x 5.8	*ZP470*
100	50	6.3 x 5.8	*ZP101*
6.3 Volt			
22	22	4.0 x 5.8	*ZN220*
33	27	5.0 x 5.8	*ZN330*
47	33	5.0 x 5.8	*ZN470*
100	100	6.3 x 5.8	*ZN101*
220	178	8.0 x 10.0	*ZN221*
330	178	8.0 x 10.0	*ZN331*
470	324	10.0 x 10.0	*ZN471*
1000	335	10.0 x 10.0	*ZN102*
10 Volt			
22	25	5.0 x 5.8	*ZL220*
33	30	5.0 x 5.8	*ZL330*
47	43	6.3 x 5.8	*ZL470*
100	110	8.0 x 6.5	*ZL101*
220	178	8.0 x 10.0	*ZL221*
330	324	10.0 x 10.0	*ZL331*
470	324	10.0 x 10.0	*ZL471*
16 Volt			
10	16	4.0 x 5.8	*ZK100*
22	30	5.0 x 5.8	*ZK220*
33	40	6.3 x 5.8	*ZK330*
47	50	6.3 x 5.8	*ZK470*
100	110	8.0 x 6.5	*ZK101*
220	324	10.0 x 10.0	*ZK221*
330	324	10.0 x 10.0	*ZK331*
470	324	10.0 x 10.0	*ZK471*
25 Volt			
4.7	13	4.0 x 5.8	*ZW4R7*
10	23	5.0 x 5.8	*ZW100*
22	38	6.3 x 5.8	*ZW220*
33	48	6.3 x 5.8	*ZW330*
47	110	8.0 x 6.5	*ZW470*
100	178	8.0 x 10.0	*ZW101*
220	324	10.0 x 10.0	*ZW221*
330	324	10.0 x 10.0	*ZW331*

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
35 Volt			
4.7	15	4.0 x 5.8	*ZR4R7*
10	25	5.0 x 5.8	*ZR100*
22	50	6.3 x 5.8	*ZR220*
33	110	8.0 x 6.5	*ZR330*
47	178	8.0 x 10.0	*ZR470*
100	324	10.0 x 10.0	*ZR101*
220	324	10.0 x 10.0	*ZR221*
50 Volt			
0.1	2	4.0 x 5.8	*ZB0R1*
0.22	3	4.0 x 5.8	*ZBR22*
0.33	4	4.0 x 5.8	*ZBR33*
0.47	5	4.0 x 5.8	*ZBR47*
1.0	10	4.0 x 5.8	*ZB1R0*
2.2	16	4.0 x 5.8	*ZB2R2*
3.3	18	4.0 x 5.8	*ZB3R3*
4.7	22	5.0 x 5.8	*ZB4R7*
10	30	6.3 x 5.8	*ZB100*
22	110	8.0 x 6.5	*ZB220*
33	178	8.0 x 10.0	*ZB330*
47	178	8.0 x 10.0	*ZB470*
100	324	10.0 x 10.0	*ZB101*
63 Volt			
22	99	8.0 x 10.0	*ZF220*
33	160	10.0 x 10.0	*ZF330*
47	160	10.0 x 10.0	*ZF470*
100 Volt			
10	67	8.0 x 10.0	*ZT100*
22	133	10.0 x 10.0	*ZT220*

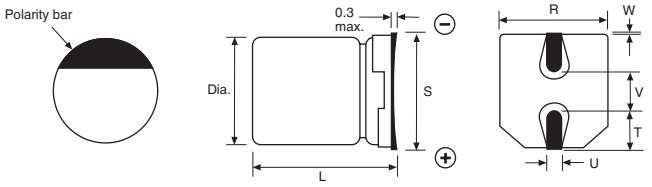


PANASONIC HB Series, type V

Surface mount, aluminium electrolytic capacitors with an extended upper temperature limit of 105°C. The HB series are endurance tested for 2000 hours at 105°C and available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **High temperature**
- Endurance **2000 hours at 105°C**
- Excellent performance/size characteristics
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V	W
B	4.0	5.8	4.3	5.5 max.	1.8	0.65	1.0	0.35
C	5.0	5.8	5.3	6.5 max.	2.2	0.65	1.5	0.35
D	6.3	5.8	6.6	7.8 max.	2.6	0.65	1.8	0.35
E	8.0	6.2	8.3	9.5 max.	3.4	0.65	2.2	0.35
F	8.0	10.2	8.3	10.0 max.	3.4	0.90	3.1	0.70
G	10.0	10.2	10.3	12.0 max.	3.5	0.90	4.6	0.70

Specification

HB (V)	
Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	4V	6.3V	10V	16V	25V	35V	50V
All case sizes	0.50	0.35	0.26	0.20	0.16	0.14	0.12

Marking and Packaging

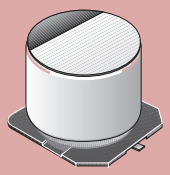
Marking	Capacitance value, Voltage code + series code, Bar to indicate negative terminal
Tape	
Case Size	
B	12mm width, 8mm pitch
C	12mm width, 12mm pitch
D	16mm width, 12mm pitch
E	16mm width, 12mm pitch
F	24mm width, 16mm pitch
G	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (μF)	Ripple Current (mA)	Case Size	Order Code
4 Volt			
47	34	B	*EEEHB0G470R*
100	61	C	*EEEHB0G101R*
150	82	D	*EEEHB0G151P*
220	82	D	*EEEHB0G221P*
6.3 Volt			
22	26	B	*EEEHB0J220R*
22	26	B*	*EEEHB0J220SR*
33	29	B	*EEEHB0J330R*
47	46	C	*EEEHB0J470R*
47	46	C*	*EEEHB0J470SR*
100	71	D	*EEEHB0J101P*
100	71	D*	*EEEHB0J101SP*
220	150	F	*EEEHB0J221P*
330	230	F	*EEEHB0J331P*
10 Volt			
33	43	C	*EEEHB1A330R*
33	43	C*	*EEEHB1A330SR*
100	110	E	*EEEHB1A101P*
220	160	F	*EEEHB1A221P*
470	270	G	*EEEHB1A471P*
16 Volt			
10	28	B	*EEEHB1C100R*
10	28	B*	*EEEHB1C100SR*
22	39	C	*EEEHB1C220R*
22	39	C*	*EEEHB1C220SR*
47	70	D	*EEEHB1C470P*
47	70	D*	*EEEHB1C470SP*
100	120	F	*EEEHB1C101P*
220	210	G	*EEEHB1C221P*
330	230	G	*EEEHB1C331P*
25 Volt			
4.7	22	B	*EEEHB1E4R7R*
4.7	22	B*	*EEEHB1E4R7SR*
6.8	25	B	*EEEHB1E6R8R*
6.8	25	B*	*EEEHB1E6R8SR*
33	65	D	*EEEHB1E330P*
33	65	D*	*EEEHB1E330SP*
47	91	E	*EEEHB1E470P*
100	130	F	*EEEHB1E101P*
220	190	G	*EEEHB1E221P*

Value (μF)	Ripple Current (mA)	Case Size	Order Code
35 Volt			
10	28	C	*EEEHB1V100R*
10	28	C*	*EEEHB1V100SR*
22	55	D	*EEEHB1V220P*
22	55	D*	*EEEHB1V220SP*
33	84	E	*EEEHB1V330P*
47	98	F	*EEEHB1V470P*
100	160	G	*EEEHB1V101P*
50 Volt			
0.1	1	B	*EEEHB1HR10R*
0.1	1	B*	*EEEHB1HR10SR*
0.22	2	B	*EEEHB1HR22R*
0.22	2	B*	*EEEHB1HR22SR*
0.33	3	B	*EEEHB1HR33R*
0.33	3	B*	*EEEHB1HR33SR*
0.47	5	B	*EEEHB1HR47R*
0.47	5	B*	*EEEHB1HR47SR*
1.0	10	B	*EEEHB1H1R0R*
1.0	10	B*	*EEEHB1H1R0SR*
2.2	16	B	*EEEHB1H2R2R*
2.2	16	B*	*EEEHB1H2R2SR*
3.3	16	B	*EEEHB1H3R3R*
3.3	16	B*	*EEEHB1H3R3SR*
4.7	22	C	*EEEHB1H4R7R*
4.7	22	C*	*EEEHB1H4R7SR*
6.8	23	C	*EEEHB1H6R8R*
6.8	23	C*	*EEEHB1H6R8SR*
10	35	D	*EEEHB1H100P*
10	35	D*	*EEEHB1H100SP*
22	70	E	*EEEHB1H220P*
33	91	F	*EEEHB1H330P*
47	100	G	*EEEHB1H470P*

* denotes 5.4mm max. case length

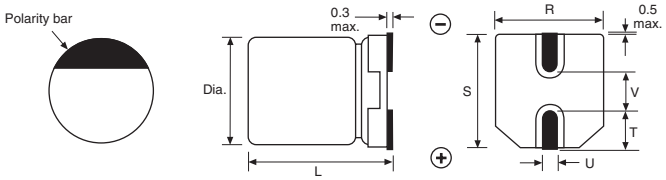


NOVER type VL

Surface mount, aluminium electrolytic capacitors offering long life together with an extended upper temperature limit of 105°C. The VL series has an endurance test of 5000 hours at 105°C and is available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **High temperature, long life**
- Endurance **5000 hours at 105°C**
- Excellent performance/size characteristics
- For sustained operation in higher ambients
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
4.0 x 5.8	4.0	5.8	4.3	4.3	1.8	0.65	1.0
5.0 x 5.8	5.0	5.8	5.3	5.3	2.1	0.65	1.3
6.3 x 5.8	6.3	5.8	6.6	6.6	2.4	0.65	2.2
6.3 x 7.7	6.3	7.7	6.6	6.6	2.4	0.65	2.2
8.0 x 10.0	8.0	10.0	8.3	8.3	2.9	0.95	3.1
10.0 x 10.0	10.0	10.0	10.3	10.3	3.2	0.95	4.5

Specification

	VL
Endurance test	5000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	4V	6.3V	10V	16V	25V	35V	50V
All case sizes	0.37	0.28	0.24	0.20	0.16	0.13	0.12

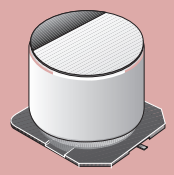
Marking and Packaging

Marking	Printed on top surface of case, except largest case sizes which may be printed on a case sleeve around the body. Capacitance value, Voltage, Bar to indicate negative terminal
Tape	
Case Size	
4.0 x 5.8	12mm width, 8mm pitch
5.0 x 5.8	12mm width, 12mm pitch
6.3 x 5.8	16mm width, 12mm pitch
6.3 x 7.7	16mm width, 12mm pitch
8.0 x 10.0	24mm width, 16mm pitch
10.0 x 10.0	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
4 Volt			
22	22	4.0 x 5.8	*EP220*
33	30	5.0 x 5.8	*EP330*
47	36	5.0 x 5.8	*EP470*
100	60	6.3 x 5.8	*EP101*
220	60	6.3 x 7.7	*EP221*
330	140	8.0 x 10.0	*EP331*
470	140	8.0 x 10.0	*EP471*
1000	315	10.0 x 10.0	*EP102*
6.3 Volt			
22	22	4.0 x 5.8	*EN220*
33	30	5.0 x 5.8	*EN330*
47	36	5.0 x 5.8	*EN470*
100	60	6.3 x 5.8	*EN101*
220	140	8.0 x 10.0	*EN221*
330	140	8.0 x 10.0	*EN331*
470	315	10.0 x 10.0	*EN471*
10 Volt			
22	27	5.0 x 5.8	*EL220*
33	35	5.0 x 5.8	*EL330*
47	46	6.3 x 5.8	*EL470*
100	60	6.3 x 7.7	*EL101*
220	140	8.0 x 10.0	*EL221*
330	315	10.0 x 10.0	*EL331*
470	315	10.0 x 10.0	*EL471*
16 Volt			
10	18	4.0 x 5.8	*EK100*
22	30	5.0 x 5.8	*EK220*
33	40	6.3 x 5.8	*EK330*
47	50	6.3 x 5.8	*EK470*
100	60	6.3 x 7.7	*EK101*
220	315	10.0 x 10.0	*EK221*
330	315	10.0 x 10.0	*EK331*

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
25 Volt			
4.7	13	4.0 x 5.8	*EE4R7*
10	23	5.0 x 5.8	*EE100*
22	38	6.3 x 5.8	*EE220*
33	48	6.3 x 5.8	*EE330*
47	60	6.3 x 7.7	*EE470*
100	140	8.0 x 10.0	*EE101*
220	315	10.0 x 10.0	*EE221*
35 Volt			
4.7	15	4.0 x 5.8	*ER4R7*
10	25	5.0 x 5.8	*ER100*
22	42	6.3 x 5.8	*ER220*
33	60	6.3 x 7.7	*ER330*
47	140	8.0 x 10.0	*ER470*
100	315	10.0 x 10.0	*ER101*
50 Volt			
0.1	1	4.0 x 5.8	*ES0R1*
0.22	2.6	4.0 x 5.8	*ESR22*
0.33	3.2	4.0 x 5.8	*ESR33*
0.47	3.8	4.0 x 5.8	*ESR47*
1.0	6.2	4.0 x 5.8	*ES1R0*
2.2	11	4.0 x 5.8	*ES2R2*
3.3	14	4.0 x 5.8	*ES3R3*
4.7	19	5.0 x 5.8	*ES4R7*
10	30	6.3 x 5.8	*ES100*
22	60	6.3 x 7.7	*ES220*
33	140	8.0 x 10.0	*ES330*
47	315	10.0 x 10.0	*ES470*
100	315	10.0 x 10.0	*ES101*

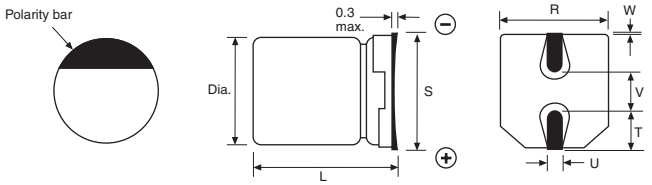


PANASONIC FK Series, type V

Surface mount, aluminium electrolytic capacitors combining low impedance and ESR characteristics within a small package. The FK series additionally feature a maximum operational temperature specification of 105°C making them especially suitable for switch mode power supplies (SMPS). Available in a wide range of values and voltages, which are listed on the following page. Supplied taped and reeled.

- **High temperature, long life**
- Endurance **2000 to 5000 hours at 105°C**
- **Low impedance**
- High ripple current
- Excellent performance/size characteristics
- For switch mode power supplies (SMPS) and industrial electronics
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Wide temperature range
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V	W
B	4.0	5.8	4.3	5.5 max.	1.8	0.65	1.0	0.35
C	5.0	5.8	5.3	6.5 max.	2.2	0.65	1.5	0.35
D	6.3	5.8	6.6	7.8 max.	2.6	0.65	1.8	0.35
D8	6.3	7.7	6.6	7.8 max.	2.6	0.65	1.8	0.35
E	8.0	6.2	8.3	9.5 max.	3.4	0.65	2.2	0.35
F	8.0	10.2	8.3	10 max.	3.4	0.90	3.1	0.70
G	10.0	10.2	10.3	12 max.	3.5	0.90	4.6	0.70
H13	12.5	13.5	13.5	15 max.	4.7	0.90	4.4	0.70
J16	16.0	16.5	17.0	19 max.	5.5	1.20	6.7	0.70
K16	18.0	16.5	19.0	21 max.	6.7	1.20	6.7	0.70

Specification

	FK (V)
Endurance test	2000 to 5000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Tan δ (as listed)	measured at 120Hz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Marking and Packaging

Marking	Capacitance value, Voltage code + series code, Bar to indicate negative terminal
Tape	

Case Size		Case Size	
B	12mm width, 8mm pitch	F	24mm width, 16mm pitch
C	12mm width, 12mm pitch	G	24mm width, 16mm pitch
D	16mm width, 12mm pitch	H13	32mm width, 24mm pitch
D8	16mm width, 12mm pitch	J16	44mm width, 28mm pitch
E	16mm width, 12mm pitch	K16	44mm width, 32mm pitch

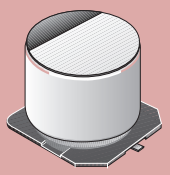
Reel	380mm dia.

continuation

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Tan δ (max.)	Case Size	Order Code
6.3 Volt					
22	90	1.35	0.26	B	*EEEFK0J220R*
47	90	1.35	0.26	B	*EEEFK0J470UR*
47	160	0.70	0.26	C	*EEEFK0J470R*
100	160	0.70	0.26	C	*EEEFK0J101UR*
100	240	0.36	0.26	D	*EEEFK0J101P*
220	240	0.36	0.26	D	*EEEFK0J221P*
330	280	0.34	0.26	D8	*EEEFK0J331XP*
330	300	0.26	0.26	E	*EEEFK0J331P*
470	600	0.16	0.26	F	*EEEFK0J471P*
1000	600	0.16	0.26	F	*EEEFK0J102P*
1500	850	0.08	0.26	G	*EEEFK0J152P*
3300	1100	0.06	0.30	H13	*EEVFK0J332Q*
6800	1800	0.035	0.36	J16	*EEVFK0J682M*
10 Volt					
22	90	1.35	0.19	B	*EEEFK1A220R*
33	90	1.35	0.19	B	*EEEFK1A330UR*
33	160	0.70	0.19	C	*EEEFK1A330R*
150	240	0.36	0.19	D	*EEEFK1A151P*
220	280	0.34	0.19	D8	*EEEFK1A221XP*
220	300	0.26	0.19	E	*EEEFK1A221P*
330	600	0.16	0.19	F	*EEEFK1A331P*
470	600	0.16	0.19	F	*EEEFK1A471P*
680	600	0.16	0.19	F	*EEEFK1A681P*
1000	850	0.08	0.19	G	*EEEFK1A102P*
2200	1100	0.06	0.21	H13	*EEVFK1A222Q*
4700	1800	0.035	0.25	J16	*EEVFK1A472M*
6800	2060	0.033	0.29	K16	*EEVFK1A682*
16 Volt					
10	90	1.35	0.16	B	*EEEFK1C100R*
22	90	1.35	0.16	B	*EEEFK1C220UR*
22	160	0.70	0.16	C	*EEEFK1C220R*
47	160	0.70	0.16	C	*EEEFK1C470UR*
47	240	0.36	0.16	D	*EEEFK1C470P*
68	240	0.36	0.16	D	*EEEFK1C680P*
100	240	0.36	0.16	D	*EEEFK1C101P*
150	280	0.34	0.16	D8	*EEEFK1C151XP*
220	280	0.34	0.16	D8	*EEEFK1C221XP*
220	300	0.26	0.16	E	*EEEFK1C221P*
330	600	0.16	0.16	F	*EEEFK1C331P*
470	600	0.16	0.16	F	*EEEFK1C471P*
680	850	0.08	0.16	G	*EEEFK1C681P*
1500	1100	0.06	0.16	H13	*EEVFK1C152Q*
3300	1800	0.035	0.20	J16	*EEVFK1C332M*
4700	2060	0.033	0.22	K16	*EEVFK1C472M*
25 Volt					
10	90	1.35	0.14	B	*EEEFK1E100R*
22	160	0.70	0.14	C	*EEEFK1E220R*
33	160	0.70	0.14	C	*EEEFK1E330UR*
33	240	0.36	0.14	D	*EEEFK1E330P*
47	240	0.36	0.14	D	*EEEFK1E470P*
68	240	0.36	0.14	D	*EEEFK1E680P*
100	280	0.34	0.14	D8	*EEEFK1E101XP*
100	300	0.26	0.14	E	*EEEFK1E101P*
150	600	0.16	0.14	F	*EEEFK1E151P*
220	600	0.16	0.14	F	*EEEFK1E221P*
330	600	0.16	0.14	F	*EEEFK1E331P*
470	850	0.08	0.14	G	*EEEFK1E471P*
1000	1100	0.06	0.14	H13	*EEVFK1E102Q*
1500	1800	0.035	0.14	J16	*EEVFK1E152M*
2200	1800	0.035	0.16	J16	*EEVFK1E222M*
3300	2060	0.033	0.18	K16	*EEVFK1E332M*
35 Volt					
4.7	90	1.35	0.12	B	*EEEFK1V4R7R*
10	90	1.35	0.12	B	*EEEFK1V100UR*
10	160	0.70	0.12	C	*EEEFK1V100R*
22	160	0.70	0.12	C	*EEEFK1V220R*
33	240	0.36	0.12	D	*EEEFK1V330P*
47	240	0.36	0.12	D	*EEEFK1V470P*
68	280	0.34	0.12	D8	*EEEFK1V680XP*
100	280	0.34	0.12	D8	*EEEFK1V101XP*
100	600	0.16	0.12	F	*EEEFK1V101P*
150	600	0.16	0.12	F	*EEEFK1V151P*
220	600	0.16	0.12	F	*EEEFK1V221P*
330	850	0.08	0.12	G	*EEEFK1V331P*
470	1100	0.06	0.12	H13	*EEVFK1V471Q*
680	1100	0.06	0.12	H13	*EEVFK1V681Q*
1000	1800	0.035	0.12	J16	*EEVFK1V102M*
1500	1800	0.035	0.12	J16	*EEVFK1V152M*

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Tan δ (max.)	Case Size	Order Code
50 Volt					
4.7	60	2.90	0.10	B	*EEEFK1H4R7R*
10	85	1.52	0.10	C	*EEEFK1H100UR*
10	165	0.88	0.10	D	*EEEFK1H100P*
22	165	0.88	0.10	D	*EEEFK1H220P*
33	195	0.68	0.10	D8	*EEEFK1H330XP*
33	195	0.68	0.10	E	*EEEFK1H330P*
47	195	0.68	0.10	D8	*EEEFK1H470XP*
47	195	0.68	0.10	E	*EEEFK1H470P*
100	350	0.34	0.10	F	*EEEFK1H101P*
150	670	0.18	0.10	G	*EEEFK1H151P*
220	670	0.18	0.10	G	*EEEFK1H221P*
330	900	0.12	0.10	H13	*EEVFK1H331Q*
390	900	0.12	0.10	H13	*EEVFK1H391Q*
470	1610	0.073	0.10	J16	*EEVFK1H471M*
560	1610	0.073	0.10	J16	*EEVFK1H561M*
680	1610	0.073	0.10	J16	*EEVFK1H681M*
1000	1610	0.073	0.10	J16	*EEVFK1H102M*
63 Volt					
4.7	50	3.0	0.08	C	*EEEFK1J4R7R*
10	80	1.5	0.08	D	*EEEFK1J100P*
22	120	1.2	0.08	D8	*EEEFK1J220XP*
22	120	1.2	0.08	E	*EEEFK1J220P*
33	250	0.65	0.08	F	*EEEFK1J330P*
47	250	0.65	0.08	F	*EEEFK1J470P*
68	250	0.65	0.08	F	*EEEFK1J680UP*
100	400	0.35	0.08	G	*EEEFK1J101P*
150	800	0.16	0.08	H13	*EEVFK1J151Q*
330	800	0.16	0.08	H13	*EEVFK1J221Q*
470	1410	0.082	0.08	J16	*EEVFK1J471M*
680	1690	0.08	0.08	K16	*EEVFK1J681M*
80 Volt					
3.3	25	5.0	0.08	C	*EEEFK1K3R3R*
4.7	40	3.0	0.08	D	*EEEFK1K4R7P*
10	60	2.4	0.08	D8	*EEEFK1K100XP*
10	60	2.4	0.08	E	*EEEFK1K100P*
22	130	1.3	0.08	F	*EEEFK1K220P*
33	130	1.3	0.08	F	*EEEFK1K330P*
47	200	0.7	0.08	G	*EEEFK1K470P*
68	500	0.32	0.08	H13	*EEVFK1K680Q*
100	500	0.32	0.08	H13	*EEVFK1K101Q*
150	500	0.32	0.08	H13	*EEVFK1K151Q*
330	793	0.17	0.08	J16	*EEVFK1K331M*
470	917	0.153	0.08	K16	*EEVFK1K471M*
100 Volt					
22	130	1.3	0.07	F	*EEEFK2A220P*
33	200	0.7	0.07	G	*EEEFK2A330P*
47	500	0.32	0.07	H13	*EEVFK2A470Q*
68	500	0.32	0.07	H13	*EEVFK2A680Q*
100	793	0.17	0.07	J16	*EEVFK2A101M*
150	793	0.17	0.07	J16	*EEVFK2A151M*
220	917	0.153	0.07	K16	*EEVFK2A221M*
330	917	0.153	0.07	K16	*EEVFK2A331M*

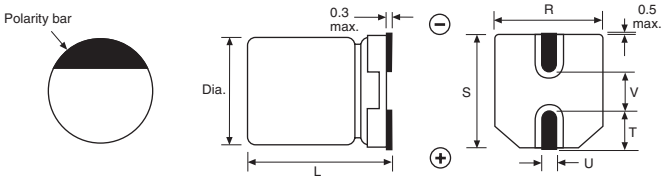


NOVER type VZ

Surface mount, aluminium electrolytic capacitors combining low impedance and ESR characteristics within a small package. The VZ series additionally feature a maximum operational temperature specification of 105°C making them especially suitable for switch mode power supplies (SMPS). Available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **Low impedance**
- Endurance **2000 hours at 105°C**
- Excellent performance/size characteristics
- For switch mode power supplies (SMPS) and industrial electronics
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
4.0 x 5.4	4.0	5.4	4.3	4.3	1.8	0.65	1.0
5.0 x 5.4	5.0	5.4	5.3	5.3	2.1	0.65	1.3
6.3 x 5.4	6.3	5.4	6.6	6.6	2.4	0.65	2.2
6.3 x 7.7	6.3	7.7	6.6	6.6	2.4	0.65	2.2
8.0 x 10.0	8.0	10.0	8.3	8.3	2.9	0.95	3.1
10.0 x 10.0	10.0	10.0	10.3	10.3	3.2	0.95	4.5

Specification

	VZ
Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V
All case sizes	0.22	0.19	0.16	0.14	0.12	0.12

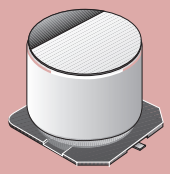
Marking and Packaging

Marking	Printed on top surface of case, except largest case sizes which may be printed on a case sleeve around the body. Capacitance value, Voltage, Bar to indicate negative terminal
Tape	
Case Size	
4.0 x 5.4	12mm width, 8mm pitch
5.0 x 5.4	12mm width, 12mm pitch
6.3 x 5.4	16mm width, 12mm pitch
6.3 x 7.7	16mm width, 12mm pitch
8.0 x 10.0	24mm width, 16mm pitch
10.0 x 10.0	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Case Size Dia. x L	Order Code
6.3 Volt				
22	50	5.0	4.0 x 5.4	***ZJ220***
33	80	2.6	5.0 x 5.4	***ZJ330***
47	80	2.6	5.0 x 5.4	***ZJ470***
100	115	1.3	6.3 x 5.4	***ZJ101***
220	150	0.8	6.3 x 7.7	***ZJ221***
330	150	0.8	6.3 x 7.7	***ZJ331***
470	450	0.45	8.0 x 10.0	***ZJ471***
1000	670	0.15	10.0 x 10.0	***ZJ102***
1500	670	0.15	10.0 x 10.0	***ZJ152***
10 Volt				
22	80	2.6	5.0 x 5.4	***ZA220***
33	80	2.6	5.0 x 5.4	***ZA330***
47	115	1.3	6.3 x 5.4	***ZA470***
100	150	0.8	6.3 x 7.7	***ZA101***
220	150	0.8	6.3 x 7.7	***ZA221***
330	450	0.45	8.0 x 10.0	***ZA331***
470	450	0.45	8.0 x 10.0	***ZA471***
1000	670	0.15	10.0 x 10.0	***ZA102***
16 Volt				
10	50	5.0	4.0 x 5.4	***ZC100***
22	80	2.6	5.0 x 5.4	***ZC220***
33	115	1.3	6.3 x 5.4	***ZC330***
47	115	1.3	6.3 x 5.4	***ZC470***
100	150	0.8	6.3 x 7.7	***ZC101***
220	150	0.8	6.3 x 7.7	***ZC221***
330	450	0.45	8.0 x 10.0	***ZC331***
470	670	0.15	10.0 x 10.0	***ZC471***

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Case Size Dia. x L	Order Code
25 Volt				
4.7	50	5.0	4.0 x 5.4	***ZE4R7***
10	80	2.6	5.0 x 5.4	***ZE100***
22	115	1.3	6.3 x 5.4	***ZE220***
33	115	1.3	6.3 x 5.4	***ZE330***
47	150	0.8	6.3 x 7.7	***ZE470***
100	150	0.8	6.3 x 7.7	***ZE101***
220	450	0.45	8.0 x 10.0	***ZE221***
330	670	0.15	10.0 x 10.0	***ZE331***
470	670	0.15	10.0 x 10.0	***ZE471***
35 Volt				
4.7	50	5.0	4.0 x 5.4	***ZV4R7***
10	80	2.6	5.0 x 5.4	***ZV100***
22	115	1.3	6.3 x 5.4	***ZV220***
33	150	0.8	6.3 x 7.7	***ZV330***
47	150	0.8	6.3 x 7.7	***ZV470***
100	450	0.45	8.0 x 10.0	***ZV101***
220	670	0.15	10.0 x 10.0	***ZV221***
330	670	0.15	10.0 x 10.0	***ZV331***
50 Volt				
1.0	30	5.0	4.0 x 5.4	***ZH1R0***
2.2	30	5.0	4.0 x 5.4	***ZH2R2***
3.3	30	5.0	4.0 x 5.4	***ZH3R3***
4.7	50	3.0	5.0 x 5.4	***ZH4R7***
10	70	2.6	6.3 x 5.4	***ZH100***
22	70	2.6	6.3 x 5.4	***ZH220***
33	120	1.0	6.3 x 7.7	***ZH330***
47	120	1.0	6.3 x 7.7	***ZH470***
100	300	0.6	8.0 x 10.0	***ZH101***
220	500	0.3	10.0 x 10.0	***ZH221***

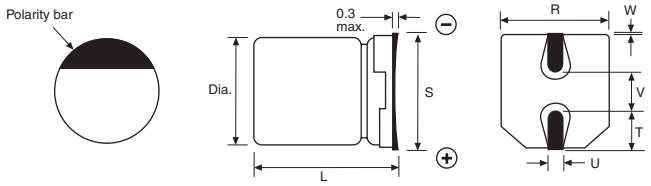


PANASONIC FC Series, type V

Surface mount, aluminium electrolytic capacitors combining low impedance and ESR characteristics within a small package. The FC series additionally feature a maximum operational temperature specification of 105°C making them especially suitable for switch mode power supplies (SMPS). Available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **Low impedance**
- Endurance **1000 hours at 105°C**
- High ripple current
- Excellent performance/size characteristics
- For switch mode power supplies (SMPS) and industrial electronics
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V	W
B	4.0	5.8	4.3	5.5 max.	1.8	0.65	1.0	0.35
C	5.0	5.8	5.3	6.5 max.	2.2	0.65	1.5	0.35
D	6.3	5.8	6.6	7.8 max.	2.6	0.65	1.8	0.35
E	8.0	6.2	8.3	9.5 max.	3.4	0.65	2.2	0.35
F	8.0	10.2	8.3	10.0 max.	3.4	0.90	3.1	0.70
G	10.0	10.2	10.3	12.0 max.	3.5	0.90	4.6	0.70

Specification

	FC (V)
Endurance test	1000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V
All case sizes	0.26	0.19	0.16	0.14	0.12	0.12

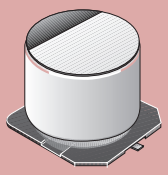
Marking and Packaging

Marking	Capacitance value, Voltage code + series code, Bar to indicate negative terminal
Tape	
Case Size	
B	12mm width, 8mm pitch
C	12mm width, 12mm pitch
D	16mm width, 12mm pitch
E	16mm width, 12mm pitch
F	24mm width, 16mm pitch
G	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Case Size	Order Code
6.3 Volt				
22	60	3.0	B	***EEEFC0J220R***
47	95	1.8	C	***EEEFC0J470R***
68	140	1.0	D	***EEEFC0J680P***
100	140	1.0	D	***EEEFC0J101P***
220	230	0.4	E	***EEEFC0J221P***
330	450	0.3	F	***EEEFC0J331P***
1000	670	0.15	G	***EEEFC0J102P***
1500	670	0.15	G	***EEEFC0J152P***
10 Volt				
33	95	1.8	C	***EEEFC1A330R***
100	230	0.4	E	***EEEFC1A101P***
150	230	0.4	E	***EEEFC1A151P***
220	450	0.3	F	***EEEFC1A221P***
470	670	0.15	G	***EEEFC1A471P***
1000	670	0.15	G	***EEEFC1A102P***
16 Volt				
10	60	3.0	B	***EEEFC1C100R***
22	95	1.8	C	***EEEFC1C220R***
47	140	1.0	D	***EEEFC1C470P***
68	230	0.4	E	***EEEFC1C680P***
100	230	0.4	E	***EEEFC1C101P***
220	670	0.15	G	***EEEFC1C221P***
330	670	0.15	G	***EEEFC1C331P***
470	670	0.15	G	***EEEFC1C471P***
680	670	0.15	G	***EEEFC1C681P***
25 Volt				
6.8	60	3.0	B	***EEEFC1E6R8R***
22	140	1.0	D	***EEEFC1E220P***
33	140	1.0	D	***EEEFC1E330P***
47	230	0.4	E	***EEEFC1E470P***
68	450	0.3	F	***EEEFC1E680P***
100	450	0.3	F	***EEEFC1E101P***
220	670	0.15	G	***EEEFC1E221P***
330	670	0.15	G	***EEEFC1E331P***
470	670	0.15	G	***EEEFC1E471P***

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Case Size	Order Code
35 Volt				
1.0	60	3.0	B	***EEEFC1V1R0R***
2.2	60	3.0	B	***EEEFC1V2R2R***
3.3	60	3.0	B	***EEEFC1V3R3R***
4.7	60	3.0	B	***EEEFC1V4R7R***
6.8	95	1.8	C	***EEEFC1V6R8R***
10	95	1.8	C	***EEEFC1V100R***
22	140	1.0	D	***EEEFC1V220P***
33	230	0.4	E	***EEEFC1V330P***
47	230	0.4	E	***EEEFC1V470P***
100	670	0.15	G	***EEEFC1V101P***
220	670	0.15	G	***EEEFC1V221P***
330	670	0.15	G	***EEEFC1V331P***
50 Volt				
1.0	30	5.0	B	***EEEFC1H1R0R***
2.2	30	5.0	B	***EEEFC1H2R2R***
3.3	30	5.0	B	***EEEFC1H3R3R***
4.7	50	3.0	C	***EEEFC1H4R7R***
10	70	2.0	D	***EEEFC1H100P***
22	120	0.7	E	***EEEFC1H220P***
33	300	0.6	F	***EEEFC1H330P***
47	500	0.3	G	***EEEFC1H470P***
100	500	0.3	G	***EEEFC1H101P***
220	500	0.3	G	***EEEFC1H221P***

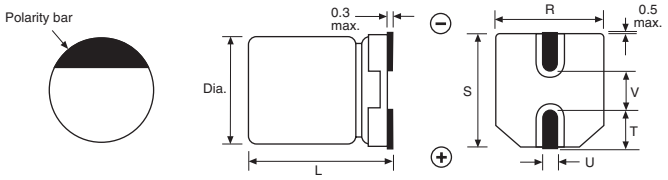


NOVER type VX

Surface mount, aluminium electrolytic capacitors offering a very low impedance and a 105°C operational temperature limit within a small package. Available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **Very low impedance**
- Endurance **2000 hours at 105°C**
- Excellent performance/size characteristics
- Ideal for portable equipment & instrumentation
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
4.0 x 5.8	4.0	5.8	4.3	4.3	1.8	0.65	1.0
5.0 x 5.8	5.0	5.8	5.3	5.3	2.1	0.65	1.3
6.3 x 5.8	6.3	5.8	6.6	6.6	2.4	0.65	2.2
6.3 x 7.7	6.3	7.7	6.6	6.6	2.4	0.65	2.2
8.0 x 10.0	8.0	10.0	8.3	8.3	2.9	0.95	3.1
10.0 x 10.0	10.0	10.0	10.3	10.3	3.2	0.95	4.5

Specification

	VX
Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100Hz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V
Case dia. 4.0 to 6.3	0.22	0.20	0.16	0.14	0.12	0.10
Case dia. 8.0 to 10.0	0.28	0.24	0.20	0.16	0.14	0.12

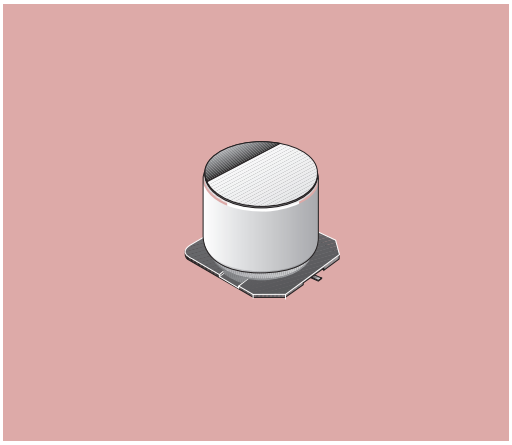
Marking and Packaging

Marking	Printed on top surface of case, except largest case sizes which may be printed on a case sleeve around the body. Capacitance value, Voltage, Bar to indicate negative terminal
Tape	
Case Size	
4.0 x 5.8	12mm width, 8mm pitch
5.0 x 5.8	12mm width, 12mm pitch
6.3 x 5.8	16mm width, 12mm pitch
6.3 x 7.7	16mm width, 12mm pitch
8.0 x 10.0	24mm width, 16mm pitch
10.0 x 10.0	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Case Size Dia. x L	Order Code
6.3 Volt				
33	150	0.76	5.0 x 5.8	***ZD330***
47	150	0.76	5.0 x 5.8	***ZD470***
100	230	0.44	6.3 x 5.8	***ZD101***
220	280	0.34	6.3 x 7.7	***ZD221***
330	280	0.34	6.3 x 7.7	***ZD331***
470	450	0.17	8.0 x 10.0	***ZD471***
1000	670	0.09	10.0 x 10.0	***ZD102***
1500	670	0.09	10.0 x 10.0	***ZD152***
10 Volt				
22	80	1.8	4.0 x 5.8	***ZG220***
33	150	0.76	5.0 x 5.8	***ZG330***
47	230	0.44	6.3 x 5.8	***ZG470***
100	280	0.34	6.3 x 7.7	***ZG101***
220	280	0.34	6.3 x 7.7	***ZG221***
330	450	0.17	8.0 x 10.0	***ZG331***
470	450	0.17	8.0 x 10.0	***ZG471***
1000	670	0.09	10.0 x 10.0	***ZG102***
16 Volt				
22	150	0.76	5.0 x 5.8	***ZM220***
33	230	0.44	6.3 x 5.8	***ZM330***
47	230	0.44	6.3 x 5.8	***ZM470***
100	280	0.34	6.3 x 7.7	***ZM101***
220	450	0.17	8.0 x 10.0	***ZM221***
330	450	0.17	8.0 x 10.0	***ZM331***
470	670	0.09	10.0 x 10.0	***ZM471***

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Case Size Dia. x L	Order Code
25 Volt				
10	80	1.8	4.0 x 5.8	***ZX100***
22	230	0.44	6.3 x 5.8	***ZX220***
33	230	0.44	6.3 x 5.8	***ZX330***
47	280	0.34	6.3 x 7.7	***ZX470***
100	280	0.34	6.3 x 7.7	***ZX101***
220	450	0.17	8.0 x 10.0	***ZX221***
330	670	0.09	10.0 x 10.0	***ZX331***
470	670	0.09	10.0 x 10.0	***ZX471***
35 Volt				
4.7	80	1.8	4.0 x 5.8	***ZY4R7***
10	150	0.76	5.0 x 5.8	***ZY100***
22	230	0.44	6.3 x 5.8	***ZY220***
33	230	0.44	6.3 x 5.8	***ZY330***
47	280	0.34	6.3 x 7.7	***ZY470***
100	450	0.17	8.0 x 10.0	***ZY101***
220	670	0.09	10.0 x 10.0	***ZY221***
330	670	0.09	10.0 x 10.0	***ZY331***
50 Volt				
1.0	30	5.0	4.0 x 5.8	***ZS1R0***
2.2	30	5.0	4.0 x 5.8	***ZS2R2***
3.3	30	5.0	4.0 x 5.8	***ZS3R3***
4.7	40	1.52	5.0 x 5.8	***ZS4R7***
10	120	0.88	6.3 x 5.8	***ZS100***
22	140	0.68	6.3 x 7.7	***ZS220***
33	140	0.68	6.3 x 7.7	***ZS330***
47	140	0.68	6.3 x 7.7	***ZS470***
100	340	0.18	10.0 x 10.0	***ZS101***
220	340	0.18	10.0 x 10.0	***ZS221***

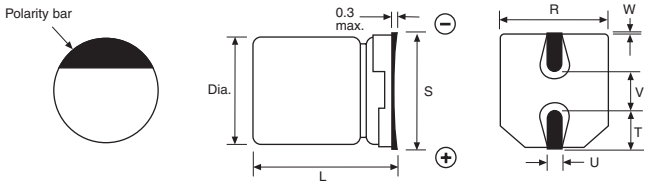


PANASONIC FP Series, type V

Surface mount, aluminium electrolytic capacitors with very low ESR characteristics within a small package. The FP series additionally feature a maximum operational temperature specification of 105°C making them especially suitable for switch mode power supplies (SMPS). Available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **Very low impedance**
- Endurance **2000 hours at 105°C**
- High ripple current
- Excellent performance/size characteristics
- For switch mode power supplies (SMPS) and industrial electronics
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Wide temperature range
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V	W
B	4.0	5.8	4.3	5.5 max.	1.8	0.65	1.0	0.35
C	5.0	5.8	5.3	6.5 max.	2.2	0.65	1.5	0.35
D	6.3	5.8	6.6	7.8 max.	2.6	0.65	1.8	0.35
D8	6.3	7.7	6.6	7.8 max.	2.6	0.65	1.8	0.35
E	8.0	6.2	8.3	9.5 max.	3.4	0.65	2.2	0.35
F	8.0	10.2	8.3	10 max.	3.4	0.90	3.1	0.70
G	10.0	10.2	10.3	12 max.	3.5	0.90	4.6	0.70

Specification

FP (V)

Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V
All cases sizes	0.26	0.19	0.16	0.14	0.12

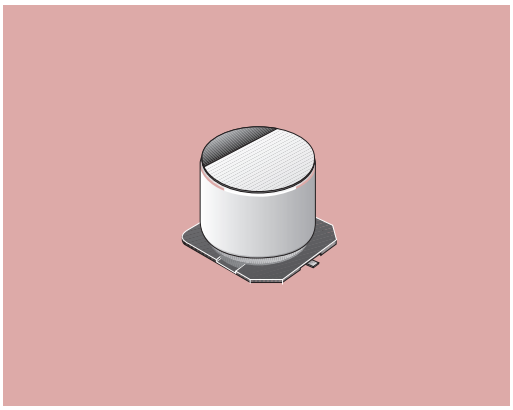
Marking and Packaging

Marking	Capacitance value, Voltage code + series code, Bar to indicate negative terminal			
Tape				
	Case Size		Case Size	
	B	12mm width, 8mm pitch	F	24mm width, 16mm pitch
	C	12mm width, 12mm pitch	G	24mm width, 16mm pitch
	D	16mm width, 12mm pitch	H13	32mm width, 24mm pitch
	D8	16mm width, 12mm pitch	J16	44mm width, 28mm pitch
	E	16mm width, 12mm pitch	K16	44mm width, 32mm pitch
Reel	380mm dia.			

ORDER CODES

Value (μF)	Ripple Current (mA)	Impedance (Ω)	Case Size	Order Code
6.3 Volt				
22	160	0.85	B	*EEEFP0J220AR*
47	160	0.85	B	*EEEFPJ470UAR*
47	240	0.36	C	*EEEFP0J470AR*
100	240	0.36	C	*EEEFPJ101UAR*
100	300	0.26	D	*EEEFP0J101AP*
220	300	0.26	D	*EEEFP0J221AP*
330	600	0.16	D8	*EEEFPJ331XAP*
330	500	0.18	E	*EEEFP0J331AP*
470	850	0.08	F	*EEEFP0J471AP*
1000	850	0.08	F	*EEEFP0J102AP*
1500	1190	0.06	G	*EEEFP0J152AP*
1800	850	0.08	G	*EEEFPJ182UAP*
10 Volt				
22	160	0.85	B	*EEEFP1A220AR*
33	160	0.85	B	*EEEFPA330UAR*
33	240	0.36	C	*EEEFP1A330AR*
150	300	0.26	D	*EEEFP1A151AP*
220	600	0.16	D8	*EEEFPA221XAP*
220	500	0.18	E	*EEEFP1A221AP*
330	850	0.08	F	*EEEFP1A331AP*
470	850	0.08	F	*EEEFP1A471AP*
680	850	0.08	F	*EEEFP1A681AP*
1000	1190	0.06	G	*EEEFP1A102AP*
1200	850	0.08	G	*EEEFPA122UAP*
16 Volt				
10	160	0.85	B	*EEEFP1C100AR*
22	160	0.85	B	*EEEFPC220UAR*
22	240	0.36	C	*EEEFP1C220AR*
47	240	0.36	C	*EEEFPC470UAR*
47	300	0.26	D	*EEEFP1C470AP*
68	300	0.26	D	*EEEFP1C680AP*
100	300	0.26	D	*EEEFP1C101AP*
100	600	0.16	D8	*EEEFPC101XAP*

Value (μF)	Ripple Current (mA)	Impedance (Ω)	Case Size	Order Code
16 Volt *(continued)*				
150	600	0.16	D8	*EEEFPC151XAP*
220	600	0.16	D8	*EEEFPC221XAP*
220	500	0.18	E	*EEEFP1C221AP*
330	850	0.08	F	*EEEFP1C331AP*
470	850	0.08	F	*EEEFP1C471AP*
680	1190	0.06	G	*EEEFP1C681AP*
820	850	0.08	G	*EEEFPC821UAP*
25 Volt				
10	160	0.85	B	*EEEFP1E100AR*
22	240	0.36	C	*EEEFP1E220AR*
33	240	0.36	C	*EEEFPE330UAR*
33	300	0.26	D	*EEEFP1E330AP*
47	300	0.26	D	*EEEFP1E470AP*
68	300	0.26	D	*EEEFP1E680AP*
100	600	0.16	D8	*EEEFPE101XAP*
100	500	0.18	E	*EEEFP1E101AP*
150	850	0.08	F	*EEEFP1E151AP*
220	850	0.08	F	*EEEFP1E221AP*
330	850	0.08	F	*EEEFP1E331AP*
470	1190	0.06	G	*EEEFP1E471AP*
560	850	0.08	G	*EEEFPE561UAP*
35 Volt				
10	160	0.85	B	*EEEFPV100UAR*
22	240	0.36	C	*EEEFP1V220AR*
33	300	0.26	D	*EEEFP1V330AP*
47	300	0.26	D	*EEEFP1V470AP*
68	600	0.16	D8	*EEEFPV680XAP*
100	600	0.16	D8	*EEEFPV101XAP*
100	850	0.08	F	*EEEFP1V101AP*
150	850	0.08	F	*EEEFP1V151AP*
220	850	0.08	F	*EEEFP1V221AP*
330	1190	0.06	G	*EEEFP1V331AP*
390	850	0.08	G	*EEEFPV391UAP*

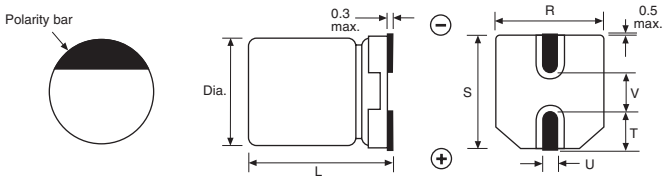


NOVER type VA

Surface mount, aluminium electrolytic capacitors with an upper temperature limit extended to 125°C to sustain performance in harsher environments. The VA series has an endurance test of 1000 hours at 125°C and is available in a range of values and voltages, which are listed below. Supplied taped and reeled.

- **Very high temperature**
- Endurance **1000 hours at 125°C**
- Excellent performance/size characteristics
- Ideal for harsh environments
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.03CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
6.3 x 7.7	6.3	7.7	6.6	6.6	2.4	0.65	2.2
8.0 x 10.0	8.0	10.0	8.3	8.3	2.9	0.95	3.1
10.0 x 10.0	10.0	10.0	10.3	10.3	3.2	0.95	4.5

Specification

	VA
Endurance test	1000 hours at 125°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 125°C
Operating temperature range	-40°C to +125°C
Leakage current	≤0.03CV or 4μA (whichever is greater) after 1 min.

Tan δ (max.) at 120Hz, 20°C

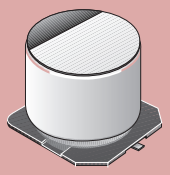
Rated voltage (dc)	10V	16V	25V	35V	50V
All case sizes	0.32	0.24	0.21	0.18	0.18

Marking and Packaging

Marking	Printed on top surface of case, except largest case sizes which may be printed on a case sleeve around the body. Capacitance value, Voltage, Bar to indicate negative terminal
Tape	
Case Size	
6.3 x 7.7	16mm width, 12mm pitch
8.0 x 10.0	24mm width, 16mm pitch
10.0 x 10.0	24mm width, 16mm pitch
Reel	380mm dia.

ORDER CODES

Value (μF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
10 Volt			
100	58	6.3 x 7.7	***EB101***
220	90	8.0 x 10.0	***EB221***
330	112	10.0 x 10.0	***EB331***
16 Volt			
100	66	8.0 x 10.0	***EC101***
220	102	10.0 x 10.0	***EC221***
25 Volt			
47	48	6.3 x 7.7	***EH470***
100	74	8.0 x 10.0	***EH101***
220	116	10.0 x 10.0	***EH221***
35 Volt			
33	44	6.3 x 7.7	***ET330***
47	52	8.0 x 10.0	***ET470***
100	80	10.0 x 10.0	***ET101***
50 Volt			
10	24	6.3 x 7.7	***EW100***
22	38	6.3 x 7.7	***EW220***
33	46	8.0 x 10.0	***EW330***
47	58	10.0 x 10.0	***EW470***

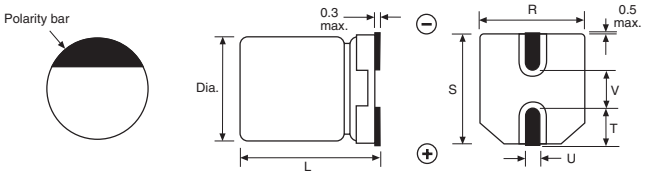


Panasonic TG Series, type V

Surface mount, aluminium electrolytic capacitors offering a low impedance and an upper temperature limit extended to 125°C to sustain performance in harsher environments. The TG series has an endurance test of 1000 to 2000 hours at 125°C and is available in a range of values and voltages, which are listed below. Supplied taped and reeled.

- **Very high temperature, low impedance**
- Endurance **1000 to 2000 hours at 125°C**
- Excellent performance/size characteristics
- Ideal for harsh environments
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
E	8.0	6.2	8.3	9.5 max.	3.4	2.2	0.35
F	8.0	10.2	8.3	10.0 max.	3.4	3.1	0.70
G	10.0	10.2	10.3	12.0 max.	3.5	4.6	0.70
H13	12.5	13.5	13.5	15.0 max.	4.7	4.4	0.70
J16	16.0	16.5	17.0	19.0 max.	5.5	6.7	0.70
K16	18.0	16.5	19.0	21.0 max.	6.7	6.7	0.70

Specification

TG (V)	
Endurance test	1000 to 2000 hours at 125°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 125°C
Impedance (as listed)	measured at 100kHz, 20°C
Tan δ (as listed)	measured at 120Hz, 20°C
Operating temperature range	-40°C to +125°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

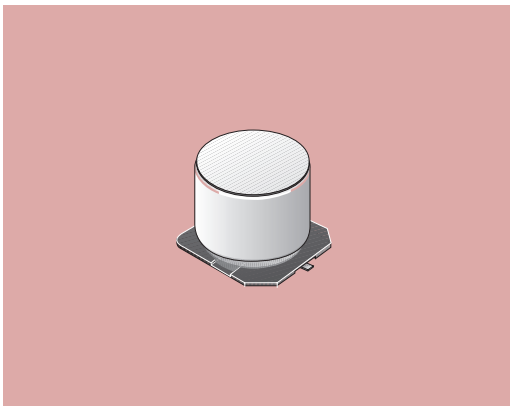
Marking and Packaging

Marking	Capacitance value, Voltage code + series code, Bar to indicate negative terminal			
Tape	Case Size		Case Size	
	E	16mm width, 12mm pitch	H13	32mm width, 24mm pitch
	F	24mm width, 16mm pitch	J16	44mm width, 28mm pitch
	G	24mm width, 16mm pitch	K16	44mm width, 32mm pitch
Reel	380mm dia.			

ORDER CODES

Value (μF)	Ripple Current (mA)	Impedance (Ω)	Tan δ	Case Size (mm)	Order Code
10 Volt					
100	100	1.00	0.30	E	*EEETG1A101P*
220*	197	0.50	0.30	F	*EEETG1A221P*
330*	270	0.30	0.30	G	*EEETG1A331P*
470	270	0.30	0.30	G	*EEETG1A471UP*
1000	800	0.12	0.30	H13	*EEVTG1A102Q*
1500	800	0.12	0.30	H13	*EEVTG1A152UQ*
2200	1100	0.08	0.32	J16	*EEVTG1A222M*
3300*	1300	0.08	0.34	K16	*EEVTG1A332M*
4700	1300	0.08	0.36	K16	*EEVTG1A472M*
16 Volt					
100	197	0.50	0.23	F	*EEETG1C101P*
220*	270	0.30	0.23	G	*EEETG1C221P*
330*	800	0.12	0.23	H13	*EEVTG1C331Q*
470	800	0.12	0.23	H13	*EEVTG1C471Q*
680	800	0.12	0.23	H13	*EEVTG1C681Q*
1000*	1100	0.08	0.23	J16	*EEVTG1C102M*
2200*	1300	0.08	0.25	K16	*EEVTG1C222M*
3300	1300	0.08	0.27	K16	*EEVTG1C332M*
25 Volt					
47	100	1.00	0.18	E	*EEETG1E470P*
100*	197	0.50	0.18	F	*EEETG1E101P*
220*	270	0.30	0.18	G	*EEETG1E221PP*
330*	800	0.12	0.18	H13	*EEVTG1E331Q*
470	800	0.12	0.18	H13	*EEVTG1E471Q*
680*	1100	0.08	0.18	J16	*EEVTG1E681M*
1000*	1300	0.08	0.18	K16	*EEVTG1E102M*
2200	1300	0.08	0.20	K16	*EEVTG1E222M*
35 Volt					
33	100	1.00	0.16	E	*EEETG1V330P*
47*	197	0.50	0.16	F	*EEETG1V470P*
100*	270	0.30	0.16	G	*EEETG1V101P*
220	270	0.30	0.16	G	*EEETG1V221UP*
330	800	0.12	0.16	H13	*EEVTG1V331Q*
470*	1100	0.08	0.16	J16	*EEVTG1V471M*
680*	1300	0.08	0.16	K16	*EEVTG1V681M*
1000	1300	0.08	0.16	K16	*EEVTG1V102M*
50 Volt					
10	80	1.60	0.14	E	*EEETG1H100P*
22	80	1.60	0.14	E	*EEETG1H220P*
33*	133	0.75	0.14	F	*EEETG1H330P*
47*	221	0.50	0.14	G	*EEETG1H470P*
100	221	0.50	0.14	G	*EEETG1H101UP*
220	600	0.23	0.14	H13	*EEVTG1H221Q*
330	600	0.23	0.14	H13	*EEVTG1H331Q*
470	900	0.15	0.14	J16	*EEVTG1H471M*
680*	950	0.14	0.14	K16	*EEVTG1H681M*
1000	950	0.14	0.14	K16	*EEVTG1H102M*
63 Volt					
10*	55	2.20	0.12	E	*EEETG1J100P*
22	100	1.00	0.12	F	*EEETG1J220P*
33*	150	0.80	0.12	G	*EEETG1J330P*
47*	150	0.80	0.12	G	*EEETG1J470P*
100*	350	0.26	0.12	H13	*EEVTG1J101Q*
220	350	0.26	0.12	H13	*EEVTG1J221Q*
330	500	0.18	0.12	J16	*EEVTG1J331M*
470	500	0.18	0.12	J16	*EEVTG1J471M*
80 Volt					
10	70	1.30	0.12	F	*EEVTG1K100P*
22*	90	1.00	0.12	G	*EEETG1K220P*
33*	90	1.00	0.12	G	*EEETG1K330P*
47*	250	0.42	0.12	H13	*EEVTG1K470Q*
100*	350	0.30	0.12	J16	*EEVTG1K101M*
220*	400	0.28	0.12	K16	*EEVTG1K221M*
330*	400	0.28	0.12	K16	*EEVTG1K331M*
470	400	0.28	0.12	K16	*EEVTG1K471M*
100 Volt					
10	70	1.30	0.10	F	*EEETG2A100P*
22*	90	1.00	0.10	G	*EEETG2A220P*
33	90	1.00	0.10	G	*EEETG2A330P*
47	250	0.42	0.10	H13	*EEVTG2A470Q*
100	350	0.30	0.10	J16	*EEVTG2A101M*
220	400	0.28	0.10	K16	*EEVTG2A221M*
330	400	0.28	0.10	K16	*EEVTG2A331M*

* denotes value is also available to order in a smaller case size

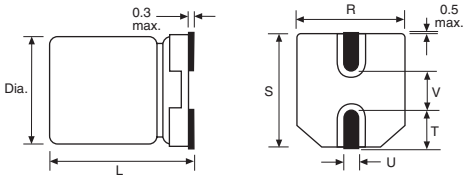


NOVER type VP

Surface mount, bi-polar (non polarised) aluminium electrolytic capacitors suitable for applications where reverse voltage may be applied. Available in a wide range of values and voltages, which are listed below. Supplied taped and reeled.

- **Bi-polar (non-polarised)**
- Endurance **2000 hours at 85°C**
- Able to withstand reverse voltage
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V
4.0 x 5.3	4.0	5.3	4.3	4.3	2.0	0.65	1.0
5.0 x 5.3	5.0	5.3	5.3	5.3	2.3	0.65	1.3
6.3 x 5.3	6.3	5.3	6.6	6.6	2.7	0.65	2.2

Specification

	VP
Endurance test	2000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

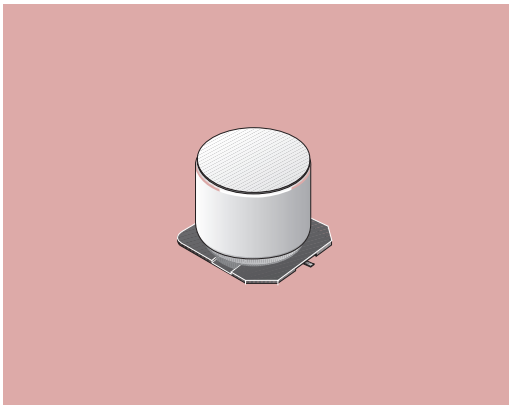
Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V
Case size 4.0 x 5.3	0.35	0.30	0.25	0.25	0.25	0.25
All other case sizes	0.30	0.25	0.20	0.15	0.15	0.15

Marking and Packaging

Marking	Printed on top surface of case. Capacitance value, Voltage
Tape	
Case Size	
4.0 x 5.3	12mm width, 8mm pitch
5.0 x 5.3	12mm width, 12mm pitch
6.3 x 5.3	16mm width, 12mm pitch
Reel	380mm dia.

ORDER CODES

Value (µF)	Ripple Current (mA)	Case Size Dia. x L	Order Code
6.3 Volt			
22	27	5.0 x 5.3	***VB220***
33	45	6.3 x 5.3	***VB330***
47	54	6.3 x 5.3	***VB470***
10 Volt			
10	18	4.0 x 5.3	***VR100***
22	40	6.3 x 5.3	***VR220***
33	50	6.3 x 5.3	***VR330***
16 Volt			
4.7	14	4.0 x 5.3	***VK4R7***
10	26	5.0 x 5.3	***VK100***
22	45	6.3 x 5.3	***VK220***
33	55	6.3 x 5.3	***VK330***
25 Volt			
3.3	13	4.0 x 5.3	***VN3R3***
4.7	20	5.0 x 5.3	***VN4R7***
10	35	6.3 x 5.3	***VN100***
35 Volt			
2.2	10	4.0 x 5.3	***VW2R2***
3.3	17	5.0 x 5.3	***VW3R3***
4.7	21	5.0 x 5.3	***VW4R7***
10	35	6.3 x 5.3	***VW100***
50 Volt			
0.1	2.3	4.0 x 5.3	***VL0R1***
0.22	3.3	4.0 x 5.3	***VLR22***
0.33	4.1	4.0 x 5.3	***VLR33***
0.47	4.9	4.0 x 5.3	***VLR47***
1.0	7.2	4.0 x 5.3	***VL1R0***
2.2	14	5.0 x 5.3	***VL2R2***
3.3	17	5.0 x 5.3	***VL3R3***
4.7	24	6.3 x 5.3	***VL4R7***

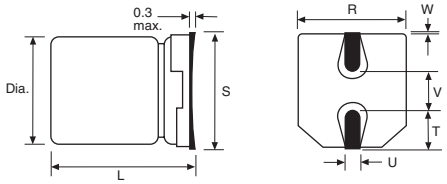


PANASONIC HP Series, type V

A range of bi-polar (non-polarised) radial aluminium electrolytic capacitors suitable for applications where reverse voltage may be applied. Endurance test 2000 hours at 105°C and available in a variety of values and voltages, which are listed below. Supplied loose or taped and boxed.

- **Bi-polar (non-polarised)**
- **High temperature**
- Endurance **2000 hours at 105°C**
- Able to withstand reverse voltage
- Suitable for reflow soldering
- Capacitance tolerance **20%**
- Leakage current **≤0.02CV**
- Supplied taped & reeled

Dimensions (mm)



Case Size	Dia.	L	R	S	T	U	V	W
B	4.0	5.8	4.3	5.5 max.	1.8	0.65	1.0	0.35
C	5.0	5.8	5.3	6.5 max.	2.2	0.65	1.5	0.35
D	6.3	5.8	6.6	7.8 max.	2.6	0.65	1.8	0.35

Specification

HP (V)	
Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Operating temperature range	-40°C to +105°C
Leakage current	≤0.02CV or 3μA (whichever is greater) after 2 min.

Tan δ (max.) at 120Hz, 20°C

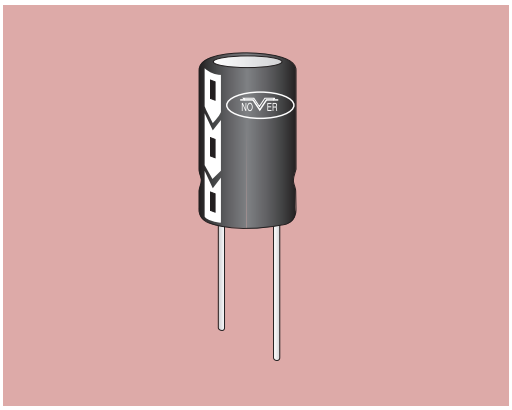
Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V
All case sizes	0.35	0.26	0.2	0.16	0.14	0.12

Marking and Packaging

Marking	Capacitance value, Voltage code + series code
Tape	
Case Size	
B	12mm width, 8mm pitch
C	12mm width, 12mm pitch
D	16mm width, 12mm pitch
Reel	380mm dia.

ORDER CODES

Value (μF)	Ripple Current (mA)	Tan δ (max.)	Case Size	Order Code
6.3 Volt				
47	35	0.60	D	***EEEHP0J470P***
10 Volt				
10	20	0.44	B	***EEEHP1A100R***
33	26	0.44	D	***EEEHP1A330P***
16 Volt				
10	25	0.32	C	***EEEHP1C100R***
25 Volt				
3.3	12	0.28	B	***EEEHP1E100P***
4.7	12	0.28	B	***EEEHP1E220P***
10	28	0.28	D	***EEEHP1E3R3R***
22	55	0.28	D	***EEEHP1E4R7R***
35 Volt				
2.2	10	0.24	B	***EEEHP1V2R2R***
50 Volt				
0.22	2	0.24	B	***EEEHP1HR22R***
0.33	3	0.24	B	***EEEHP1HR33R***
0.47	5	0.24	B	***EEEHP1HR47R***
1.0	10	0.24	B	***EEEHP1H1R0R***
3.3	16	0.24	D	***EEEHP1H3R3P***
4.7	23	0.24	D	***EEEHP1H4R7P***

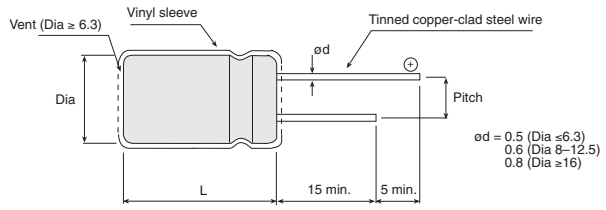


NOVER type RE

Radial lead aluminium electrolytic capacitors manufactured to be highly cost effective whilst maintaining high levels of quality and reliability. Offer longer life with an endurance test of 2000 hours at 85°C. The most popular values are listed below and continued on the following page with other values and higher voltages being available to order. Supplied loose or taped and boxed.

- **Standard range**
- Longer life
- Endurance **2000 hours at 85°C**
- Solvent resistant
- Very competitively priced
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Black**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Conforms to JIS C5141-1982 Char.W

	RE
Endurance test	2000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C (see also multiplier table below)
Operating temperature range	-40°C to +85°C
Leakage current	6.3 ~ 100V ≤0.01CV or 3µA 250 ~ 450V ≤0.06CV or 10µA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C) *Add 0.02 for every 1000µF above 1000µF

Rated voltage	6.3V	10V	16V	25V	40V	50V	63V	dc
Tan δ (max.)*	0.22	0.19	0.16	0.14	0.11	0.10	0.09	
Rated voltage	100V	250V	350V	450V				dc
Tan δ (max.)	0.08	0.15	0.15	0.23				

Surge voltage capability

Rated voltage	6.3V	10V	16V	25V	40V	50V	63V	dc
Surge voltage	8V	13V	20V	32V	50V	63V	79V	dc
Rated voltage	100V	250V	350V	450V				dc
Surge voltage	125V	300V	400V	500V				dc

Multiplier for ripple current

Frequency coefficient						
Rated Voltage (V)	Freq (Hz) / CV (µF.WV)	50/60	120	1k	10k	100k
6.3 ~ 16		0.8	1.0	1.1	1.2	1.2
25 ~ 40	≤1000	0.8	1.0	1.2	1.7	1.7
	>1000	0.8	1.0	1.2	1.3	1.3
50 ~ 100	≤1000	0.8	1.0	1.6	1.9	1.9
	>1000	0.8	1.0	1.2	1.3	1.3
250 ~ 450		0.8	1.0	1.3	1.5	1.6

Temperature coefficient		
Temperature (°C)	+70	+85
Factor	1.35	1.0

ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
6.3 Volt					
33	70	5.0 x 11.0	2.0(5)	***053308***	***053308T***
47	75	5.0 x 11.0	2.0(5)	***053309***	***053309T***
100	100	5.0 x 11.0	2.0(5)	***053310***	***053310T***
220	170	6.3 x 11.0	2.5(5)	***053311***	***053311T***
330	210	6.3 x 11.0	2.5(5)	***053312***	***053312T***
470	300	8.0 x 11.5	3.5(5)	***053313***	***053313T***
1000	530	10.0 x 12.5	5.0	***053314***	***053314T***
2200	990	12.5 x 20.0	5.0	***053315***	***053315T***
3300	1150	12.5 x 20.0	5.0	***053316***	***053316T***
4700	1700	16.0 x 25.0	7.5	***053317***	***053317T***
6800	1900	16.0 x 25.0	7.5	***053318***	***053318T***
10000	2250	16.0 x 31.5	7.5	***053319***	–
15000	2400	18.0 x 35.5	7.5	***053320***	–
10 Volt					
22	55	5.0 x 11.0	2.0(5)	***053007***	***053007T***
33	70	5.0 x 11.0	2.0(5)	***053008***	***053008T***
47	75	5.0 x 11.0	2.0(5)	***053009***	***053009T***
100	110	5.0 x 11.0	2.0(5)	***053010***	***053010T***
220	190	6.3 x 11.0	2.5(5)	***053011***	***053011T***
330	270	8.0 x 11.5	3.5(5)	***053012***	***053012T***
470	330	8.0 x 11.5	3.5(5)	***053013***	***053013T***
1000	620	10.0 x 16.0	5.0	***053014***	***053014T***
2200	1050	12.5 x 20.0	5.0	***053015***	***053015T***
3300	1350	12.5 x 25.0	5.0	***053215***	***053215T***
4700	1800	16.0 x 25.0	7.5	***053216***	***053216T***
6800	2200	16.0 x 31.5	7.5	***053217***	–
10000	2750	18.0 x 35.5	7.5	***053218***	–
16 Volt					
10	40	5.0 x 11.0	2.0(5)	***053016***	***053016T***
22	55	5.0 x 11.0	2.0(5)	***053017***	***053017T***
33	70	5.0 x 11.0	2.0(5)	***053018***	***053018T***
47	80	5.0 x 11.0	2.0(5)	***053019***	***053019T***
100	140	6.3 x 11.0	2.5(5)	***053020***	***053020T***
220	220	6.3 x 11.0	2.5(5)	***053421***	***053421T***
220	240	8.0 x 11.5	3.5(5)	***053021***	***053021T***
330	300	8.0 x 11.5	3.5(5)	***053022***	***053022T***
470	400	8.0 x 11.5	3.5(5)	***053423***	***053423T***
470	420	10.0 x 12.5	5.0	***053023***	***053023T***
1000	720	10.0 x 16.0	5.0	***053424***	***053424T***
1000	740	10.0 x 20.0	5.0	***053024***	***053024T***
2200	1200	12.5 x 25.0	5.0	***053025***	***053025T***
3300	1650	16.0 x 25.0	7.5	***053225***	***053225T***
4700	2100	16.0 x 31.5	7.5	***053226***	–
6800	2600	18.0 x 35.5	7.5	***053227***	–
25 Volt					
4.7	25	5.0 x 11.0	2.0(5)	***053234***	***053234T***
10	45	5.0 x 11.0	2.0(5)	***053026***	***053026T***
22	60	5.0 x 11.0	2.0(5)	***053027***	***053027T***
33	70	5.0 x 11.0	2.0(5)	***053028***	***053028T***
47	90	5.0 x 11.0	2.0(5)	***053029***	***053029T***
100	150	6.3 x 11.0	2.5(5)	***053030***	***053030T***
220	260	8.0 x 11.5	3.5(5)	***053031***	***053031T***
330	380	10.0 x 12.5	5.0	***053032***	***053032T***
470	500	10.0 x 16.0	5.0	***053033***	***053033T***
1000	910	12.5 x 20.0	5.0	***053034***	***053034T***
2200	1400	12.5 x 25.0	5.0	***053435***	***053435T***
2200	1500	16.0 x 25.0	7.5	***053035***	***053035T***
3300	1900	16.0 x 31.5	7.5	***053235***	–
4700	2450	18.0 x 35.5	7.5	***053036***	–

continued > > > >

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continuation

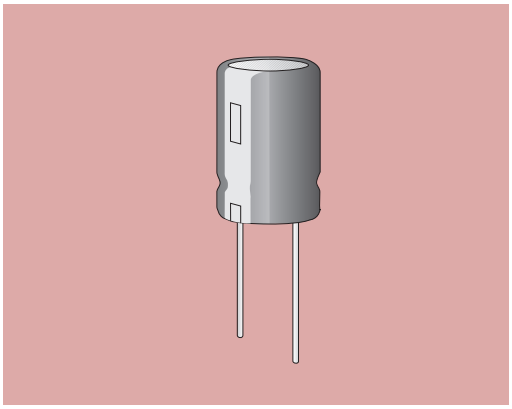
ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
40 Volt					
4.7	30	5.0 x 11.0	2.0(5)	***053236***	***053236T***
10	45	5.0 x 11.0	2.0(5)	***053037***	***053037T***
22	60	5.0 x 11.0	2.0(5)	***053038***	***053038T***
33	90	5.0 x 11.0	2.0(5)	***053039***	***053039T***
47	100	6.3 x 11.0	2.5(5)	***053040***	***053040T***
100	200	8.0 x 11.5	3.5(5)	***053041***	***053041T***
220	360	10.0 x 12.5	5.0	***053042***	***053042T***
330	500	10.0 x 16.0	5.0	***053043***	***053043T***
470	620	10.0 x 20.0	5.0	***053044***	***053044T***
1000	1040	12.5 x 25.0	5.0	***053045***	***053045T***
2200	1900	16.0 x 31.5	7.5	***053046***	–
3300	2250	18.0 x 35.5	7.5	***053047***	–
4700	2500	18.0 x 35.5	7.5	***053247***	–
50 Volt					
0.1	5	5.0 x 11.0	2.0(5)	***053112***	***053112T***
0.22	7	5.0 x 11.0	2.0(5)	***053113***	***053113T***
0.33	9	5.0 x 11.0	2.0(5)	***053114***	***053114T***
0.47	10	5.0 x 11.0	2.0(5)	***053115***	***053115T***
1.0	15	5.0 x 11.0	2.0(5)	***053048***	***053048T***
2.2	20	5.0 x 11.0	2.0(5)	***053049***	***053049T***
3.3	25	5.0 x 11.0	2.0(5)	***053116***	***053116T***
4.7	30	5.0 x 11.0	2.0(5)	***053050***	***053050T***
10	45	5.0 x 11.0	2.0(5)	***053051***	***053051T***
22	70	5.0 x 11.0	2.0(5)	***053052***	***053052T***
33	100	6.3 x 11.0	2.5(5)	***053053***	***053053T***
47	120	6.3 x 11.0	2.5(5)	***053054***	***053054T***
100	210	8.0 x 11.5	3.5(5)	***053055***	***053055T***
220	400	10.0 x 16.0	5.0	***053056***	***053056T***
330	540	10.0 x 20.0	5.0	***053057***	***053057T***
470	740	12.5 x 20.0	5.0	***053058***	***053058T***
1000	1280	12.5 x 25.0	5.0	***053459***	***053459T***
1000	1350	16.0 x 25.0	7.5	***053059***	***053059T***
2200	2100	18.0 x 35.5	7.5	***053221***	–
63 Volt					
0.1	5	5.0 x 11.0	2.0(5)	***053117***	***053117T***
0.22	8	5.0 x 11.0	2.0(5)	***053118***	***053118T***
0.33	9	5.0 x 11.0	2.0(5)	***053119***	***053119T***
0.47	10	5.0 x 11.0	2.0(5)	***053060***	***053060T***
1.0	15	5.0 x 11.0	2.0(5)	***053061***	***053061T***
2.2	20	5.0 x 11.0	2.0(5)	***053062***	***053062T***
3.3	30	5.0 x 11.0	2.0(5)	***053063***	***053063T***
4.7	35	5.0 x 11.0	2.0(5)	***053064***	***053064T***
10	50	5.0 x 11.0	2.0(5)	***053065***	***053065T***
22	85	6.3 x 11.0	2.5(5)	***053066***	***053066T***
33	100	6.3 x 11.0	2.5(5)	***053067***	***053067T***
47	150	8.0 x 11.5	3.5(5)	***053068***	***053068T***
100	260	10.0 x 12.5	5.0	***053069***	***053069T***
220	460	10.0 x 20.0	5.0	***053070***	***053070T***
330	650	12.5 x 20.0	5.0	***053071***	***053071T***
470	850	12.5 x 25.0	5.0	***053120***	***053120T***
1000	1550	16.0 x 31.5	7.5	***053220***	–

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
100 Volt					
0.1	5	5.0 x 11.0	2.0(5)	***053128***	***053128T***
0.22	8	5.0 x 11.0	2.0(5)	***053129***	***053129T***
0.33	10	5.0 x 11.0	2.0(5)	***053130***	***053130T***
0.47	10	5.0 x 11.0	2.0(5)	***053072***	***053072T***
1.0	15	5.0 x 11.0	2.0(5)	***053073***	***053073T***
2.2	25	5.0 x 11.0	2.0(5)	***053074***	***053074T***
3.3	30	5.0 x 11.0	2.0(5)	***053075***	***053075T***
4.7	35	5.0 x 11.0	2.0(5)	***053076***	***053076T***
10	60	6.3 x 11.0	2.5(5)	***053077***	***053077T***
22	110	8.0 x 11.5	3.5(5)	***053078***	***053078T***
33	160	10.0 x 12.5	5.0	***053079***	***053079T***
47	210	10.0 x 16.0	5.0	***053080***	***053080T***
100	380	12.5 x 20.0	5.0	***053081***	***053081T***
220	720	16.0 x 25.0	7.5	***053083***	***053083T***
330	880	16.0 x 25.0	7.5	***053084***	***053084T***
470	1150	16.0 x 31.5	7.5	***053085***	–
250 Volt					
0.47	10	6.3 x 11.0	2.5(5)	***053106***	***053106T***
1.0	15	6.3 x 11.0	2.5(5)	***053107***	***053107T***
2.2	25	8.0 x 11.5	3.5(5)	***053108***	***053108T***
3.3	35	10.0 x 12.5	5.0	***053109***	***053109T***
4.7	40	10.0 x 12.5	5.0	***053110***	***053110T***
10	75	10.0 x 20.0	5.0	***053111***	***053111T***
22	140	12.5 x 25.0	5.0	***053135***	***053135T***
33	170	12.5 x 20.0	5.0	***053136***	***053136T***
47	240	16.0 x 25.0	7.5	***053182***	***053182T***
100	440	18.0 x 35.5	7.5	***053183***	–
350 Volt					
0.47	10	6.3 x 11.0	2.5(5)	***053131***	***053131T***
1.0	15	8.0 x 11.5	3.5(5)	***053132***	***053132T***
2.2	30	10.0 x 12.5	5.0	***053133***	***053133T***
3.3	35	10.0 x 12.5	5.0	***053134***	***053134T***
4.7	45	10.0 x 16.0	5.0	***053140***	***053140T***
10	75	10.0 x 20.0	5.0	***053141***	***053141T***
22	140	12.5 x 25.0	5.0	***053142***	***053142T***
33	200	16.0 x 25.0	7.5	***053143***	***053143T***
47	260	16.0 x 31.5	7.5	***053144***	–
450 Volt					
1.0	15	10.0 x 12.5	5.0	***053121***	***053121T***
2.2	25	10.0 x 16.0	5.0	***053122***	***053122T***
3.3	35	10.0 x 20.0	5.0	***053123***	***053123T***
4.7	45	12.5 x 20.0	5.0	***053124***	***053124T***
10	75	12.5 x 25.0	5.0	***053125***	***053125T***
22	140	16.0 x 31.5	7.5	***053126***	–
33	200	18.0 x 35.5	7.5	***053127***	–
47	296	16.0 x 31.5	7.5	***053155***	–

(5) Leads pre-formed to 5mm pitch on taped part

Other values and higher voltages are available to order. Please contact our Sales Desk for details.

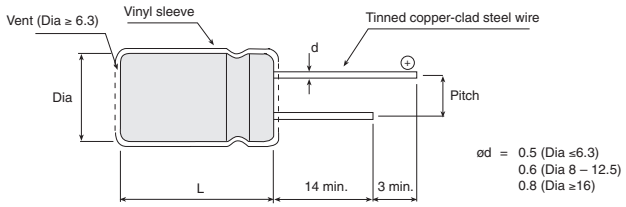


PANASONIC M Series type A

Radial lead aluminium electrolytic capacitors manufactured to high levels of quality and reliability whilst offering longer life with an endurance test of 2000 hours at 85°C. The entire range of values are listed below and continued on the following page. Supplied loose, with taped and boxed product available to order (see details below).

- **Standard range**
- Longer life
- Endurance **2000 hours at 85°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	M (A)	
Endurance test	2000 hours at 85°C	
Capacitance tolerance	±20% at 120Hz, 20°C	
Ripple current (as listed)	measured at 120Hz, 85°C	
Tan δ (as listed)	measured at 120Hz, 20°C	
Operating temperature range	6.3 to 100V, -40°C to +85°C	160 to 450V, -25°C to +85°C
Leakage current (after 2 min.)	≤0.01CV or 3μA (whichever is greater)	≤0.06CV +10μA

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

ORDER CODES

Value (μF)	Ripple Current (mA)	Tan δ	Dia. x L (mm)	Pitch (mm)	Loose
6.3 Volt					
220	240	0.28	5.0 x 11.0	2.0	***ECA0JM221***
470	380	0.28	6.3 x 11.2	2.5	***ECA0JM471***
1000	580	0.28	8.0 x 11.5	3.5	***ECA0JM102***
2200	890	0.30	10.0 x 16.0	5.0	***ECA0JM222***
3300	1020	0.32	10.0 x 20.0	5.0	***ECA0JM332***
4700	1170	0.34	12.5 x 20.0	5.0	***ECA0JM472***
6800	1270	0.38	12.5 x 25.0	5.0	***ECA0JM682***
10000	1450	0.46	16.0 x 25.0	7.5	***ECA0JM103***
15000	1700	0.56	16.0 x 31.5	7.5	***ECA0JM153***
22000	1900	0.70	18.0 x 35.5	7.5	***ECA0JM223***
10 Volt					
330	330	0.24	6.3 x 11.2	2.5	***ECA1AM331***
1000	630	0.24	10.0 x 12.5	5.0	***ECA1AM102***
2200	920	0.26	10.0 x 20.0	5.0	***ECA1AM222***
3300	1090	0.28	12.5 x 20.0	5.0	***ECA1AM332***
4700	1200	0.30	12.5 x 25.0	5.0	***ECA1AM472***
6800	1400	0.34	16.0 x 25.0	7.5	***ECA1AM682***
10000	1600	0.42	16.0 x 31.5	7.5	***ECA1AM103***
15000	1850	0.52	18.0 x 35.5	7.5	***ECA1AM153***
16 Volt					
10	30	0.20	5.0 x 11.0	2.0	***ECA1CM100***
22	75	0.20	5.0 x 11.0	2.0	***ECA1CM220***
33	110	0.20	5.0 x 11.0	2.0	***ECA1CM330***
47	130	0.20	5.0 x 11.0	2.0	***ECA1CM470***
100	180	0.20	5.0 x 11.0	2.0	***ECA1CM101***
220	280	0.20	6.3 x 11.2	2.5	***ECA1CM221***
470	440	0.20	8.0 x 11.5	3.5	***ECA1CM471***
1000	680	0.20	10.0 x 16.0	5.0	***ECA1CM102***
2200	1000	0.22	12.5 x 20.0	5.0	***ECA1CM222***
3300	1200	0.24	12.5 x 25.0	5.0	***ECA1CM332***
4700	1360	0.26	16.0 x 25.0	7.5	***ECA1CM472***
6800	1600	0.30	16.0 x 31.5	7.5	***ECA1CM682***
10000	1800	0.38	18.0 x 35.5	7.5	***ECA1CM103***
25 Volt					
100	180	0.16	6.3 x 11.2	2.5	***ECA1EM101***
330	390	0.16	8.0 x 11.5	3.5	***ECA1EM331***
470	480	0.16	10.0 x 12.5	5.0	***ECA1EM471***
1000	850	0.16	10.0 x 20.0	5.0	***ECA1EM102***
2200	1200	0.18	12.5 x 25.0	5.0	***ECA1EM222***
3300	1300	0.20	16.0 x 25.0	7.5	***ECA1EM332***
4700	1500	0.22	16.0 x 31.5	7.5	***ECA1EM472***
6800	1750	0.26	18.0 x 35.5	7.5	***ECA1EM682***
35 Volt					
47	130	0.14	5.0 x 11.0	2.0	***ECA1VM470***
100	210	0.14	6.3 x 11.2	2.5	***ECA1VM101***
220	350	0.14	8.0 x 11.5	3.5	***ECA1VM221***
330	440	0.14	10.0 x 12.5	5.0	***ECA1VM331***
470	550	0.14	10.0 x 16.0	5.0	***ECA1VM471***
1000	900	0.14	12.5 x 20.0	5.0	***ECA1VM102***
2200	1250	0.16	16.0 x 25.0	7.5	***ECA1VM222***
3300	1400	0.18	16.0 x 31.5	7.5	***ECA1VM332***
4700	1600	0.20	18.0 x 35.5	7.5	***ECA1VM472***

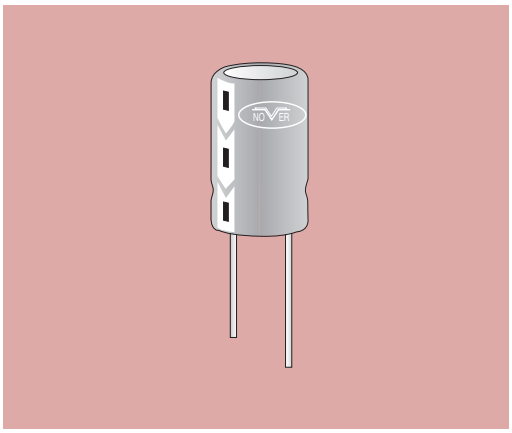
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continuation

ORDER CODES

Value (µF)	Ripple Current (mA)	Tan δ	Dia. x L (mm)	Pitch (mm)	Loose
50 Volt					
0.1	1.3	0.12	5.0 x 11.0	2.0	***ECA1HM0R1***
0.22	2.9	0.12	5.0 x 11.0	2.0	***ECA1HMR22***
0.33	4.4	0.12	5.0 x 11.0	2.0	***ECA1HMR33***
0.47	5	0.12	5.0 x 11.0	2.0	***ECA1HMR47***
1.0	10	0.12	5.0 x 11.0	2.0	***ECA1HM010***
2.2	20	0.12	5.0 x 11.0	2.0	***ECA1HM2R2***
3.3	35	0.12	5.0 x 11.0	2.0	***ECA1HM3R3***
4.7	45	0.12	5.0 x 11.0	2.0	***ECA1HM4R7***
10	65	0.12	5.0 x 11.0	2.0	***ECA1HM100***
22	100	0.12	5.0 x 11.0	2.0	***ECA1HM220***
33	110	0.12	5.0 x 11.0	2.0	***ECA1HM330***
47	130	0.12	6.3 x 11.2	2.5	***ECA1HM470***
100	250	0.12	8.0 x 11.5	3.5	***ECA1HM101***
220	400	0.12	10.0 x 12.5	5.0	***ECA1HM221***
330	500	0.12	10.0 x 16.0	5.0	***ECA1HM331***
470	650	0.12	10.0 x 20.0	5.0	***ECA1HM471***
1000	1050	0.12	12.5 x 25.0	5.0	***ECA1HM102***
2200	1300	0.14	16.0 x 31.5	7.5	***ECA1HM222***
3300	1500	0.16	18.0 x 35.5	7.5	***ECA1HM332***
63 Volt					
10	70	0.11	5.0 x 11.0	2.0	***ECA1JM100***
22	105	0.11	5.0 x 11.0	2.0	***ECA1JM220***
33	130	0.11	6.3 x 11.2	2.5	***ECA1JM330***
47	160	0.11	6.3 x 11.2	2.5	***ECA1JM470***
100	270	0.11	8.0 x 11.5	3.5	***ECA1JM101***
220	450	0.11	10.0 x 16.0	5.0	***ECA1JM221***
330	550	0.11	10.0 x 20.0	5.0	***ECA1JM331***
470	750	0.11	12.5 x 20.0	5.0	***ECA1JM471***
1000	1100	0.11	16.0 x 25.0	7.5	***ECA1JM102***
2200	1400	0.13	18.0 x 35.5	7.5	***ECA1JM222***
100 Volt					
0.47	10	0.10	5.0 x 11.0	2.0	***ECA2AMR47***
1.0	20	0.10	5.0 x 11.0	2.0	***ECA2AM010***
2.2	30	0.10	5.0 x 11.0	2.0	***ECA2AM2R2***
3.3	40	0.10	5.0 x 11.0	2.0	***ECA2AM3R3***
4.7	50	0.10	5.0 x 11.0	2.0	***ECA2AM4R7***
10	70	0.10	5.0 x 11.0	2.0	***ECA2AM100***
22	115	0.10	6.3 x 11.2	2.5	***ECA2AM220***
33	145	0.10	8.0 x 11.5	3.5	***ECA2AM330***
47	180	0.10	8.0 x 11.5	3.5	***ECA2AM470***
100	350	0.10	10.0 x 16.0	5.0	***ECA2AM101***
220	550	0.10	12.5 x 20.0	5.0	***ECA2AM221***
330	700	0.10	12.5 x 25.0	5.0	***ECA2AM331***
470	900	0.10	16.0 x 25.0	7.5	***ECA2AM471***
1000	1300	0.10	18.0 x 35.5	7.5	***ECA2AM102***
160 Volt					
1.0	36	0.16	6.3 x 11.2	2.5	***ECA2CM010***
2.2	53	0.16	6.3 x 11.2	2.5	***ECA2CM2R2***
3.3	66	0.16	6.3 x 11.2	2.5	***ECA2CM3R3***
4.7	78	0.16	6.3 x 11.2	2.5	***ECA2CM4R7***
10	105	0.16	10.0 x 12.5	5.0	***ECA2CM100***
22	175	0.16	10.0 x 16.0	5.0	***ECA2CM220***
33	235	0.16	10.0 x 20.0	5.0	***ECA2CM330***
47	320	0.16	12.5 x 20.0	5.0	***ECA2CM470***
100	515	0.16	12.5 x 25.0	5.0	***ECA2CM101***
220	830	0.16	16.0 x 31.5	7.5	***ECA2CM221***
330	1090	0.16	18.0 x 31.5	7.5	***ECA2CM331***
470	1440	0.16	18.0 x 40.0	7.5	***ECA2CM471***

Value (µF)	Ripple Current (mA)	Tan δ	Dia. x L (mm)	Pitch (mm)	Loose
200 Volt					
1.0	34	0.18	6.3 x 11.2	2.5	***ECA2DM010***
2.2	50	0.18	6.3 x 11.2	2.5	***ECA2DM2R2***
3.3	62	0.18	6.3 x 11.2	2.5	***ECA2DM3R3***
4.7	86	0.18	8.0 x 11.5	3.5	***ECA2DM4R7***
10	100	0.18	10.0 x 12.5	5.0	***ECA2DM100***
22	180	0.18	10.0 x 20.0	5.0	***ECA2DM220***
33	220	0.18	10.0 x 20.0	5.0	***ECA2DM330***
47	300	0.18	12.5 x 20.0	5.0	***ECA2DM470***
100	475	0.18	16.0 x 25.0	7.5	***ECA2DM101***
220	835	0.18	18.0 x 31.5	7.5	***ECA2DM221***
330	1140	0.18	18.0 x 40.0	7.5	***ECA2DM331***
250 Volt					
1.0	34	0.18	6.3 x 11.2	2.5	***ECA2EM010***
2.2	50	0.18	6.3 x 11.2	2.5	***ECA2EM2R2***
3.3	72	0.18	8.0 x 11.5	3.5	***ECA2EM3R3***
4.7	86	0.18	8.0 x 11.5	3.5	***ECA2EM4R7***
10	110	0.18	10.0 x 16.0	5.0	***ECA2EM100***
22	180	0.18	10.0 x 20.0	5.0	***ECA2EM220***
33	250	0.18	12.5 x 20.0	5.0	***ECA2EM330***
47	330	0.18	12.5 x 25.0	5.0	***ECA2EM470***
100	530	0.18	16.0 x 31.5	7.5	***ECA2EM101***
220	930	0.18	18.0 x 40.0	7.5	***ECA2EM221***
350 Volt					
1.0	32	0.20	6.3 x 11.2	2.5	***ECA2VM010***
2.2	55	0.20	8.0 x 11.5	3.5	***ECA2VM2R2***
3.3	60	0.20	8.0 x 11.5	3.5	***ECA2VM3R3***
4.7	65	0.20	10.0 x 12.5	5.0	***ECA2VM4R7***
10	115	0.20	10.0 x 20.0	5.0	***ECA2VM100***
22	195	0.20	12.5 x 20.0	5.0	***ECA2VM220***
33	300	0.20	16.0 x 25.0	7.5	***ECA2VM330***
47	325	0.20	16.0 x 25.0	7.5	***ECA2VM470***
100	535	0.20	18.0 x 31.5	7.5	***ECA2VM101***
400 Volt					
1.0	32	0.20	6.3 x 11.2	2.5	***ECA2GM010***
2.2	50	0.20	8.0 x 11.5	3.5	***ECA2GM2R2***
3.3	54	0.20	10.0 x 12.5	5.0	***ECA2GM3R3***
4.7	72	0.20	10.0 x 16.0	5.0	***ECA2GM4R7***
10	115	0.20	10.0 x 20.0	5.0	***ECA2GM100***
22	215	0.20	12.5 x 25.0	5.0	***ECA2GM220***
33	275	0.20	16.0 x 25.0	7.5	***ECA2GM330***
47	350	0.20	16.0 x 31.5	7.5	***ECA2GM470***
100	600	0.20	18.0 x 40.0	7.5	***ECA2GM101***
450 Volt					
1.0	37	0.20	8.0 x 11.5	3.5	***ECA2WM010***
2.2	44	0.20	10.0 x 12.5	5.0	***ECA2WM2R2***
3.3	60	0.20	10.0 x 16.0	5.0	***ECA2WM3R3***
4.7	79	0.20	10.0 x 20.0	5.0	***ECA2WM4R7***
10	130	0.20	12.5 x 20.0	5.0	***ECA2WM100***
22	210	0.20	16.0 x 25.0	7.5	***ECA2WM220***
33	285	0.20	16.0 x 31.5	7.5	***ECA2WM330***

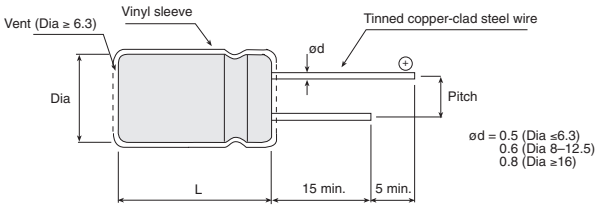


NOVER type RH/RT

A range of radial aluminium electrolytic capacitors with an extended upper temperature limit of 105°C. Ideal for equipment running at a high ambient where a greater temperature safety margin and thus improved reliability is required. Endurance test 2000 hours at 105°C except for 400V RT series parts which are 3000 hours at 105°C. The most popular values are listed below and continued on the following page with other values and voltages being available to order. Supplied loose or taped and boxed.

- **High temperature**
- Longer life
- Endurance **2000/3000 hours at 105°C**
- Solvent resistant
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Light Green/Purple**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Conforms to JIS C5141-1982 Char.W

	RH/RT
Endurance test	2000 hours at 105°C (400V RT series: 3000 hours at 105°C)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C (400V: 120Hz, 105°C) (see also multiplier table below)
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

Rated voltage	6.3V	10V	16V	25V	35V	50V	63V	100V	400V	dc
Tan δ (max.)*	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.25†	

*Add 0.02 for every 1000µF above 1000µF

†RT series 0.20

Surge voltage capability

Rated voltage	6.3V	10V	16V	25V	35V	50V	63V	100V	400V	dc
Surge voltage	8V	13V	20V	32V	44V	63V	79V	125V	450V	dc

Multiplier for ripple current

Frequency coefficient						
Rated Voltage (V)	Freq (Hz) / Cap (µF)	50	120	1k	10k	100k
6.3 ~ 100	0.1 ~ 4.7	–	0.4	0.7	0.8	1.0
	10 ~ 47	–	0.5	0.8	0.9	1.0
	100 ~ 220	–	0.7	0.9	0.9	1.0
	330 ~ 1000	–	0.8	0.9	1.0	1.0
	2200 ~ 10000	–	0.9	1.0	1.0	1.0
400	3.3 ~ 47	0.8	1.0	1.3	1.4	1.6

Temperature coefficient			
Temperature (°C) / Rated Voltage (V)	+70	+85	+105
6.3 ~ 100	2.0	1.7	1.0
400	1.8	1.4	1.0

ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
6.3 Volt					
33	105	5.0 x 11.0	2.0(5)	*052308*	*052308T*
47	120	5.0 x 11.0	2.0(5)	*052309*	*052309T*
100	130	5.0 x 11.0	2.0(5)	*052310*	*052310T*
220	180	6.3 x 11.0	2.5(5)	*052311*	*052311T*
330	220	8.0 x 11.5	3.5(5)	*052312*	*052312T*
470	315	8.0 x 11.5	3.5(5)	*052313*	*052313T*
1000	500	10.0 x 12.5	5.0	*052314*	*052314T*
2200	1000	12.5 x 20.0	5.0	*052315*	*052315T*
3300	1050	12.5 x 25.0	5.0	*052316*	*052316T*
4700	1670	16.0 x 25.0	7.5	*052317*	*052317T*
6800	1740	16.0 x 31.5	7.5	*052318*	–
10000	2110	16.0 x 31.5	7.5	*052719*	–
10000	2110	18.0 x 35.5	7.5	*052319*	–
10 Volt					
22	92	5.0 x 11.0	2.0(5)	*052007*	*052007T*
33	105	5.0 x 11.0	2.0(5)	*052008*	*052008T*
47	120	5.0 x 11.0	2.0(5)	*052009*	*052009T*
100	130	5.0 x 11.0	2.0(5)	*052010*	*052010T*
220	220	6.3 x 11.0	2.5(5)	*052011*	*052011T*
330	265	8.0 x 11.5	3.5(5)	*052412*	*052412T*
330	265	10.0 x 12.5	5.0	*052012*	*052012T*
470	315	10.0 x 12.5	5.0	*052013*	*052013T*
1000	615	10.0 x 16.0	5.0	*052414*	*052414T*
2200	1050	12.5 x 20.0	5.0	*052015*	*052015T*
3300	1300	16.0 x 25.0	7.5	*052215*	*052215T*
4700	1740	16.0 x 31.5	7.5	*052216*	–
6800	2110	18.0 x 35.5	7.5	*052217*	–
16 Volt					
10	92	5.0 x 11.0	2.0(5)	*052016*	*052016T*
22	105	5.0 x 11.0	2.0(5)	*052017*	*052017T*
33	120	5.0 x 11.0	2.0(5)	*052018*	*052018T*
47	130	5.0 x 11.0	2.0(5)	*052019*	*052019T*
100	220	6.3 x 11.0	2.5(5)	*052020*	*052020T*
220	290	8.0 x 11.5	3.5(5)	*052021*	*052021T*
330	315	8.0 x 11.5	3.5(5)	*052422*	*052422T*
330	315	10.0 x 12.5	5.0	*052022*	*052022T*
470	315	10.0 x 12.5	5.0	*052023*	*052023T*
1000	825	10.0 x 20.0	5.0	*052024*	*052024T*
2200	1300	12.5 x 25.0	5.0	*052025*	*052025T*
3300	1740	16.0 x 25.0	7.5	*052225*	*052225T*
4700	2110	16.0 x 31.5	7.5	*052226*	–
25 Volt					
10	92	5.0 x 11.0	2.0(5)	*052026*	*052026T*
22	105	5.0 x 11.0	2.0(5)	*052027*	*052027T*
33	120	5.0 x 11.0	2.0(5)	*052028*	*052028T*
47	130	6.3 x 11.0	2.5(5)	*052029*	*052029T*
100	220	6.3 x 11.0	2.5(5)	*052430*	*052430T*
100	220	8.0 x 11.5	3.5(5)	*052030*	*052030T*
220	315	8.0 x 11.5	3.5(5)	*052431*	*052431T*
220	315	10.0 x 12.5	5.0	*052031*	*052031T*
330	500	10.0 x 12.5	5.0	*052032*	*052032T*
470	615	10.0 x 16.0	5.0	*052033*	*052033T*
1000	1050	12.5 x 20.0	5.0	*052034*	*052034T*
2200	1740	16.0 x 25.0	7.5	*052035*	*052035T*
3300	2110	16.0 x 31.5	7.5	*052235*	–

continued > > > >

22

continuation

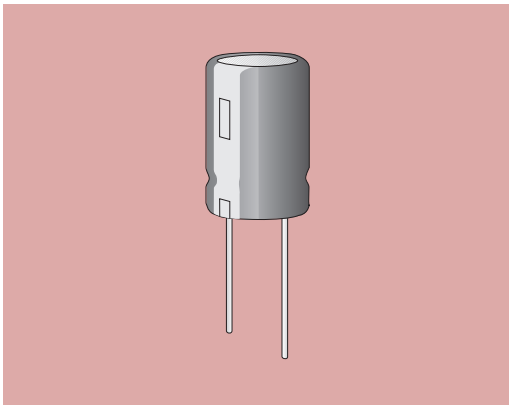
ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
35 Volt					
4.7	92	5.0 x 11.0	2.0(5)	***052236***	***052236T***
10	105	5.0 x 11.0	2.0(5)	***052037***	***052037T***
22	120	5.0 x 11.0	2.0(5)	***052038***	***052038T***
33	130	6.3 x 11.0	2.5(5)	***052039***	***052039T***
47	220	6.3 x 11.0	2.5(5)	***052040***	***052040T***
100	315	8.0 x 11.5	3.5(5)	***052041***	***052041T***
220	500	10.0 x 12.5	5.0	***052042***	***052042T***
330	615	10.0 x 16.0	5.0	***052043***	***052043T***
470	825	10.0 x 20.0	5.0	***052044***	***052044T***
1000	1300	12.5 x 25.0	5.0	***052445***	***052445T***
1000	1300	16.0 x 25.0	7.5	***052045***	***052045T***
2200	2110	16.0 x 31.5	7.5	***052046***	–
50 Volt					
0.1	10	5.0 x 11.0	2.0(5)	***052112***	***052112T***
0.22	15	5.0 x 11.0	2.0(5)	***052113***	***052113T***
0.33	18	5.0 x 11.0	2.0(5)	***052114***	***052114T***
0.47	23	5.0 x 11.0	2.0(5)	***052115***	***052115T***
1.0	35	5.0 x 11.0	2.0(5)	***052048***	***052048T***
2.2	53	5.0 x 11.0	2.0(5)	***052049***	***052049T***
3.3	65	5.0 x 11.0	2.0(5)	***052116***	***052116T***
4.7	82	5.0 x 11.0	2.0(5)	***052050***	***052050T***
10	100	5.0 x 11.0	2.0(5)	***052051***	***052051T***
22	125	6.3 x 11.0	2.5(5)	***052052***	***052052T***
33	195	6.3 x 11.0	2.5(5)	***052053***	***052053T***
47	245	6.3 x 11.0	2.5(5)	***052054***	***052054T***
100	385	8.0 x 11.5	3.5(5)	***052055***	***052055T***
220	505	10.0 x 16.0	5.0	***052056***	***052056T***
330	675	12.5 x 20.0	5.0	***052057***	***052057T***
470	895	12.5 x 20.0	5.0	***052058***	***052058T***
1000	1495	16.0 x 25.0	7.5	***052059***	***052059T***
63 Volt					
0.1	10	5.0 x 11.0	2.0(5)	***052117***	***052117T***
0.22	15	5.0 x 11.0	2.0(5)	***052118***	***052118T***
0.33	18	5.0 x 11.0	2.0(5)	***052119***	***052119T***
0.47	23	5.0 x 11.0	2.0(5)	***052060***	***052060T***
1.0	35	5.0 x 11.0	2.0(5)	***052061***	***052061T***
2.2	53	5.0 x 11.0	2.0(5)	***052062***	***052062T***
3.3	65	5.0 x 11.0	2.0(5)	***052063***	***052063T***
4.7	74	5.0 x 11.0	2.0(5)	***052064***	***052064T***
10	95	5.0 x 11.0	2.0(5)	***052465***	***052465T***
10	95	6.3 x 11.0	2.5(5)	***052065***	***052065T***
22	130	8.0 x 11.5	3.5(5)	***052066***	***052066T***
33	160	8.0 x 11.5	3.5(5)	***052067***	***052067T***
47	305	8.0 x 11.5	3.5(5)	***052068***	***052068T***
100	395	10.0 x 12.5	5.0	***052069***	***052069T***
220	505	10.0 x 20.0	5.0	***052070***	***052070T***
330	660	12.5 x 25.0	5.0	***052071***	***052071T***
470	850	12.5 x 25.0	5.0	***052520***	***052520T***
470	1250	16.0 x 25.0	7.5	***052120***	***052120T***

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
100 Volt					
0.47	30	5.0 x 11.0	2.0(5)	***052072***	***052072T***
1.0	45	5.0 x 11.0	2.0(5)	***052073***	***052073T***
2.2	60	5.0 x 11.0	2.0(5)	***052074***	***052074T***
3.3	67	5.0 x 11.0	2.0(5)	***052075***	***052075T***
4.7	75	5.0 x 11.0	2.0(5)	***052076***	***052076T***
10	110	6.3 x 11.0	2.5(5)	***052077***	***052077T***
22	165	8.0 x 11.5	3.5(5)	***052078***	***052078T***
33	305	10.0 x 12.5	5.0	***052079***	***052079T***
47	320	10.0 x 16.0	5.0	***052080***	***052080T***
100	585	12.5 x 20.0	5.0	***052081***	***052081T***
220	1120	16.0 x 25.0	7.5	***052082***	***052082T***
330	1290	16.0 x 25.0	7.5	***052083***	***052083T***
470	1350	16.0 x 31.5	7.5	***052084***	–
400 Volt					
3.3	29	8.0 x 11.5	3.5(5)	***052148***	***052148T***
4.7	36	8.0 x 11.5	3.5(5)	***052149***	***052149T***
10	62	10.0 x 16.0	5.0	***052150***	***052150T***
22	132	12.5 x 20.0	5.0	***052151***	***052151T***
33	174	12.5 x 25.0	5.0	***052152***	***052152T***
47	212	16.0 x 25.0	7.5	***052153***	***052153T***
400 Volt *3000 hour endurance at 105°C (RT series)*					
4.7	52	10.0 x 16.0	5.0	***052250***	***052250T***
10	79	10.0 x 20.0	5.0	***052251***	***052251T***
22	140	12.5 x 25.0	5.0	***052252***	***052252T***
33	186	16.0 x 25.0	7.5	***052253***	***052253T***
47	238	16.0 x 31.5	7.5	***052254***	–

(5) Leads pre-formed to 5mm pitch on taped part

Other values and higher voltages are available to order. Please contact our Sales Desk for details.

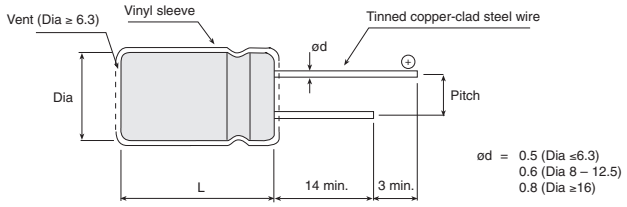


PANASONIC NHG Series, type A

A range of radial aluminium electrolytic capacitors with an extended upper temperature limit of 105°C. Ideal for equipment running at a high ambient where a greater temperature safety margin and thus improved reliability is required. Endurance test 1000/2000 hours at 105°C. The entire range of values and voltages manufactured are listed below and continued on the following page. Supplied loose, with taped and boxed product available to order (see details below).

- **High temperature**
- Longer life
- Endurance **1000/2000 hours at 105°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	NHG (A)
Endurance test (at 105°C)	6.3 to 100V = 1000 hours (Dia ≤8), 2000 hours (Dia ≥10), 160 to 450V = 2000 hours
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Tan δ (as listed)	measured at 120Hz, 20°C
Operating temperature range	6.3 to 100V, -55°C to +105°C 160 to 450V, -25°C to 105°C
Leakage current (after 2 min.)	≤0.01CV or 3μA (whichever is greater) ≤0.06CV +10μA

Frequency correction factor for ripple current

Rated Voltage (V)	Cap. (μF)	Frequency (Hz)				
		60	120	1k	10k	100k
6.3 to 100	0.1 to 33	0.75	1.0	1.55	1.80	2.00
	47 to 470	0.80	1.0	1.35	1.50	1.50
	1000 to 22000	0.85	1.0	1.10	1.15	1.15
160 to 450	1 to 330	0.80	1.0	1.35	1.50	1.50

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

ORDER CODES

Value (μF)	Ripple Current (mA)	Tan δ	Dia. x L (mm)	Pitch (mm)	Loose
6.3 Volt					
220	140	0.28	5.0 x 11.0	2.0	***ECA0JHG221***
470	230	0.28	6.3 x 11.2	2.5	***ECA0JHG471***
1000	380	0.28	8.0 x 11.5	3.5	***ECA0JHG102***
2200	710	0.30	10.0 x 16.0	5.0	***ECA0JHG222***
3300	840	0.32	10.0 x 20.0	5.0	***ECA0JHG332***
4700	1090	0.34	12.5 x 20.0	5.0	***ECA0JHG472***
6800	1350	0.38	12.5 x 25.0	5.0	***ECA0JHG682***
10000	1650	0.46	16.0 x 25.0	7.5	***ECA0JHG103***
15000	2010	0.56	16.0 x 31.5	7.5	***ECA0JHG153***
22000	2350	0.70	18.0 x 35.5	7.5	***ECA0JHG223***
10 Volt					
330	200	0.24	6.3 x 11.2	2.5	***ECA1AHG331***
470	250	0.24	8.0 x 11.5	3.5	***ECA1AHG471***
1000	460	0.24	10.0 x 12.5	5.0	***ECA1AHG102***
2200	760	0.26	10.0 x 20.0	5.0	***ECA1AHG222***
3300	1000	0.28	12.5 x 20.0	5.0	***ECA1AHG332***
4700	1260	0.30	12.5 x 25.0	5.0	***ECA1AHG472***
6800	1570	0.34	16.0 x 25.0	7.5	***ECA1AHG682***
10000	1890	0.42	16.0 x 31.5	7.5	***ECA1AHG103***
15000	2180	0.52	18.0 x 35.5	7.5	***ECA1AHG153***
16 Volt					
100	110	0.20	5.0 x 11.0	2.0	***ECA1CHG101***
220	180	0.20	6.3 x 11.2	2.5	***ECA1CHG221***
330	260	0.20	8.0 x 11.5	3.5	***ECA1CHG331***
470	310	0.20	8.0 x 11.5	3.5	***ECA1CHG471***
1000	560	0.20	10.0 x 16.0	5.0	***ECA1CHG102***
2200	920	0.22	12.5 x 20.0	5.0	***ECA1CHG222***
3300	1170	0.24	12.5 x 25.0	5.0	***ECA1CHG332***
4700	1480	0.26	16.0 x 25.0	7.5	***ECA1CHG472***
6800	1780	0.30	16.0 x 31.5	7.5	***ECA1CHG682***
10000	2060	0.38	18.0 x 35.5	7.5	***ECA1CHG103***
25 Volt					
47	91	0.16	5.0 x 11.0	2.0	***ECA1EHG470***
100	130	0.16	6.3 x 11.2	2.5	***ECA1EHG101***
220	230	0.16	8.0 x 11.5	3.5	***ECA1EHG221***
330	310	0.16	8.0 x 11.5	3.5	***ECA1EHG331***
470	380	0.16	10.0 x 12.5	5.0	***ECA1EHG471***
1000	680	0.16	10.0 x 20.0	5.0	***ECA1EHG102***
2200	1090	0.18	12.5 x 25.0	5.0	***ECA1EHG222***
3300	1400	0.20	16.0 x 25.0	7.5	***ECA1EHG332***
4700	1750	0.22	16.0 x 31.5	7.5	***ECA1EHG472***
6800	2040	0.26	18.0 x 35.5	7.5	***ECA1EHG682***
35 Volt					
47	90	0.14	5.0 x 11.0	2.0	***ECA1VHG470***
100	150	0.14	6.3 x 11.2	2.5	***ECA1VHG101***
220	270	0.14	8.0 x 11.5	3.5	***ECA1VHG221***
330	350	0.14	10.0 x 12.5	5.0	***ECA1VHG331***
470	460	0.14	10.0 x 16.0	5.0	***ECA1VHG471***
1000	810	0.14	12.5 x 20.0	5.0	***ECA1VHG102***
2200	1260	0.16	16.0 x 25.0	7.5	***ECA1VHG222***
3300	1610	0.18	16.0 x 31.5	7.5	***ECA1VHG332***
4700	1910	0.20	18.0 x 35.5	7.5	***ECA1VHG472***

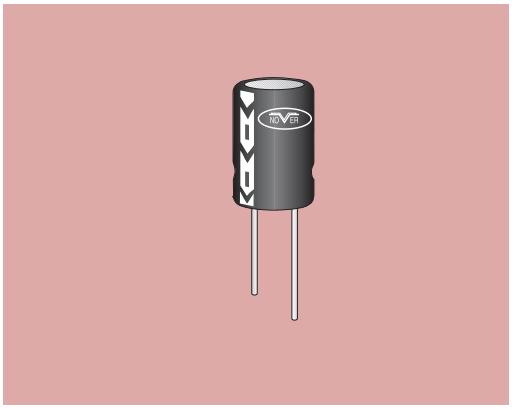
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continuation

ORDER CODES

Value (µF)	Ripple Current (mA)	Tan δ	Dia. x L (mm)	Pitch (mm)	Loose
50 Volt					
0.1	1.1	0.12	5.0 x 11.0	2.0	***ECA1HHG0R1***
0.22	2.3	0.12	5.0 x 11.0	2.0	***ECA1HHGR22***
0.33	3.5	0.12	5.0 x 11.0	2.0	***ECA1HHGR33***
0.47	5	0.12	5.0 x 11.0	2.0	***ECA1HHGR47***
1.0	10	0.12	5.0 x 11.0	2.0	***ECA1HHG010***
2.2	18	0.12	5.0 x 11.0	2.0	***ECA1HHG2R2***
3.3	22	0.12	5.0 x 11.0	2.0	***ECA1HHG3R3***
4.7	26	0.12	5.0 x 11.0	2.0	***ECA1HHG4R7***
10	39	0.12	5.0 x 11.0	2.0	***ECA1HHG100***
22	65	0.12	5.0 x 11.0	2.0	***ECA1HHG220***
33	90	0.12	5.0 x 11.0	2.0	***ECA1HHG330***
47	110	0.12	6.3 x 11.2	2.5	***ECA1HHG470***
100	180	0.12	8.0 x 11.5	3.5	***ECA1HHG101***
220	300	0.12	10.0 x 12.5	5.0	***ECA1HHG221***
330	410	0.12	10.0 x 16.0	5.0	***ECA1HHG331***
470	530	0.12	10.0 x 20.0	5.0	***ECA1HHG471***
1000	950	0.12	12.5 x 25.0	5.0	***ECA1HHG102***
2200	1470	0.14	16.0 x 31.5	7.5	***ECA1HHG222***
3300	1770	0.16	18.0 x 35.5	7.5	***ECA1HHG332***
63 Volt					
10	46	0.10	5.0 x 11.0	2.0	***ECA1JHG100***
22	71	0.10	5.0 x 11.0	2.0	***ECA1JHG220***
33	100	0.10	6.3 x 11.2	2.5	***ECA1JHG330***
47	120	0.10	6.3 x 11.2	2.5	***ECA1JHG470***
100	215	0.10	10.0 x 12.5	5.0	***ECA1JHG101***
220	335	0.10	10.0 x 16.0	5.0	***ECA1JHG221***
330	510	0.10	10.0 x 20.0	5.0	***ECA1JHG331***
470	640	0.10	12.5 x 20.0	5.0	***ECA1JHG471***
1000	930	0.10	16.0 x 25.0	7.5	***ECA1JHG102***
2200	1610	0.12	18.0 x 35.5	7.5	***ECA1JHG222***
100 Volt					
0.47	9	0.08	5.0 x 11.0	2.0	***ECA2AHGR47***
1.0	14	0.08	5.0 x 11.0	2.0	***ECA2AHG010***
2.2	21	0.08	5.0 x 11.0	2.0	***ECA2AHG2R2***
3.3	31	0.08	5.0 x 11.0	2.0	***ECA2AHG3R3***
4.7	38	0.08	5.0 x 11.0	2.0	***ECA2AHG4R7***
10	54	0.08	6.3 x 11.2	2.5	***ECA2AHG100***
22	93	0.08	6.3 x 11.2	2.5	***ECA2AHG220***
33	130	0.08	8.0 x 11.5	3.5	***ECA2AHG330***
47	165	0.08	10.0 x 12.5	5.0	***ECA2AHG470***
100	265	0.08	10.0 x 20.0	5.0	***ECA2AHG101***
220	440	0.08	12.5 x 25.0	5.0	***ECA2AHG221***
330	540	0.08	16.0 x 25.0	7.5	***ECA2AHG331***
470	715	0.08	16.0 x 25.0	7.5	***ECA2AHG471***
1000	985	0.08	18.0 x 35.5	7.5	***ECA2AHG102***
160 Volt					
1.0	17	0.15	6.3 x 11.2	2.5	***ECA2CHG010***
2.2	25	0.15	6.3 x 11.2	2.5	***ECA2CHG2R2***
3.3	36	0.15	6.3 x 11.2	2.5	***ECA2CHG3R3***
4.7	43	0.15	6.3 x 11.2	2.5	***ECA2CHG4R7***
10	70	0.15	10.0 x 12.5	5.0	***ECA2CHG100***
22	130	0.15	10.0 x 20.0	5.0	***ECA2CHG220***
33	180	0.15	10.0 x 20.0	5.0	***ECA2CHG330***
47	220	0.15	12.5 x 20.0	5.0	***ECA2CHG470***
100	335	0.15	16.0 x 25.0	7.5	***ECA2CHG101***
220	540	0.15	16.0 x 31.5	7.5	***ECA2CHG221***
330	705	0.15	18.0 x 31.5	7.5	***ECA2CHG331***

Value (µF)	Ripple Current (mA)	Tan δ	Dia. x L (mm)	Pitch (mm)	Loose
200 Volt					
1.0	17	0.15	6.3 x 11.2	2.5	***ECA2DHG010***
2.2	25	0.15	6.3 x 11.2	2.5	***ECA2DHG2R2***
3.3	36	0.15	6.3 x 11.2	2.5	***ECA2DHG3R3***
4.7	50	0.15	8.0 x 11.5	3.5	***ECA2DHG4R7***
10	80	0.15	10.0 x 16.0	5.0	***ECA2DHG100***
22	140	0.15	10.0 x 20.0	5.0	***ECA2DHG220***
33	190	0.15	12.5 x 20.0	5.0	***ECA2DHG330***
47	220	0.15	12.5 x 20.0	5.0	***ECA2DHG470***
100	335	0.15	16.0 x 25.0	7.5	***ECA2DHG101***
220	575	0.15	18.0 x 31.5	7.5	***ECA2DHG221***
250 Volt					
1.0	17	0.15	6.3 x 11.2	2.5	***ECA2EHG010***
2.2	29	0.15	6.3 x 11.2	2.5	***ECA2EHG2R2***
3.3	42	0.15	8.0 x 11.5	3.5	***ECA2EHG3R3***
4.7	50	0.15	8.0 x 11.5	3.5	***ECA2EHG4R7***
10	88	0.15	10.0 x 16.0	5.0	***ECA2EHG100***
22	155	0.15	12.5 x 20.0	5.0	***ECA2EHG220***
33	190	0.15	12.5 x 20.0	5.0	***ECA2EHG330***
47	230	0.15	12.5 x 25.0	5.0	***ECA2EHG470***
100	365	0.15	16.0 x 31.5	7.5	***ECA2EHG101***
350 Volt					
1.0	18	0.20	6.3 x 11.2	2.5	***ECA2VHG010***
2.2	31	0.20	8.0 x 11.5	3.5	***ECA2VHG2R2***
3.3	38	0.20	10.0 x 12.5	5.0	***ECA2VHG3R3***
4.7	50	0.20	10.0 x 16.0	5.0	***ECA2VHG4R7***
10	82	0.20	10.0 x 20.0	5.0	***ECA2VHG100***
22	130	0.20	12.5 x 20.0	5.0	***ECA2VHG220***
33	195	0.20	16.0 x 25.0	7.5	***ECA2VHG330***
47	230	0.20	16.0 x 25.0	7.5	***ECA2VHG470***
100	375	0.20	18.0 x 31.5	7.5	***ECA2VHG101***
400 Volt					
1.0	18	0.24	6.3 x 11.2	2.5	***ECA2GHG010***
2.2	30	0.24	8.0 x 11.5	3.5	***ECA2GHG2R2***
3.3	40	0.24	10.0 x 12.5	5.0	***ECA2GHG3R3***
4.7	50	0.24	10.0 x 16.0	5.0	***ECA2GHG4R7***
10	80	0.24	10.0 x 20.0	5.0	***ECA2GHG100***
22	145	0.24	12.5 x 25.0	5.0	***ECA2GHG220***
33	195	0.24	16.0 x 25.0	7.5	***ECA2GHG330***
47	250	0.24	16.0 x 31.5	7.5	***ECA2GHG470***
450 Volt					
1.0	18	0.24	8.0 x 11.5	3.5	***ECA2WHG010***
2.2	29	0.24	10.0 x 12.5	5.0	***ECA2WHG2R2***
3.3	41	0.24	10.0 x 16.0	5.0	***ECA2WHG3R3***
4.7	49	0.24	10.0 x 20.0	5.0	***ECA2WHG4R7***
10	75	0.24	12.5 x 20.0	5.0	***ECA2WHG100***
22	115	0.24	16.0 x 25.0	7.5	***ECA2WHG220***
33	155	0.24	16.0 x 31.5	7.5	***ECA2WHG330***

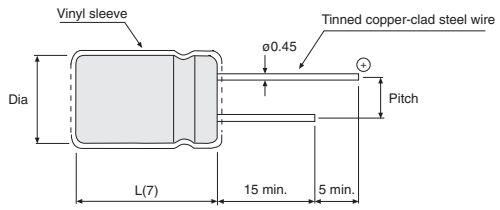


NOVER type R7

A range of sub-miniature, radial aluminium electrolytic capacitors all with a 7mm can height. Ideal in applications where space is at a premium. The entire range of values and voltages manufactured are listed below and supplied loose or taped and boxed.

- **Low profile** **7mm height**
- Solvent resistant
- Maximum temperature **85°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Black**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L

Specification

Conforms to JIS C5141-1982 Char.W

	R7
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C (see also multiplier table below)
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

Rated voltage	6.3V	10V	16V	25V	35V	50V	63V	dc
Tan δ (max)	0.24	0.20	0.16	0.14	0.12	0.10	0.08	

Surge voltage capability

Rated voltage	6.3V	10V	16V	25V	35V	50V	63V	dc
Surge voltage	8V	13V	20V	32V	44V	63V	79V	dc

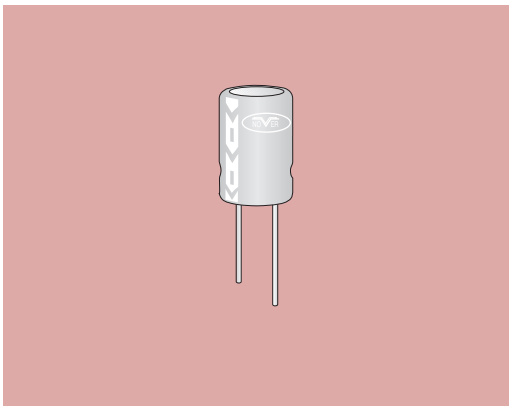
Multiplier for ripple current

Frequency coefficient				
Freq (Hz) / Rated Voltage (V)	50/60	120	1k	10 ~ 100k
6.3 ~ 16	0.8	1.0	1.1	1.2
25 ~ 35	0.8	1.0	1.5	1.7
50 ~ 63	0.8	1.0	1.6	1.9
Temperature coefficient				
Temperature (°C)	+70		+85	
Factor	1.35		1.0	

ORDER CODES

Value (μF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
6.3 Volt					
22	35	4.0 x 7.0	1.5(5)	*056001*	*056001T*
33	40	4.0 x 7.0	1.5(5)	*056002*	*056002T*
47	50	4.0 x 7.0	1.5(5)	*056403*	*056403T*
47	50	5.0 x 7.0	2.0(5)	*056003*	*056003T*
100	80	5.0 x 7.0	2.0(5)	*056404*	*056404T*
100	80	6.3 x 7.0	2.5(5)	*056004*	*056004T*
220	140	6.3 x 7.0	2.5(5)	*056005*	*056005T*
10 Volt					
22	35	4.0 x 7.0	1.5(5)	*056411*	*056411T*
22	35	5.0 x 7.0	2.0(5)	*056011*	*056011T*
33	45	4.0 x 7.0	1.5(5)	*056412*	*056412T*
33	45	5.0 x 7.0	2.0(5)	*056012*	*056012T*
47	60	5.0 x 7.0	2.0(5)	*056413*	*056413T*
47	60	6.3 x 7.0	2.5(5)	*056013*	*056013T*
100	105	6.3 x 7.0	2.5(5)	*056014*	*056014T*
16 Volt					
3.3	20	4.0 x 7.0	1.5(5)	*056019*	*056019T*
10	25	4.0 x 7.0	1.5(5)	*056021*	*056021T*
22	40	4.0 x 7.0	1.5(5)	*056422*	*056422T*
22	40	5.0 x 7.0	2.0(5)	*056022*	*056022T*
33	55	5.0 x 7.0	2.0(5)	*056023*	*056023T*
47	70	5.0 x 7.0	2.0(5)	*056424*	*056424T*
47	70	6.3 x 7.0	2.5(5)	*056024*	*056024T*
100	120	6.3 x 7.0	2.5(5)	*056025*	*056025T*
25 Volt					
10	25	4.0 x 7.0	1.5(5)	*056431*	*056431T*
10	30	5.0 x 7.0	2.0(5)	*056031*	*056031T*
22	50	5.0 x 7.0	2.0(5)	*056432*	*056432T*
22	50	6.3 x 7.0	2.5(5)	*056032*	*056032T*
33	70	6.3 x 7.0	2.5(5)	*056033*	*056033T*
35 Volt					
4.7	20	4.0 x 7.0	1.5(5)	*056034*	*056034T*
10	30	5.0 x 7.0	2.0(5)	*056035*	*056035T*
22	55	6.3 x 7.0	2.5(5)	*056036*	*056036T*
50 Volt					
1.0	10	4.0 x 7.0	1.5(5)	*056055*	*056055T*
2.2	15	4.0 x 7.0	1.5(5)	*056056*	*056056T*
3.3	20	4.0 x 7.0	1.5(5)	*056057*	*056057T*
4.7	24	4.0 x 7.0	1.5(5)	*056444*	*056444T*
4.7	24	5.0 x 7.0	2.0(5)	*056044*	*056044T*
10	40	6.3 x 7.0	2.5(5)	*056045*	*056045T*
63 Volt					
0.1	5	4.0 x 7.0	1.5(5)	*056037*	*056037T*
0.22	8	4.0 x 7.0	1.5(5)	*056038*	*056038T*
0.33	10	4.0 x 7.0	1.5(5)	*056039*	*056039T*
0.47	10	4.0 x 7.0	1.5(5)	*056040*	*056040T*
1.0	15	4.0 x 7.0	1.5(5)	*056041*	*056041T*
2.2	20	4.0 x 7.0	1.5(5)	*056042*	*056042T*
4.7	30	5.0 x 7.0	2.0(5)	*056058*	*056058T*

(5) Leads pre-formed to 5mm pitch on taped part

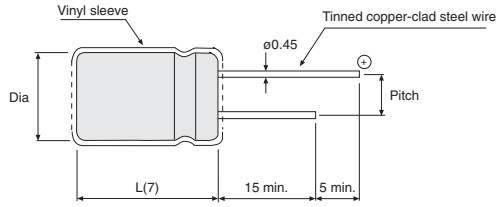


NOVER type RJ

A range of sub-miniature, radial aluminium electrolytic capacitors all with a 7mm can height and an extended upper temperature limit of 105°C. Ideal in applications where space is at a premium and a greater temperature safety margin is required. The entire range of values and voltages manufactured are listed below and supplied loose or taped and boxed.

- **Low profile** **7mm height**
- **High temperature** **105°C**
- Solvent resistant
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Yellow**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L

Specification

Conforms to JIS C5141-1982 Char.W

	RJ
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C (see also multiplier table below)
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

Rated voltage	6.3V	10V	16V	25V	35V	50V	dc
Tan δ (max)	0.24	0.20	0.16	0.14	0.12	0.10	

Surge voltage capability

Rated voltage	6.3V	10V	16V	25V	35V	50V	dc
Surge voltage	8V	13V	20V	32V	44V	63V	dc

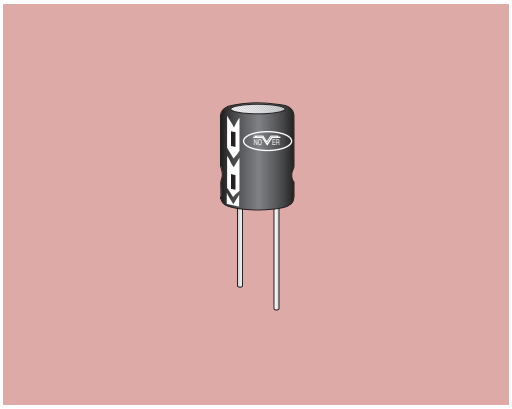
Multiplier for ripple current

Frequency coefficient				
Freq (Hz) / Cap (µF)	50/60	120	1k	10 ~ 100k
0.1 ~ 47	0.8	1.0	1.3	1.5
100 ~ 220	0.8	1.0	1.1	1.2
Temperature coefficient				
Temperature (°C)	+70	+85	+105	
Factor	2.0	1.7	1.0	

ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
6.3 Volt					
22	42	4.0 x 7.0	1.5(5)	***057001***	***057001T***
33	50	4.0 x 7.0	1.5(5)	***057402***	***057402T***
33	53	5.0 x 7.0	2.0(5)	***057002***	***057002T***
47	64	5.0 x 7.0	2.0(5)	***057003***	***057003T***
100	89	5.0 x 7.0	2.0(5)	***057404***	***057404T***
100	96	6.3 x 7.0	2.5(5)	***057004***	***057004T***
220	122	6.3 x 7.0	2.5(5)	***057005***	***057005T***
10 Volt					
22	46	4.0 x 7.0	1.5(5)	***057411***	***057411T***
22	49	5.0 x 7.0	2.0(5)	***057011***	***057011T***
33	60	5.0 x 7.0	2.0(5)	***057012***	***057012T***
47	89	5.0 x 7.0	2.0(5)	***057413***	***057413T***
47	95	6.3 x 7.0	2.5(5)	***057013***	***057013T***
100	116	6.3 x 7.0	2.5(5)	***057014***	***057014T***
16 Volt					
10	39	4.0 x 7.0	1.5(5)	***057021***	***057021T***
22	46	4.0 x 7.0	1.5(5)	***057422***	***057422T***
22	49	5.0 x 7.0	2.0(5)	***057022***	***057022T***
33	78	5.0 x 7.0	2.0(5)	***057423***	***057423T***
33	83	6.3 x 7.0	2.5(5)	***057023***	***057023T***
47	89	5.0 x 7.0	2.0(5)	***057424***	***057424T***
47	95	6.3 x 7.0	2.5(5)	***057024***	***057024T***
100	116	6.3 x 7.0	2.5(5)	***057025***	***057025T***
25 Volt					
10	30	4.0 x 7.0	1.5(5)	***057431***	***057431T***
10	47	5.0 x 7.0	2.0(5)	***057031***	***057031T***
22	82	5.0 x 7.0	2.0(5)	***057432***	***057432T***
22	87	6.3 x 7.0	2.5(5)	***057032***	***057032T***
33	90	6.3 x 7.0	2.5(5)	***057033***	***057033T***
35 Volt					
4.7	25	4.0 x 7.0	1.5(5)	***057034***	***057034T***
10	45	4.0 x 7.0	1.5(5)	***057435***	***057435T***
10	48	5.0 x 7.0	2.0(5)	***057035***	***057035T***
22	90	6.3 x 7.0	2.5(5)	***057036***	***057036T***
50 Volt					
0.1	5	4.0 x 7.0	1.5(5)	***057051***	***057051T***
0.22	8	4.0 x 7.0	1.5(5)	***057052***	***057052T***
0.33	10	4.0 x 7.0	1.5(5)	***057053***	***057053T***
0.47	12	4.0 x 7.0	1.5(5)	***057054***	***057054T***
1.0	16	4.0 x 7.0	1.5(5)	***057055***	***057055T***
2.2	25	4.0 x 7.0	1.5(5)	***057056***	***057056T***
3.3	28	4.0 x 7.0	1.5(5)	***057057***	***057057T***
4.7	48	5.0 x 7.0	2.0(5)	***057044***	***057044T***
10	75	6.3 x 7.0	2.5(5)	***057045***	***057045T***

(5) Leads pre-formed to 5mm pitch on taped part

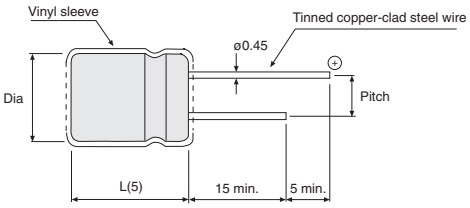


NOVER type R5

A range of ultra-miniature radial aluminium electrolytic capacitors evolving from the advanced features of the R7 series and offering a very low profile of only 5mm. The entire range of values and voltages manufactured are listed below and supplied loose or taped and boxed.

- **Very low profile 5mm height**
- Solvent resistant
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body Colour **Indigo**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L

Specification

Conforms to JIS C5141-1982 Char.W

	R5
Endurance test	1000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C (see also multiplier table below)
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

Rated voltage	6.3V	10V	16V	25V	35V	50V	dc
Tan δ (max)	0.26	0.22	0.18	0.14	0.12	0.10	

Surge voltage capability

Rated voltage	6.3V	10V	16V	25V	35V	50V	dc
Surge voltage	8V	13V	20V	32V	44V	63V	dc

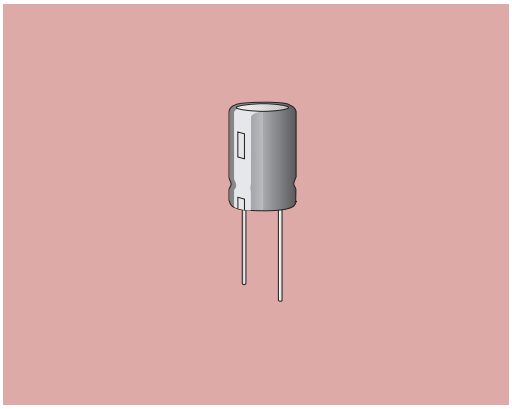
Multiplier for ripple current

Frequency coefficient				
Freq (Hz) / Cap (μF)	50/60	120	1k	10 ~ 100k
0.1 ~ 47	0.8	1.0	1.3	1.5
100	0.8	1.0	1.15	1.2
Temperature coefficient				
Temperature (°C)	+70		+85	
Factor	1.35		1.0	

ORDER CODES

Value (μF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
6.3 Volt					
22	22	4.0 x 5.0	1.5(5)	***063001***	***063001T***
33	34	5.0 x 5.0	2.0(5)	***063002***	***063002T***
47	37	5.0 x 5.0	2.0(5)	***063003***	***063003T***
100	62	6.3 x 5.0	2.5(5)	***063004***	***063004T***
10 Volt					
10	16	4.0 x 5.0	1.5(5)	***063010***	***063010T***
22	28	4.0 x 5.0	1.5(5)	***063411***	***063411T***
33	45	5.0 x 5.0	2.0(5)	***063012***	***063012T***
47	48	5.0 x 5.0	2.0(5)	***063413***	***063413T***
16 Volt					
4.7	11	4.0 x 5.0	1.5(5)	***063020***	***063020T***
10	18	4.0 x 5.0	1.5(5)	***063021***	***063021T***
22	35	5.0 x 5.0	2.0(5)	***063022***	***063022T***
33	48	5.0 x 5.0	2.0(5)	***063423***	***063423T***
47	65	6.3 x 5.0	2.5(5)	***063024***	***063024T***
25 Volt					
4.7	13	4.0 x 5.0	1.5(5)	***063030***	***063030T***
10	25	4.0 x 5.0	1.5(5)	***063431***	***063431T***
22	43	5.0 x 5.0	2.0(5)	***063432***	***063432T***
33	54	6.3 x 5.0	2.5(5)	***063033***	***063033T***
35 Volt					
3.3	12	4.0 x 5.0	1.5(5)	***063049***	***063049T***
4.7	14	4.0 x 5.0	1.5(5)	***063034***	***063034T***
10	27	5.0 x 5.0	2.0(5)	***063035***	***063035T***
22	46	6.3 x 5.0	2.5(5)	***063036***	***063036T***
50 Volt					
0.1	1	4.0 x 5.0	1.5(5)	***063051***	***063051T***
0.22	1.5	4.0 x 5.0	1.5(5)	***063052***	***063052T***
0.33	2.5	4.0 x 5.0	1.5(5)	***063053***	***063053T***
0.47	4	4.0 x 5.0	1.5(5)	***063054***	***063054T***
1.0	6	4.0 x 5.0	1.5(5)	***063055***	***063055T***
2.2	7	4.0 x 5.0	1.5(5)	***063056***	***063056T***
3.3	13	4.0 x 5.0	1.5(5)	***063057***	***063057T***
4.7	20	5.0 x 5.0	2.0(5)	***063044***	***063044T***
10	31	6.3 x 5.0	2.5(5)	***063045***	***063045T***

(5) Leads pre-formed to 5mm pitch on taped part

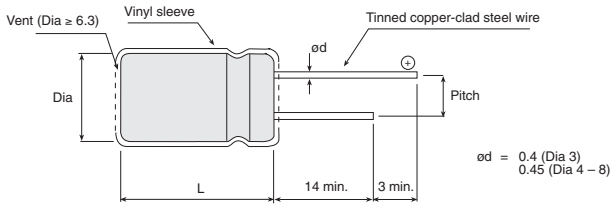


PANASONIC KS Series, type A

A range of ultra-miniature radial aluminium electrolytic capacitors offering a very low profile of only 5mm. The entire range of values and voltages manufactured are listed below and supplied loose, with taped and boxed product available to order (see details below).

- **Very low profile 5mm height**
- High quality
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	KS (A)
Endurance test	1000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Tan δ at 120Hz, 20°C

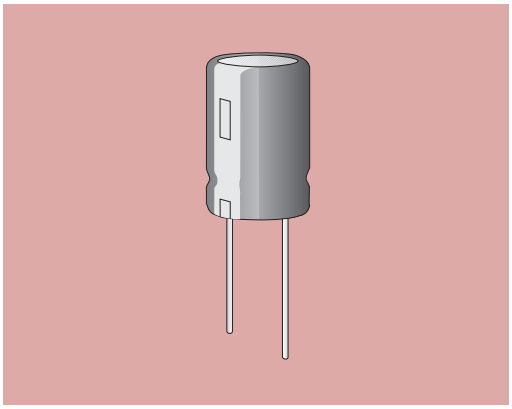
Rated voltage (dc)	4V	6.3V	10V	16V	25V	35V	50V
Tan δ	0.35	0.24	0.20	0.16	0.14	0.12	0.10

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

ORDER CODES

Value (μF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose
4 Volt				
22	19	3.0 x 5.0	1.0	***ECEA0GKK220***
33	26	4.0 x 5.0	1.5	***ECEA0GKS330***
47	34	4.0 x 5.0	1.5	***ECEA0GKS470***
100	61	5.0 x 5.0	2.0	***ECEA0GKS101***
220	82	6.3 x 5.0	2.5	***ECEA0GKS221***
6.3 Volt				
22	29	4.0 x 5.0	1.5	***ECEA0JKS220***
33	38	5.0 x 5.0	2.0	***ECEA0JKS330***
47	46	5.0 x 5.0	2.0	***ECEA0JKS470***
100	71	6.3 x 5.0	2.5	***ECEA0JKS101***
330	130	8.0 x 5.0	2.5	***ECEA0JKS331***
330	130	8.0 x 5.0	5.0	***ECEA0JKS331Q***
10 Volt				
22	35	5.0 x 5.0	2.0	***ECEA1AKS220***
33	43	5.0 x 5.0	2.0	***ECEA1AKS330***
47	65	6.3 x 5.0	2.5	***ECEA1AKS470***
100	80	6.3 x 5.0	2.5	***ECEA1AKS101***
220	120	8.0 x 5.0	2.5	***ECEA1AKS221***
220	120	8.0 x 5.0	5.0	***ECEA1AKS221Q***
16 Volt				
10	20	3.0 x 5.0	1.0	***ECEA1CKK100***
10	28	4.0 x 5.0	1.5	***ECEA1CKS100***
22	39	5.0 x 5.0	2.0	***ECEA1CKS220***
33	60	6.3 x 5.0	2.5	***ECEA1CKS330***
47	70	6.3 x 5.0	2.5	***ECEA1CKS470***
100	91	8.0 x 5.0	2.5	***ECEA1CKS101***
100	91	8.0 x 5.0	5.0	***ECEA1CKS101Q***
25 Volt				
2.2	8	3.0 x 5.0	1.0	***ECEA1EKK2R2***
3.3	10	3.0 x 5.0	1.0	***ECEA1EKK3R3***
4.7	12	3.0 x 5.0	1.0	***ECEA1EKK4R7***
4.7	22	4.0 x 5.0	1.5	***ECEA1EKS4R7***
10	28	5.0 x 5.0	2.0	***ECEA1EKS100***
22	55	6.3 x 5.0	2.5	***ECEA1EKS220***
33	65	6.3 x 5.0	2.5	***ECEA1EKS330***
100	85	8.0 x 5.0	2.5	***ECEA1EKS101***
100	85	8.0 x 5.0	5.0	***ECEA1EKS101Q***
35 Volt				
3.3	16	4.0 x 5.0	1.5	***ECEA1VKS3R3***
4.7	22	4.0 x 5.0	1.5	***ECEA1VKS4R7***
10	30	5.0 x 5.0	2.0	***ECEA1VKS100***
22	60	6.3 x 5.0	2.5	***ECEA1VKS220***
33	65	8.0 x 5.0	2.5	***ECEA1VKS330***
33	65	8.0 x 5.0	5.0	***ECEA1VKS330Q***
47	85	8.0 x 5.0	2.5	***ECEA1VKS470***
47	85	8.0 x 5.0	5.0	***ECEA1VKS470Q***
50 Volt				
0.1	1	3.0 x 5.0	1.0	***ECEA1HKK0R1***
0.1	1	4.0 x 5.0	1.5	***ECEA1HKS0R1***
0.22	2	3.0 x 5.0	2.5	***ECEA1HKKR22***
0.22	2	4.0 x 5.0	2.5	***ECEA1HKSR22***
0.33	3	3.0 x 5.0	2.5	***ECEA1HKKR33***
0.33	3	4.0 x 5.0	2.5	***ECEA1HKSR33***
0.47	5	3.0 x 5.0	2.5	***ECEA1HKKR47***
0.47	5	4.0 x 5.0	2.5	***ECEA1HKSR47***
1.0	8	3.0 x 5.0	2.5	***ECEA1HKK010***
1.0	10	4.0 x 5.0	2.5	***ECEA1HKS010***
2.2	16	4.0 x 5.0	2.5	***ECEA1HKS2R2***
3.3	16	4.0 x 5.0	2.5	***ECEA1HKS3R3***
4.7	23	5.0 x 5.0	2.5	***ECEA1HKS4R7***
10	35	6.3 x 5.0	2.5	***ECEA1HKS100***
22	60	8.0 x 5.0	2.5	***ECEA1HKS220***
22	60	8.0 x 5.0	5.0	***ECEA1HKS220Q***

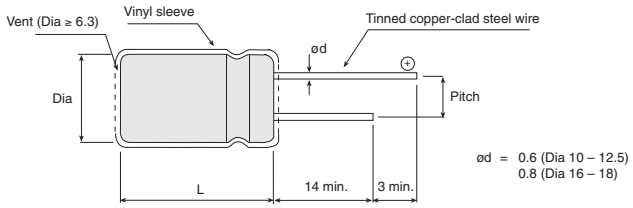


PANASONIC ED Series, type A

A specialised range of radial aluminium electrolytic capacitors which offers a superb combination of high temperature and an extended life expectancy. Suitable for applications where long term component reliability and integrity are of paramount importance.
The entire range of values and voltages manufactured are listed below and supplied loose, with taped and boxed product available to order (see details below).

- High endurance **Up to 10000 hours**
- High ripple current
- Maximum temperature **105°C**
- Capacitance tolerance **20%**
- Includes low profile 20mm products
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	ED (A)
Endurance test (at 105°C)	8000 hours (Dia 10), 10000 hours (Dia ≥12.5)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Operating temperature range	-25°C to +105°C
Leakage current	≤0.06CV +10μA after 2 min.

Tan δ at 120Hz, 20°C

Rated voltage (dc)	160V	200V	250V	350V	400V	450V
Tan δ	0.15	0.15	0.15	0.20	0.24	0.24

Frequency correction factor for ripple current

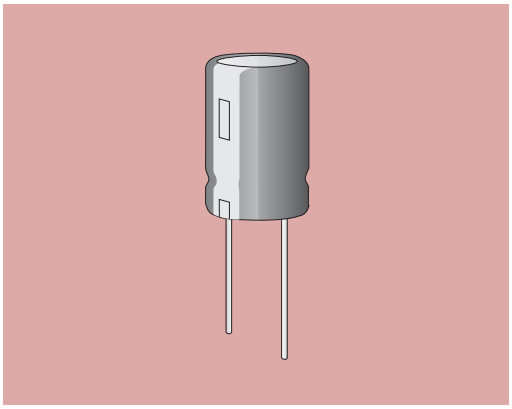
Cap. (μF) \ Freq. (Hz)	60	120	1k	10k	100k
<100	0.30	0.40	0.70	0.90	1.0
≥100	0.35	0.45	0.75	0.90	1.0

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

ORDER CODES

Value (μF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose
160 Volt				
22	500	10.0 x 20.0	5.0	***EEUED2C220***
33	580	10.0 x 20.0	5.0	***EEUED2C330***
47	750	10.0 x 20.0	5.0	***EEUED2C470***
68	950	12.5 x 20.0	5.0	***EEUED2C680***
82	1060	12.5 x 25.0	5.0	***EEUED2C820***
100	1170	12.5 x 25.0	5.0	***EEUED2C101***
100	1280	16.0 x 20.0	7.5	***EEUED2C101S***
150	1400	16.0 x 25.0	7.5	***EEUED2C151***
150	1400	18.0 x 20.0	7.5	***EEUED2C151S***
220	1700	16.0 x 31.5	7.5	***EEUED2C221***
220	1500	18.0 x 25.0	7.5	***EEUED2C221S***
330	2000	18.0 x 31.5	7.5	***EEUED2C331***
200 Volt				
22	600	10.0 x 20.0	5.0	***EEUED2D220***
33	650	10.0 x 20.0	5.0	***EEUED2D330***
47	790	12.5 x 20.0	5.0	***EEUED2D470***
68	950	12.5 x 25.0	5.0	***EEUED2D680***
68	1000	16.0 x 20.0	7.5	***EEUED2D680S***
82	1100	16.0 x 20.0	7.5	***EEUED2D820S***
100	1300	16.0 x 25.0	7.5	***EEUED2D101***
100	1280	18.0 x 20.0	7.5	***EEUED2D101S***
150	1400	16.0 x 25.0	7.5	***EEUED2D151***
220	2000	18.0 x 31.5	7.5	***EEUED2D221***
330	2400	18.0 x 40.0	7.5	***EEUED2D331***
250 Volt				
22	560	10.0 x 20.0	5.0	***EEUED2E220***
33	710	12.5 x 20.0	5.0	***EEUED2E330***
47	920	12.5 x 25.0	5.0	***EEUED2E470***
47	990	16.0 x 20.0	7.5	***EEUED2E470S***
68	1000	16.0 x 20.0	7.5	***EEUED2E680S***
82	1200	16.0 x 25.0	7.5	***EEUED2E820***
82	1200	18.0 x 20.0	7.5	***EEUED2E820S***
100	1500	16.0 x 31.5	7.5	***EEUED2E101***
100	1500	18.0 x 25.0	7.5	***EEUED2E101S***
150	1800	18.0 x 31.5	7.5	***EEUED2E151***
220	2100	18.0 x 40.0	7.5	***EEUED2E221***
350 Volt				
10	350	10.0 x 20.0	5.0	***EEUED2V100***
22	480	12.5 x 20.0	5.0	***EEUED2V220***
33	640	16.0 x 20.0	7.5	***EEUED2V330S***
47	800	16.0 x 25.0	7.5	***EEUED2V470***
47	800	18.0 x 20.0	7.5	***EEUED2V470S***
68	1100	16.0 x 31.5	7.5	***EEUED2V680***
68	1000	18.0 x 25.0	7.5	***EEUED2V680S***
82	1100	18.0 x 25.0	7.5	***EEUED2V820S***
100	1200	18.0 x 31.5	7.5	***EEUED2V101***
400 Volt				
10	300	10.0 x 20.0	5.0	***EEUED2G100***
15	410	12.5 x 20.0	5.0	***EEUED2G150***
22	500	12.5 x 25.0	5.0	***EEUED2G220***
22	600	16.0 x 20.0	7.5	***EEUED2G220S***
33	730	16.0 x 20.0	7.5	***EEUED2G330S***
47	840	16.0 x 25.0	7.5	***EEUED2G470***
47	840	18.0 x 20.0	7.5	***EEUED2G470S***
68	1200	18.0 x 31.5	7.5	***EEUED2G680***
82	1500	18.0 x 40.0	7.5	***EEUED2G820***
450 Volt				
10	350	12.5 x 20.0	5.0	***EEUED2W100***
15	560	12.5 x 25.0	5.0	***EEUED2W150***
22	680	16.0 x 20.0	7.5	***EEUED2W220S***
33	850	16.0 x 31.5	7.5	***EEUED2W330***
33	850	18.0 x 25.0	7.5	***EEUED2W330S***
47	1000	18.0 x 31.5	7.5	***EEUED2W470***
68	1300	18.0 x 40.0	7.5	***EEUED2W680***

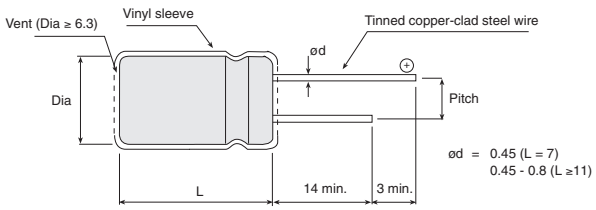


PANASONIC FC Series, type A

A specialised range of radial aluminium electrolytic capacitors which offers a superb combination of low impedance, high temperature and an extended life expectancy. Suitable for applications where long term component reliability and integrity are of paramount importance. The entire range of values and voltages manufactured are listed below and continued on the following pages. Supplied loose, with taped and boxed product available to order (see details below).

- **Low impedance**
- High endurance **Up to 5000 hours**
- Maximum temperature **105°C**
- Capacitance tolerance **20%**
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	FC (A)
Endurance test (at 105°C)	1000 hours (Dia ≤6.3), 2000 hours (Dia 8), 3000 hours (Dia 10), 5000 hours (Dia ≥12.5)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.06CV or 3μA (whichever is greater) after 2 min.

Tan δ at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V	63V	100V
Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.07

For capacitance values >1000μF, add 0.02 per every 1000μF.

Frequency correction factor for ripple current

Rated Voltage (V)	Capacitance (μF)	Frequency (Hz) 60	120	1k	10k	100k
6.3 to 100	1.0 to 330	0.55	0.65	0.85	0.90	1.0
	390 to 1000	0.70	0.75	0.90	0.95	1.0
	1200 to 2200	0.75	0.80	0.90	0.95	1.0
	2700 to 15000	0.80	0.85	0.95	1.00	1.0

ORDER CODES

Value (μF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
6.3 Volt					
27	65	2.000	4.0 x 7.0	1.5	***EEAFC0J270***
56	120	0.950	5.0 x 7.0	2.0	***EEAFC0J560***
68	120	1.300	4.0 x 11.0	1.5	***EEUFC0J680***
100	175	0.800	5.0 x 11.0	2.0	***EEUFC0J101***
120	200	0.450	6.3 x 7.0	2.5	***EEAFC0J121***
150	235	0.500	5.0 x 15.0	2.0	***EEUFC0J151***
220	290	0.350	6.3 x 11.2	2.5	***EEUFC0J221***
270	290	0.350	6.3 x 11.2	2.5	***EEUFC0J271***
330	290	0.350	6.3 x 11.2	2.5	***EEUFC0J331S***
330	400	0.250	6.3 x 15.0	2.5	***EEUFC0J331***
390	555	0.117	8.0 x 11.5	3.5	***EEUFC0J391***
470	555	0.117	8.0 x 11.5	3.5	***EEUFC0J471***
560	555	0.117	8.0 x 11.5	3.5	***EEUFC0J561***
820	730	0.085	8.0 x 15.0	3.5	***EEUFC0J821L***
820	755	0.090	10.0 x 12.5	5.0	***EEUFC0J821***
1000	755	0.090	10.0 x 12.5	5.0	***EEUFC0J102***
1200	995	0.065	8.0 x 20.0	3.5	***EEUFC0J122L***
1200	1050	0.068	10.0 x 16.0	5.0	***EEUFC0J122***
1500	1220	0.052	10.0 x 20.0	5.0	***EEUFC0J152***
1500	1205	0.065	12.5 x 15.0	5.0	***EEUFC0J152S***
1800	1440	0.045	10.0 x 25.0	5.0	***EEUFC0J182***
2200	1440	0.045	10.0 x 25.0	5.0	***EEUFC0J222***
2200	1690	0.043	16.0 x 15.0	7.5	***EEUFC0J222S***
2700	1815	0.035	10.0 x 30.0	5.0	***EEUFC0J272L***
2700	1655	0.038	12.5 x 20.0	5.0	***EEUFC0J272***
2700	1690	0.043	16.0 x 15.0	7.5	***EEUFC0J272S***
3300	1655	0.038	12.5 x 20.0	5.0	***EEUFC0J332***
3300	2000	0.038	18.0 x 15.0	7.5	***EEUFC0J332S***
3900	1945	0.030	12.5 x 25.0	5.0	***EEUFC0J392***
4700	2310	0.025	12.5 x 30.0	5.0	***EEUFC0J472***
4700	2205	0.029	16.0 x 20.0	7.5	***EEUFC0J472S***
5600	2510	0.022	12.5 x 35.0	5.0	***EEUFC0J562L***
5600	2205	0.029	16.0 x 20.0	7.5	***EEUFC0J562***
6800	2655	0.018	12.5 x 40.0	5.0	***EEUFC0J682L***
6800	2555	0.022	16.0 x 25.0	7.5	***EEUFC0J682***
6800	2490	0.028	18.0 x 20.0	7.5	***EEUFC0J682S***
8200	3010	0.018	16.0 x 31.5	7.5	***EEUFC0J822***
10000	3150	0.016	16.0 x 35.5	7.5	***EEUFC0J103***
10000	2740	0.020	18.0 x 25.0	7.5	***EEUFC0J103S***
12000	3360	0.015	16.0 x 40.0	7.5	***EEUFC0J123L***
12000	3635	0.016	18.0 x 31.5	7.5	***EEUFC0J123***
15000	3680	0.015	18.0 x 35.5	7.5	***EEUFC0J153***

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

Panasonic FC Series
continued overleaf > > > >

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continuation

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
10 Volt					
22	65	2.000	4.0 x 7.0	1.5	***EEAFC1A220***
39	120	0.950	5.0 x 7.0	2.0	***EEAFC1A390***
47	120	1.300	4.0 x 11.0	1.5	***EEUFC1A470***
82	175	0.800	5.0 x 11.0	2.0	***EEUFC1A820***
82	200	0.450	6.3 x 7.0	2.5	***EEAFC1A820***
100	175	0.800	5.0 x 11.0	2.0	***EEUFC1A101S***
100	235	0.500	5.0 x 15.0	2.0	***EEUFC1A101***
150	290	0.350	6.3 x 11.2	2.5	***EEUFC1A151***
180	290	0.350	6.3 x 11.2	2.5	***EEUFC1A181***
220	290	0.350	6.3 x 11.2	2.5	***EEUFC1A221S***
220	400	0.250	6.3 x 15.0	2.5	***EEUFC1A221***
330	555	0.117	8.0 x 11.5	3.5	***EEUFC1A331***
390	555	0.117	8.0 x 11.5	3.5	***EEUFC1A391***
470	555	0.117	8.0 x 11.5	3.5	***EEUFC1A471***
560	755	0.090	10.0 x 12.5	5.0	***EEUFC1A561***
680	730	0.085	8.0 x 15.0	3.5	***EEUFC1A681L***
680	755	0.090	10.0 x 12.5	5.0	***EEUFC1A681***
820	1050	0.068	10.0 x 16.0	5.0	***EEUFC1A821***
1000	995	0.065	8.0 x 20.0	3.5	***EEUFC1A102L***
1000	1050	0.068	10.0 x 16.0	5.0	***EEUFC1A102***
1200	1220	0.052	10.0 x 20.0	5.0	***EEUFC1A122***
1200	1205	0.065	12.5 x 15.0	5.0	***EEUFC1A122S***
1500	1440	0.045	10.0 x 25.0	5.0	***EEUFC1A152***
1800	1655	0.038	12.5 x 20.0	5.0	***EEUFC1A182***
1800	1690	0.043	16.0 x 15.0	7.5	***EEUFC1A182S***
2200	1815	0.035	10.0 x 30.0	5.0	***EEUFC1A222L***
2200	1655	0.038	12.5 x 20.0	5.0	***EEUFC1A222***
2700	1945	0.030	12.5 x 25.0	5.0	***EEUFC1A272***
2700	2000	0.038	18.0 x 15.0	7.5	***EEUFC1A272S***
3300	2310	0.025	12.5 x 30.0	5.0	***EEUFC1A332***
3300	2205	0.029	16.0 x 20.0	7.5	***EEUFC1A332S***
3900	2510	0.022	12.5 x 35.0	5.0	***EEUFC1A392L***
3900	2205	0.029	16.0 x 20.0	7.5	***EEUFC1A392***
4700	2655	0.018	12.5 x 40.0	5.0	***EEUFC1A472L***
4700	2555	0.022	16.0 x 25.0	7.5	***EEUFC1A472***
5600	2555	0.022	16.0 x 25.0	7.5	***EEUFC1A562***
5600	2490	0.028	18.0 x 20.0	7.5	***EEUFC1A562S***
6800	3010	0.018	16.0 x 31.5	7.5	***EEUFC1A682***
6800	2740	0.020	18.0 x 25.0	7.5	***EEUFC1A682S***
8200	3150	0.016	16.0 x 35.5	7.5	***EEUFC1A822L***
8200	3635	0.016	18.0 x 31.5	7.5	***EEUFC1A822***
10000	3680	0.015	18.0 x 35.5	7.5	***EEUFC1A103***
12000	3735	0.014	18.0 x 40.0	7.5	***EEUFC1A123***
16 Volt					
15	65	2.000	4.0 x 7.0	1.5	***EEAFC1C150***
27	120	0.950	5.0 x 7.0	2.0	***EEAFC1C270***
39	120	1.300	4.0 x 11.0	1.5	***EEUFC1C390***
47	175	0.800	5.0 x 11.0	2.0	***EEUFC1C470***
56	175	0.800	5.0 x 11.0	2.0	***EEUFC1C560***
56	200	0.450	6.3 x 7.0	2.5	***EEAFC1C560***
68	175	0.800	5.0 x 11.0	2.0	***EEUFC1C680***
82	235	0.500	5.0 x 15.0	2.0	***EEUFC1C820***
100	290	0.350	6.3 x 11.2	2.5	***EEUFC1C101***
120	290	0.350	6.3 x 11.2	2.5	***EEUFC1C121***
180	400	0.250	6.3 x 15.0	2.5	***EEUFC1C181***
220	555	0.117	8.0 x 11.5	3.5	***EEUFC1C221***
270	555	0.117	8.0 x 11.5	3.5	***EEUFC1C271***
330	555	0.117	8.0 x 11.5	3.5	***EEUFC1C331***
390	755	0.090	10.0 x 12.5	5.0	***EEUFC1C391***
470	730	0.085	8.0 x 15.0	3.5	***EEUFC1C471L***
470	755	0.090	10.0 x 12.5	5.0	***EEUFC1C471***
560	1050	0.068	10.0 x 16.0	5.0	***EEUFC1C561***
680	995	0.065	8.0 x 20.0	3.5	***EEUFC1C681L***
680	1050	0.068	10.0 x 16.0	5.0	***EEUFC1C681***
820	1220	0.052	10.0 x 20.0	5.0	***EEUFC1C821***
820	1205	0.065	12.5 x 15.0	5.0	***EEUFC1C821S***
1000	1220	0.052	10.0 x 20.0	5.0	***EEUFC1C102S***
1000	1440	0.045	10.0 x 25.0	5.0	***EEUFC1C102***
1200	1440	0.045	10.0 x 25.0	5.0	***EEUFC1C122***
1200	1690	0.043	16.0 x 15.0	7.5	***EEUFC1C122S***
1500	1815	0.035	10.0 x 30.0	5.0	***EEUFC1C152L***
1500	1655	0.038	12.5 x 20.0	5.0	***EEUFC1C152***
1500	1690	0.043	16.0 x 15.0	7.5	***EEUFC1C152S***
1800	1945	0.030	12.5 x 25.0	5.0	***EEUFC1C182***
1800	2000	0.038	18.0 x 15.0	7.5	***EEUFC1C182S***
16 Volt *continued*					
2200	1945	0.030	12.5 x 25.0	5.0	***EEUFC1C222***
2200	2205	0.029	16.0 x 20.0	7.5	***EEUFC1C222S***
2700	2310	0.025	12.5 x 30.0	5.0	***EEUFC1C272L***
2700	2205	0.029	16.0 x 20.0	7.5	***EEUFC1C272***
3300	2510	0.022	12.5 x 35.0	5.0	***EEUFC1C332***
3300	2490	0.028	18.0 x 20.0	7.5	***EEUFC1C332S***
3900	2555	0.022	16.0 x 25.0	7.5	***EEUFC1C392***
3900	2490	0.028	18.0 x 20.0	7.5	***EEUFC1C392S***
4700	3010	0.018	16.0 x 31.5	7.5	***EEUFC1C472***
4700	2740	0.020	18.0 x 25.0	7.5	***EEUFC1C472S***
5600	3150	0.016	16.0 x 35.5	7.5	***EEUFC1C562L***
5600	3635	0.016	18.0 x 31.5	7.5	***EEUFC1C562***
6800	3360	0.015	16.0 x 40.0	7.5	***EEUFC1C682***
8200	3680	0.015	18.0 x 35.5	7.5	***EEUFC1C822***
25 Volt					
10	65	2.000	4.0 x 7.0	1.5	***EEAFC1E100***
22	120	0.950	5.0 x 7.0	2.0	***EEAFC1E220***
27	120	1.300	4.0 x 11.0	1.5	***EEUFC1E270***
39	175	0.800	5.0 x 11.0	2.0	***EEUFC1E390***
39	200	0.450	6.3 x 7.0	2.5	***EEAFC1E390***
47	175	0.800	5.0 x 11.0	2.0	***EEUFC1E470***
56	235	0.500	5.0 x 15.0	2.0	***EEUFC1E560***
82	290	0.350	6.3 x 11.2	2.5	***EEUFC1E820***
100	290	0.350	6.3 x 11.2	2.5	***EEUFC1E101S***
120	400	0.250	6.3 x 15.0	2.5	***EEUFC1E121***
180	555	0.117	8.0 x 11.5	3.5	***EEUFC1E181***
220	555	0.117	8.0 x 11.5	3.5	***EEUFC1E221***
270	755	0.090	10.0 x 12.5	5.0	***EEUFC1E271***
330	730	0.085	8.0 x 15.0	3.5	***EEUFC1E331L***
330	755	0.090	10.0 x 12.5	5.0	***EEUFC1E331***
390	1050	0.068	10.0 x 16.0	5.0	***EEUFC1E391***
470	995	0.065	8.0 x 20.0	3.5	***EEUFC1E471L***
470	1050	0.068	10.0 x 16.0	5.0	***EEUFC1E471***
560	1220	0.052	10.0 x 20.0	5.0	***EEUFC1E561***
560	1205	0.065	12.5 x 15.0	5.0	***EEUFC1E561S***
680	1220	0.052	10.0 x 20.0	5.0	***EEUFC1E681***
820	1440	0.045	10.0 x 25.0	5.0	***EEUFC1E821***
820	1655	0.038	12.5 x 20.0	5.0	***EEUFC1E821S***
1000	1815	0.035	10.0 x 30.0	5.0	***EEUFC1E102L***
1000	1655	0.038	12.5 x 20.0	5.0	***EEUFC1E102***
1000	1690	0.043	16.0 x 15.0	7.5	***EEUFC1E102S***
1200	1945	0.030	12.5 x 25.0	5.0	***EEUFC1E122***
1200	2000	0.038	18.0 x 15.0	7.5	***EEUFC1E122S***
1500	1945	0.030	12.5 x 25.0	5.0	***EEUFC1E152***
1500	2205	0.029	16.0 x 20.0	7.5	***EEUFC1E152S***
1800	2310	0.025	12.5 x 30.0	5.0	***EEUFC1E182L***
1800	2205	0.029	16.0 x 20.0	7.5	***EEUFC1E182***
2200	2510	0.022	12.5 x 35.0	5.0	***EEUFC1E222***
2200	2490	0.028	18.0 x 20.0	7.5	***EEUFC1E222S***
2700	2555	0.022	16.0 x 25.0	7.5	***EEUFC1E272***
3300	3010	0.018	16.0 x 31.5	7.5	***EEUFC1E332***
3300	2740	0.020	18.0 x 25.0	7.5	***EEUFC1E332S***
3900	3150	0.016	16.0 x 35.5	7.5	***EEUFC1E392L***
3900	3635	0.016	18.0 x 31.5	7.5	***EEUFC1E392***
4700	3680	0.015	18.0 x 35.5	7.5	***EEUFC1E472***
5600	3735	0.014	18.0 x 40.0	7.5	***EEUFC1E562***
35 Volt					
6.8	65	2.000	4.0 x 7.0	1.5	***EEAFC1V6R8***
12	120	0.950	5.0 x 7.0	2.0	***EEAFC1V120***
18	120	1.300	4.0 x 11.0	1.5	***EEUFC1V180***
22	175	0.800	5.0 x 11.0	2.0	***EEUFC1V220***
27	175	0.800	5.0 x 11.0	2.0	***EEUFC1V270***
27	200	0.450	6.3 x 7.0	2.5	***EEAFC1V270***
33	175	0.080	5.0 x 11.0	2.0	***EEUFC1V330***
39	235	0.500	5.0 x 15.0	2.0	***EEUFC1V390***
47	290	0.350	6.3 x 11.2	2.5	***EEUFC1V470***
56	290	0.350	6.3 x 11.2	2.5	***EEUFC1V560***
68	290	0.350	6.3 x 11.2	2.5	***EEUFC1V680***
82	400	0.250	6.3 x 15.0	2.5	***EEUFC1V820***
100	555	0.117	8.0 x 11.5	3.5	***EEUFC1V101***
120	555	0.117	8.0 x 11.5	3.5	***EEUFC1V121***
150	555	0.117	8.0 x 11.5	3.5	***EEUFC1V151***
180	755	0.090	10.0 x 12.5	5.0	***EEUFC1V181***
220	730	0.085	8.0 x 15.0	3.5	***EEUFC1V221L***
220	755	0.090	10.0 x 12.5	5.0	***EEUFC1V221***

continued > > > >

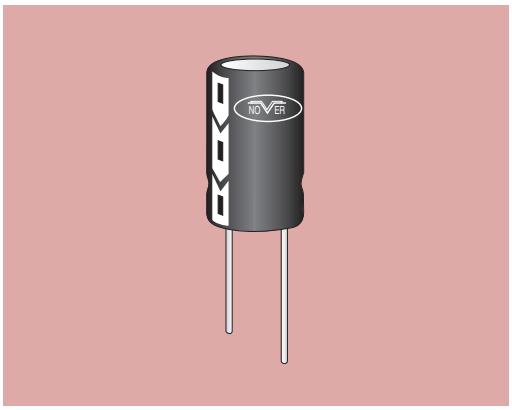
32

continuation

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
35 Volt *continued*					
270	1050	0.068	10.0 x 16.0	5.0	***EEUFC1V271***
330	995	0.065	8.0 x 20.0	3.5	***EEUFC1V331L***
330	1050	0.068	10.0 x 16.0	5.0	***EEUFC1V331***
390	1220	0.052	10.0 x 20.0	5.0	***EEUFC1V391***
390	1205	0.065	12.5 x 15.0	5.0	***EEUFC1V391S***
470	1220	0.052	10.0 x 20.0	5.0	***EEUFC1V471***
560	1440	0.045	10.0 x 25.0	5.0	***EEUFC1V561***
560	1655	0.038	12.5 x 20.0	5.0	***EEUFC1V561S***
680	1815	0.035	10.0 x 30.0	5.0	***EEUFC1V681L***
680	1655	0.038	12.5 x 20.0	5.0	***EEUFC1V681***
680	1690	0.043	16.0 x 15.0	7.5	***EEUFC1V681S***
820	1945	0.030	12.5 x 25.0	5.0	***EEUFC1V821L***
820	2000	0.038	18.0 x 15.0	7.5	***EEUFC1V821***
1000	1945	0.030	12.5 x 25.0	5.0	***EEUFC1V102***
1000	2205	0.029	16.0 x 20.0	7.5	***EEUFC1V102S***
1200	2310	0.025	12.5 x 30.0	5.0	***EEUFC1V122L***
1200	2205	0.029	16.0 x 20.0	7.5	***EEUFC1V122***
1500	2510	0.022	12.5 x 35.0	5.0	***EEUFC1V152L***
1500	2555	0.022	16.0 x 25.0	7.5	***EEUFC1V152***
1500	2490	0.028	18.0 x 20.0	7.5	***EEUFC1V152S***
1800	2655	0.018	12.5 x 40.0	5.0	***EEUFC1V182L***
1800	2555	0.022	16.0 x 25.0	7.5	***EEUFC1V182***
1800	2490	0.028	18.0 x 20.0	7.5	***EEUFC1V182S***
2200	3010	0.018	16.0 x 31.5	7.5	***EEUFC1V222***
2200	2740	0.020	18.0 x 25.0	7.5	***EEUFC1V222S***
2700	3150	0.016	16.0 x 35.5	7.5	***EEUFC1V272L***
2700	3635	0.016	18.0 x 31.5	7.5	***EEUFC1V272***
3300	3680	0.015	18.0 x 35.5	7.5	***EEUFC1V332***
3900	3735	0.014	18.0 x 40.0	7.5	***EEUFC1V392***
50 Volt					
1.0	20	2.400	5.0 x 11.0	2.0	***EEUFC1H1R0***
2.2	45	1.800	5.0 x 11.0	2.0	***EEUFC1H2R2***
3.3	65	1.300	5.0 x 11.0	2.0	***EEUFC1H3R3***
4.7	95	1.300	5.0 x 11.0	2.0	***EEUFC1H4R7***
10	90	2.500	4.0 x 11.0	1.5	***EEUFC1H100***
10	125	1.300	5.0 x 11.0	2.0	***EEUFC1H100L***
12	135	1.300	5.0 x 11.0	2.0	***EEUFC1H120***
15	145	1.300	5.0 x 11.0	2.0	***EEUFC1H150***
18	155	1.300	5.0 x 11.0	2.0	***EEUFC1H180***
22	155	1.300	5.0 x 11.0	2.0	***EEUFC1H220***
27	215	0.900	5.0 x 15.0	2.0	***EEUFC1H270***
33	260	0.600	6.3 x 11.2	2.5	***EEUFC1H330***
39	260	0.600	6.3 x 11.2	2.5	***EEUFC1H390***
47	260	0.600	6.3 x 11.2	2.5	***EEUFC1H470***
56	360	0.400	6.3 x 15.0	2.5	***EEUFC1H560***
68	485	0.234	8.0 x 11.5	3.5	***EEUFC1H680***
82	485	0.234	8.0 x 11.5	3.5	***EEUFC1H820***
100	615	0.162	10.0 x 12.5	5.0	***EEUFC1H101***
120	635	0.155	8.0 x 15.0	3.5	***EEUFC1H121L***
120	615	0.162	10.0 x 12.5	5.0	***EEUFC1H121***
150	850	0.119	10.0 x 16.0	5.0	***EEUFC1H151***
180	860	0.120	8.0 x 20.0	3.5	***EEUFC1H181L***
180	850	0.119	10.0 x 16.0	5.0	***EEUFC1H181***
220	1030	0.090	10.0 x 20.0	5.0	***EEUFC1H221***
220	1150	0.110	12.5 x 15.0	5.0	***EEUFC1H221S***
270	1200	0.082	10.0 x 25.0	5.0	***EEUFC1H271***
330	1610	0.060	10.0 x 30.0	5.0	***EEUFC1H331L***
330	1480	0.063	12.5 x 20.0	5.0	***EEUFC1H331***
390	1480	0.063	12.5 x 20.0	5.0	***EEUFC1H391***
390	1610	0.080	16.0 x 15.0	7.5	***EEUFC1H391S***
470	1610	0.060	10.0 x 30.0	5.0	***EEUFC1H471L***
470	1832	0.050	12.5 x 25.0	5.0	***EEUFC1H471***
560	1832	0.050	12.5 x 25.0	5.0	***EEUFC1H561***
560	1900	0.068	18.0 x 15.0	7.5	***EEUFC1H561S***
680	2215	0.040	12.5 x 30.0	5.0	***EEUFC1H681L***
680	1835	0.048	16.0 x 20.0	7.5	***EEUFC1H681***
820	2285	0.034	12.5 x 35.0	5.0	***EEUFC1H821L***
820	2420	0.042	18.0 x 20.0	7.5	***EEUFC1H821***
1000	2590	0.030	12.5 x 40.0	5.0	***EEUFC1H102L***
1000	2235	0.034	16.0 x 25.0	7.5	***EEUFC1H102***
1200	2700	0.028	16.0 x 31.5	7.5	***EEUFC1H122***
1200	2610	0.029	18.0 x 25.0	7.5	***EEUFC1H122S***
1500	2790	0.025	16.0 x 35.5	7.5	***EEUFC1H152L***
1800	2845	0.023	16.0 x 40.0	7.5	***EEUFC1H182L***
1800	3000	0.025	18.0 x 31.5	7.5	***EEUFC1H182***
2200	3100	0.023	18.0 x 35.5	7.5	***EEUFC1H222***

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
63 Volt					
6.8	80	3.500	4.0 x 11.0	1.5	***EEUFC1J6R8***
12	145	2.000	5.0 x 11.0	2.0	***EEUFC1J120***
18	200	1.300	5.0 x 15.0	2.0	***EEUFC1J180***
22	240	1.000	6.3 x 11.2	2.5	***EEUFC1J220***
33	240	1.000	6.3 x 11.2	2.5	***EEUFC1J330***
39	330	0.700	6.3 x 15.0	2.5	***EEUFC1J390***
47	405	0.342	8.0 x 11.5	3.5	***EEUFC1J470***
56	405	0.342	8.0 x 11.5	3.5	***EEUFC1J560***
68	405	0.342	8.0 x 11.5	3.5	***EEUFC1J680***
82	535	0.256	10.0 x 12.5	5.0	***EEUFC1J820***
100	535	0.230	8.0 x 15.0	3.5	***EEUFC1J101L***
100	535	0.256	10.0 x 12.5	5.0	***EEUFC1J101***
120	600	0.194	10.0 x 16.0	5.0	***EEUFC1J121***
150	690	0.178	8.0 x 20.0	3.5	***EEUFC1J151***
180	885	0.147	10.0 x 20.0	5.0	***EEUFC1J181***
180	1020	0.150	12.5 x 15.0	5.0	***EEUFC1J181S***
220	885	0.147	10.0 x 20.0	5.0	***EEUFC1J221X***
220	1050	0.130	10.0 x 25.0	5.0	***EEUFC1J221***
220	1285	0.085	12.5 x 20.0	5.0	***EEUFC1J221S***
270	1410	0.090	16.0 x 15.0	7.5	***EEUFC1J271***
330	1300	0.090	10.0 x 30.0	5.0	***EEUFC1J331L***
330	1285	0.085	12.5 x 20.0	5.0	***EEUFC1J331***
390	1720	0.070	12.5 x 25.0	5.0	***EEUFC1J391***
390	1690	0.086	18.0 x 15.0	7.5	***EEUFC1J391S***
470	2090	0.055	12.5 x 30.0	5.0	***EEUFC1J471L***
470	1765	0.059	16.0 x 20.0	7.5	***EEUFC1J471***
560	2160	0.050	16.0 x 25.0	7.5	***EEUFC1J561***
680	2265	0.047	12.5 x 35.0	5.0	***EEUFC1J681L***
680	2160	0.050	16.0 x 25.0	7.5	***EEUFC1J681***
680	2290	0.055	18.0 x 20.0	7.5	***EEUFC1J681S***
820	2560	0.042	12.5 x 40.0	5.0	***EEUFC1J821L***
820	2670	0.043	16.0 x 31.5	7.5	***EEUFC1J821***
820	2585	0.043	18.0 x 25.0	7.5	***EEUFC1J821S***
1000	2670	0.043	16.0 x 31.5	7.5	***EEUFC1J102U***
1000	2770	0.036	16.0 x 35.5	7.5	***EEUFC1J102***
1200	2825	0.030	16.0 x 40.0	7.5	***EEUFC1J122L***
1200	2950	0.032	18.0 x 31.5	7.5	***EEUFC1J122***
1500	3095	0.030	18.0 x 35.5	7.5	***EEUFC1J152***
1800	3205	0.025	18.0 x 40.0	7.5	***EEUFC1J182***
100 Volt					
5.6	80	4.100	5.0 x 11.0	2.0	***EEUFC2A5R6***
8.2	90	2.800	5.0 x 15.0	2.0	***EEUFC2A8R2***
12	114	1.800	6.3 x 11.2	2.5	***EEUFC2A120***
18	155	1.100	6.3 x 15.0	2.5	***EEUFC2A180***
22	260	0.680	8.0 x 11.5	3.5	***EEUFC2A220***
33	340	0.450	8.0 x 15.0	3.5	***EEUFC2A330L***
33	306	0.530	10.0 x 12.5	5.0	***EEUFC2A330***
39	455	0.330	8.0 x 20.0	5.0	***EEUFC2A390L***
39	400	0.360	10.0 x 16.0	5.0	***EEUFC2A390***
56	463	0.240	10.0 x 20.0	5.0	***EEUFC2A560***
68	599	0.210	10.0 x 25.0	5.0	***EEUFC2A680L***
68	511	0.230	12.5 x 15.0	5.0	***EEUFC2A680***
100	698	0.150	10.0 x 30.0	5.0	***EEUFC2A101L***
120	671	0.180	12.5 x 20.0	5.0	***EEUFC2A101***
120	793	0.140	16.0 x 15.0	7.5	***EEUFC2A121S***
150	807	0.110	12.5 x 25.0	5.0	***EEUFC2A151***
150	917	0.120	18.0 x 15.0	7.5	***EEUFC2A151S***
180	937	0.098	12.5 x 30.0	5.0	***EEUFC2A181L***
180	995	0.110	16.0 x 20.0	7.5	***EEUFC2A181***
220	1040	0.087	12.5 x 35.0	5.0	***EEUFC2A221L***
220	1170	0.089	16.0 x 25.0	7.5	***EEUFC2A221***
270	1130	0.072	12.5 x 40.0	5.0	***EEUFC2A271L***
270	1230	0.080	18.0 x 20.0	7.5	***EEUFC2A271S***
330	1520	0.062	16.0 x 31.5	7.5	***EEUFC2A331***
330	1420	0.070	18.0 x 25.0	7.5	***EEUFC2A331S***
390	1730	0.053	16.0 x 35.5	7.5	***EEUFC2A391L***
390	1600	0.062	18.0 x 31.5	7.5	***EEUFC2A391***
470	1920	0.047	16.0 x 40.0	7.5	***EEUFC2A471***
560	1770	0.041	18.0 x 35.5	7.5	***EEUFC2A561***
680	2300	0.036	18.0 x 40.0	7.5	***EEUFC2A681***

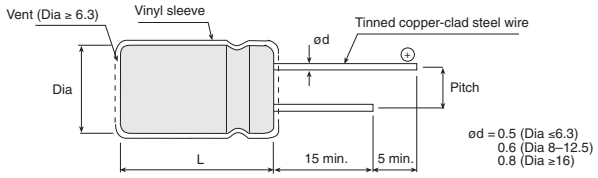


NOVER type RX

A specialised range of radial aluminium electrolytic capacitors which offers a superb combination of low impedance, high temperature and an extended life expectancy. Suitable for applications where long term component reliability and integrity are of paramount importance. The entire range of values and voltages manufactured are listed below and on the following page. Supplied loose or taped and boxed.

- **Low impedance**
- High endurance **Up to 6000 hours**
- High ripple current
- Maximum temperature **105°C**
- Capacitance tolerance **20%**
- Body colour **Black**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Conforms to JIS C5141-1982 Char.W

	RX
Endurance test (at 105°C)	3000 hours (Dia ≤8), 6000 hours (Dia ≥10)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C (see also multiplier table below)
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV or 0.3µA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

* Add 0.02 for every 100µF above 1000µF

Rated voltage	10V	16V	25V	35V	50V	63V	100V	dc
Tan δ (max) *	0.19	0.16	0.14	0.12	0.10	0.09	0.08	

Surge voltage capability

Rated voltage	10V	16V	25V	35V	50V	63V	100V	dc
Surge voltage	13V	20V	32V	44V	63V	79V	125V	dc

Multiplier for ripple current

Frequency coefficient					
Freq (Hz) / Cap (µF)	50/60	120	1k	10k	≤100k
0.47 ~ 4.7	0.35	0.42	0.60	0.80	1.0
10 ~ 33	0.45	0.55	0.75	0.90	1.0
47 ~ 330	0.60	0.70	0.85	0.95	1.0
470 ~ 1000	0.65	0.75	0.90	0.98	1.0
2200 ~ 10000	0.75	0.80	0.95	1.0	1.0

Temperature coefficient			
Temperature (°C)	+70	+85	+105
Coefficient	1.96	1.68	1.0

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
10 Volt						
100	147	0.900	5.0 x 11.0	2.0(5)	***061011***	***061011T***
220	244	0.400	6.3 x 11.0	2.5(5)	***061012***	***061012T***
330	391	0.250	8.0 x 11.5	3.5(5)	***061013***	***061013T***
470	391	0.250	8.0 x 11.5	3.5(5)	***061014***	***061014T***
1000	762	0.120	10.0 x 16.0	5.0	***061015***	***061015T***
2200	1296	0.062	12.5 x 20.0	5.0	***061016***	***061016T***
3300	1646	0.048	12.5 x 25.0	5.0	***061017***	***061017T***
4700	1839	0.034	16.0 x 25.0	7.5	***061018***	***061018T***
6800	1994	0.029	16.0 x 31.5	7.5	***061019***	–
10000	2193	0.025	18.0 x 35.5	7.5	***061020***	–
16 Volt						
47	147	0.900	5.0 x 11.0	2.0(5)	***061084***	***061084T***
100	244	0.400	6.3 x 11.0	2.5(5)	***061085***	***061085T***
220	391	0.250	8.0 x 11.5	3.5(5)	***061086***	***061086T***
330	391	0.250	8.0 x 11.5	3.5(5)	***061087***	***061087T***
470	576	0.160	10.0 x 12.5	5.0	***061088***	***061088T***
1000	1009	0.078	10.0 x 20.0	5.0	***061089***	***061089T***
2200	1646	0.048	12.5 x 25.0	5.0	***061090***	***061090T***
3300	1839	0.034	16.0 x 25.0	7.5	***061091***	***061091T***
4700	1994	0.029	16.0 x 31.5	7.5	***061092***	–
6800	2193	0.025	18.0 x 35.5	7.5	***061093***	–
25 Volt						
33	147	0.900	5.0 x 11.0	2.0(5)	***061028***	***061028T***
47	147	0.900	5.0 x 11.0	2.0(5)	***061029***	***061029T***
100	244	0.400	6.3 x 11.0	2.5(5)	***061030***	***061030T***
220	391	0.250	8.0 x 11.5	3.5(5)	***061031***	***061031T***
330	576	0.160	10.0 x 12.5	5.0	***061032***	***061032T***
470	762	0.120	10.0 x 16.0	5.0	***061033***	***061033T***
1000	1296	0.062	12.5 x 20.0	5.0	***061034***	***061034T***
2200	1893	0.034	16.0 x 25.0	7.5	***061035***	***061035T***
3300	1994	0.029	16.0 x 31.5	7.5	***061036***	–
4700	2193	0.025	18.0 x 35.5	7.5	***061037***	–

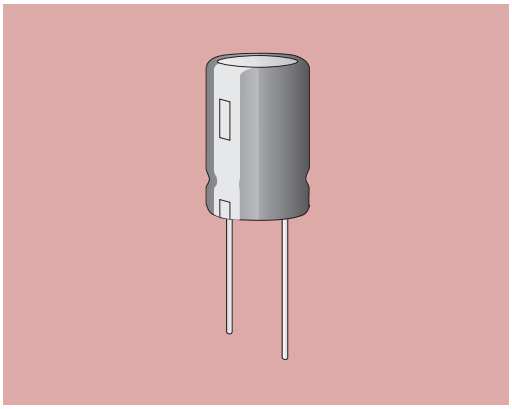
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34

continuation

ORDER CODES						
Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
35 Volt						
33	147	0.900	5.0 x 11.0	2.0(5)	***061039***	***061039T***
47	244	0.400	6.3 x 11.0	2.5(5)	***061040***	***061040T***
100	391	0.250	8.0 x 11.5	3.5(5)	***061041***	***061041T***
220	576	0.160	10.0 x 12.5	5.0	***061042***	***061042T***
330	762	0.120	10.0 x 16.0	5.0	***061043***	***061043T***
470	1009	0.078	10.0 x 20.0	5.0	***061044***	***061044T***
680	1340	0.068	12.5 x 25.0	5.0	***061021***	***061021T***
1000	1646	0.048	12.5 x 25.0	5.0	***061045***	***061045T***
2200	1994	0.029	16.0 x 31.5	7.5	***061046***	–
3300	2193	0.025	18.0 x 35.5	7.5	***061047***	–
50 Volt						
0.47	17	5.500	5.0 x 11.0	2.0(5)	***061048***	***061048T***
1.0	29	4.000	5.0 x 11.0	2.0(5)	***061049***	***061049T***
2.2	43	2.500	5.0 x 11.0	2.0(5)	***061050***	***061050T***
3.3	53	2.200	5.0 x 11.0	2.0(5)	***061051***	***061051T***
4.7	88	1.900	5.0 x 11.0	2.0(5)	***061052***	***061052T***
10	100	1.500	5.0 x 11.0	2.0(5)	***061053***	***061053T***
22	147	0.900	5.0 x 11.0	2.0(5)	***061054***	***061054T***
33	244	0.400	6.3 x 11.0	2.5(5)	***061055***	***061055T***
47	244	0.400	6.3 x 11.0	2.5(5)	***061056***	***061056T***
100	391	0.250	8.0 x 11.5	3.5(5)	***061057***	***061057T***
220	762	0.120	10.0 x 16.0	5.0	***061058***	***061058T***
330	1009	0.078	10.0 x 20.0	5.0	***061059***	***061059T***
470	1295	0.062	12.5 x 20.0	5.0	***061060***	***061060T***
1000	1839	0.034	16.0 x 25.0	7.5	***061061***	***061061T***
2200	2193	0.025	18.0 x 35.5	7.5	***061062***	–
63 Volt						
10	87	2.300	5.0 x 11.0	2.0(5)	***061063***	***061063T***
22	138	1.300	6.3 x 11.0	2.5(5)	***061064***	***061064T***
33	138	1.200	6.3 x 11.0	2.5(5)	***061065***	***061065T***
47	210	0.630	8.0 x 11.5	3.5(5)	***061066***	***061066T***
100	300	0.430	10.0 x 12.5	5.0	***061067***	***061067T***
220	520	0.210	10.0 x 20.0	5.0	***061068***	***061068T***
330	660	0.160	12.5 x 20.0	5.0	***061069***	***061069T***
470	750	0.120	12.5 x 25.0	5.0	***061070***	***061070T***
1000	1390	0.054	16.0 x 31.5	7.5	***061071***	–
100 Volt						
0.47	15	6.000	5.0 x 11.0	2.0(5)	***061072***	***061072T***
1.0	20	4.500	5.0 x 11.0	2.0(5)	***061073***	***061073T***
2.2	30	3.000	5.0 x 11.0	2.0(5)	***061074***	***061074T***
3.3	40	2.700	5.0 x 11.0	2.0(5)	***061075***	***061075T***
4.7	65	2.500	5.0 x 11.0	2.0(5)	***061076***	***061076T***
10	138	1.200	6.3 x 11.0	2.5(5)	***061077***	***061077T***
22	160	0.630	8.0 x 11.5	3.5(5)	***061078***	***061078T***
33	230	0.430	10.0 x 12.5	5.0	***061079***	***061079T***
47	290	0.310	10.0 x 16.0	5.0	***061080***	***061080T***
100	430	0.160	12.5 x 20.0	5.0	***061081***	***061081T***
220	900	0.073	16.0 x 25.0	7.5	***061082***	***061082T***
330	900	0.073	16.0 x 25.0	7.5	***061083***	***061083T***

(5) Leads pre-formed to 5mm pitch on taped part

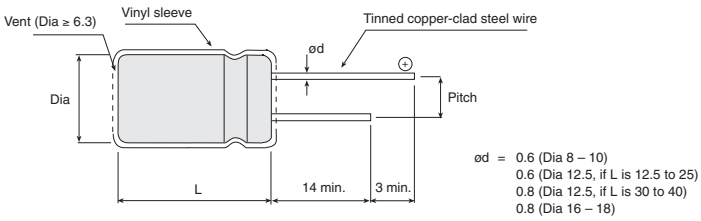


PANASONIC FK Series, type A

A specialised range of radial aluminium electrolytic capacitors which offers a superb combination of low impedance, high temperature and an extended life expectancy. Suitable for applications where long term component reliability and integrity are of paramount importance. The entire range of values and voltages manufactured is listed below and on the following page. Supplied loose, with taped and boxed product available to order (see details below).

- **Low impedance**
- High endurance **Up to 5000 hours**
- High ripple current
- Maximum temperature **105°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied loose

Dimensions (mm)



ød = 0.6 (Dia 8 – 10)
0.6 (Dia 12.5, if L is 12.5 to 25)
0.8 (Dia 12.5, if L is 30 to 40)
0.8 (Dia 16 – 18)

Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	FK (A)
Endurance test (at 105°C)	3000 hours (Dia 8), 4000 hours (Dia 10), 5000 hours (Dia ≥12.5)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-55°C to +105°C
Leakage current	≤0.01CV after 2 min.

Tan δ at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V
Tan δ (max.)	0.22	0.19	0.16	0.14	0.12

For capacitance values >1000µF, add 0.02 per every 1000µF.

Frequency correction factor for ripple current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)				
		60	120	1k	10k	100k
6.3 to 35	180 to 330	0.60	0.70	0.85	0.95	1.0
	390 to 1000	0.65	0.75	0.90	0.98	1.0
	1200 to 12000	0.75	0.80	0.95	1.0	1.0

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

ORDER CODES

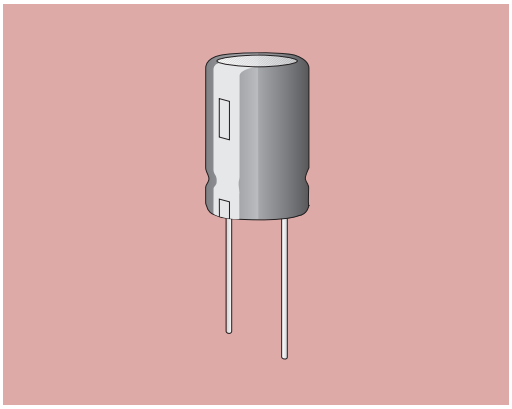
Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
6.3 Volt					
680	630	0.090	8.0 x 11.5	3.5	***EEUFK0J681***
1000	860	0.062	8.0 x 15.0	3.5	***EEUFK0J102L***
1000	900	0.063	10.0 x 12.5	5.0	***EEUFK0J102***
1500	1220	0.044	8.0 x 20.0	3.5	***EEUFK0J152L***
1500	1240	0.049	10.0 x 16.0	5.0	***EEUFK0J152***
1800	1400	0.048	12.5 x 15.0	5.0	***EEUFK0J182S***
2200	1490	0.035	10.0 x 20.0	5.0	***EEUFK0J222***
2200	1680	0.033	10.0 x 25.0	5.0	***EEUFK0J222L***
3300	2140	0.025	10.0 x 30.0	5.0	***EEUFK0J332L***
3300	1890	0.029	12.5 x 20.0	5.0	***EEUFK0J332***
3300	1800	0.038	16.0 x 15.0	7.5	***EEUFK0J332S***
4700	2280	0.022	12.5 x 25.0	5.0	***EEUFK0J472***
4700	2060	0.036	18.0 x 15.0	7.5	***EEUFK0J472S***
5600	2720	0.018	12.5 x 30.0	5.0	***EEUFK0J562L***
5600	2330	0.026	16.0 x 20.0	7.5	***EEUFK0J562S***
6800	2940	0.016	12.5 x 35.0	5.0	***EEUFK0J682L***
8200	3010	0.014	12.5 x 40.0	5.0	***EEUFK0J822L***
8200	2760	0.019	16.0 x 25.0	7.5	***EEUFK0J822***
8200	2640	0.025	18.0 x 20.0	7.5	***EEUFK0J822S***
12000	2850	0.018	18.0 x 25.0	7.5	***EEUFK0J123S***
10 Volt					
560	630	0.090	8.0 x 11.5	3.5	***EEUFK1A561***
820	860	0.062	8.0 x 15.0	3.5	***EEUFK1A821L***
820	900	0.063	10.0 x 12.5	5.0	***EEUFK1A821***
1200	1220	0.044	8.0 x 20.0	3.5	***EEUFK1A122L***
1200	1240	0.049	10.0 x 16.0	5.0	***EEUFK1A122***
1500	1400	0.048	12.5 x 15.0	5.0	***EEUFK1A152S***
1800	1490	0.035	10.0 x 20.0	5.0	***EEUFK1A182***
1800	1680	0.033	10.0 x 25.0	5.0	***EEUFK1A182L***
2700	2140	0.025	10.0 x 30.0	5.0	***EEUFK1A272L***
2700	1890	0.029	12.5 x 20.0	5.0	***EEUFK1A272***
2700	1800	0.038	16.0 x 15.0	7.5	***EEUFK1A272S***
3900	2280	0.022	12.5 x 25.0	5.0	***EEUFK1A392***
3900	2060	0.036	18.0 x 15.0	7.5	***EEUFK1A392S***
4700	2720	0.018	12.5 x 30.0	5.0	***EEUFK1A472L***
4700	2330	0.026	16.0 x 20.0	7.5	***EEUFK1A472S***
5600	2940	0.016	12.5 x 35.0	5.0	***EEUFK1A562L***
6800	3010	0.014	12.5 x 40.0	5.0	***EEUFK1A682L***
6800	2760	0.019	16.0 x 25.0	7.5	***EEUFK1A682***
6800	2640	0.025	18.0 x 20.0	7.5	***EEUFK1A682S***
8200	2850	0.018	18.0 x 25.0	7.5	***EEUFK1A822S***

continued > > > >

continuation

ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
16 Volt					
390	630	0.090	8.0 x 11.5	3.5	***EEUFK1C391***
680	860	0.062	8.0 x 15.0	3.5	***EEUFK1C681L***
680	900	0.063	10.0 x 12.5	5.0	***EEUFK1C681***
820	1220	0.044	8.0 x 20.0	3.5	***EEUFK1C821L***
1000	1240	0.049	10.0 x 16.0	5.0	***EEUFK1C102***
1200	1490	0.035	10.0 x 20.0	5.0	***EEUFK1C122***
1200	1400	0.048	12.5 x 15.0	5.0	***EEUFK1C122S***
1500	1680	0.033	10.0 x 25.0	5.0	***EEUFK1C152L***
2200	2140	0.025	10.0 x 30.0	5.0	***EEUFK1C222L***
2200	1890	0.029	12.5 x 20.0	5.0	***EEUFK1C222***
2200	1800	0.038	16.0 x 15.0	7.5	***EEUFK1C222S***
2700	2280	0.022	12.5 x 25.0	5.0	***EEUFK1C272***
2700	2060	0.036	18.0 x 15.0	7.5	***EEUFK1C272S***
3300	2720	0.018	12.5 x 30.0	5.0	***EEUFK1C332L***
3900	2940	0.016	12.5 x 35.0	5.0	***EEUFK1C392L***
3900	2330	0.026	16.0 x 20.0	7.5	***EEUFK1C392S***
4700	3010	0.014	12.5 x 40.0	5.0	***EEUFK1C472L***
4700	2640	0.025	18.0 x 20.0	7.5	***EEUFK1C472S***
5600	2760	0.019	16.0 x 25.0	7.5	***EEUFK1C562***
6800	2850	0.018	18.0 x 25.0	7.5	***EEUFK1C682S***
25 Volt					
270	630	0.090	8.0 x 11.5	3.5	***EEUFK1E271***
390	860	0.062	8.0 x 15.0	3.5	***EEUFK1E391L***
470	900	0.063	10.0 x 12.5	5.0	***EEUFK1E471***
560	1220	0.044	8.0 x 20.0	3.5	***EEUFK1E561L***
560	1240	0.049	10.0 x 16.0	5.0	***EEUFK1E561***
820	1490	0.035	10.0 x 20.0	5.0	***EEUFK1E821***
820	1400	0.048	12.5 x 15.0	5.0	***EEUFK1E821S***
1000	1680	0.033	10.0 x 25.0	5.0	***EEUFK1E102L***
1200	1890	0.029	12.5 x 20.0	5.0	***EEUFK1E122***
1500	2140	0.025	10.0 x 30.0	5.0	***EEUFK1E152L***
1500	1800	0.038	16.0 x 15.0	7.5	***EEUFK1E152S***
1800	2280	0.022	12.5 x 25.0	5.0	***EEUFK1E182***
1800	2060	0.036	18.0 x 15.0	7.5	***EEUFK1E182S***
2200	2720	0.018	12.5 x 30.0	5.0	***EEUFK1E222L***
2200	2330	0.026	16.0 x 20.0	7.5	***EEUFK1E222S***
2700	2940	0.016	12.5 x 35.0	5.0	***EEUFK1E272L***
3300	3010	0.014	12.5 x 40.0	5.0	***EEUFK1E332L***
3300	2760	0.019	16.0 x 25.0	7.5	***EEUFK1E332***
3300	2640	0.025	18.0 x 20.0	7.5	***EEUFK1E332S***
4700	2850	0.018	18.0 x 25.0	7.5	***EEUFK1E472S***
35 Volt					
180	630	0.090	8.0 x 11.5	3.5	***EEUFK1V181***
270	860	0.062	8.0 x 15.0	3.5	***EEUFK1V271L***
270	900	0.063	10.0 x 12.5	5.0	***EEUFK1V271***
390	1220	0.044	8.0 x 20.0	3.5	***EEUFK1V391L***
390	1240	0.049	10.0 x 16.0	5.0	***EEUFK1V391***
560	1490	0.035	10.0 x 20.0	5.0	***EEUFK1V561***
560	1400	0.048	12.5 x 15.0	5.0	***EEUFK1V561S***
680	1680	0.033	10.0 x 25.0	5.0	***EEUFK1V681L***
820	1890	0.029	12.5 x 20.0	5.0	***EEUFK1V821***
1000	2140	0.025	10.0 x 30.0	5.0	***EEUFK1V102L***
1000	1800	0.038	16.0 x 15.0	7.5	***EEUFK1V102S***
1200	2280	0.022	12.5 x 25.0	5.0	***EEUFK1V122***
1200	2060	0.036	18.0 x 15.0	7.5	***EEUFK1V122S***
1500	2720	0.018	12.5 x 30.0	5.0	***EEUFK1V152L***
1800	2940	0.016	12.5 x 35.0	5.0	***EEUFK1V182L***
1800	2330	0.026	16.0 x 20.0	7.5	***EEUFK1V182S***
2200	3010	0.014	12.5 x 40.0	5.0	***EEUFK1V222L***
2200	2760	0.019	16.0 x 25.0	7.5	***EEUFK1V222***
2200	2640	0.025	18.0 x 20.0	7.5	***EEUFK1V222S***
3300	2850	0.018	18.0 x 25.0	7.5	***EEUFK1V332S***

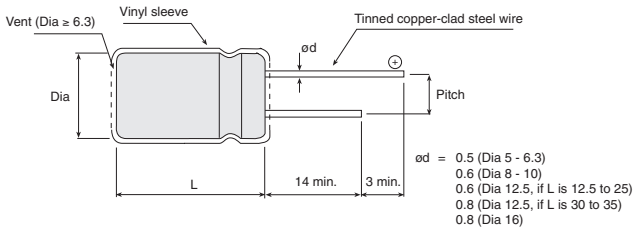


PANASONIC FM Series, type A

A radial aluminium electrolytic capacitors which offer of very low impedance, high temperature and an extended life expectancy. Suitable for applications where long term component reliability and integrity are of paramount importance. The entire range of values and voltages manufactured is listed below and on the following page. Supplied loose, with taped and boxed product available to order (see details below).

- **Very low impedance**
- High endurance **Up to 7000 hours**
- Very high ripple current
- Maximum temperature **105°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Specification	FM (A)
Endurance test (at 105°C)	2000 hours (Dia 5 - 6.3) 3000 hours (Dia 8 x 11.5 - Dia 8 x 15), 4000 hours (Dia 8 x 20 - Dia 10 x 16), 5000 hours (Dia 10 x 20 - Dia 12.5 x 20/16 x 20) 7000 hours (Dia 12.5 x 25 - Dia 12.5 x 35/16 x 25)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 100kHz, 105°C
Impedance (as listed)	measured at 100kHz, 20°C
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV after 2 min.

Tan δ at 120Hz, 20°C

Rated voltage (dc)	6.3V	10V	16V	25V	35V	50V
Tan δ (max.)	0.22	0.19	0.16	0.14	0.12	0.10

For capacitance values >1000µF, add 0.02 per every 1000µF.

Frequency correction factor for ripple current

Rated Voltage (V)	Capacitance (µF)	Frequency (Hz)				
		60	120	1k	10k	100k
6.3 to 50	22 to 33	0.45	0.55	0.75	0.90	1.0
	47 to 330	0.60	0.70	0.85	0.95	1.0
	390 to 1000	0.65	0.75	0.90	0.98	1.0
	1200 to 6800	0.75	0.80	0.95	1.0	1.0

Order codes listed apply to loose product with straight leads.

Taped & boxed product is also available, please contact our Sales Desk for details.

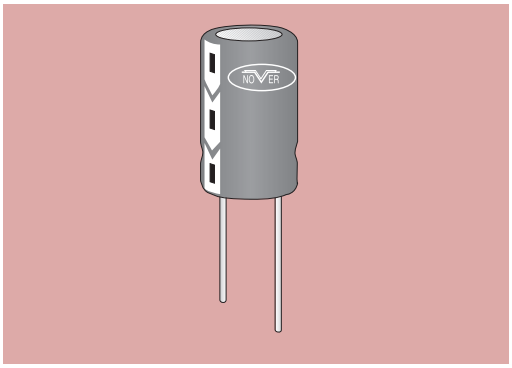
ORDER CODES

Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
6.3 Volt					
150	280	0.300	5.0 x 11.0	2.0	***EEUFM0J151***
330	455	0.130	6.0 x 11.2	2.5	***EEUFM0J331***
560	950	0.056	8.0 x 11.5	3.5	***EEUFM0J561***
820	1240	0.041	8.0 x 15.0	3.5	***EEUFM0J821L***
1000	1290	0.038	10.0 x 12.5	5.0	***EEUFM0J102***
1200	1560	0.030	8.0 x 20.0	3.5	***EEUFM0J122L***
1200	1790	0.026	10.0 x 16.0	5.0	***EEUFM0J122***
1500	2180	0.019	10.0 x 20.0	5.0	***EEUFM0J152***
2200	2470	0.018	10.0 x 25.0	5.0	***EEUFM0J222L***
3300	2600	0.018	12.5 x 20.0	5.0	***EEUFM0J332***
3900	3190	0.015	12.5 x 25.0	5.0	***EEUFM0J392***
4700	3630	0.013	12.5 x 30.0	5.0	***EEUFM0J472L***
5600	3750	0.012	12.5 x 35.0	5.0	***EEUFM0J562L***
5600	3300	0.017	16.0 x 20.0	7.5	***EEUFM0J562S***
6800	3820	0.014	16.0 x 25.0	7.5	***EEUFM0J682***
10 Volt					
100	280	0.300	5.0 x 11.0	2.0	***EEUFM1A101***
220	455	0.130	6.0 x 11.2	2.5	***EEUFM1A221***
470	950	0.056	8.0 x 11.5	3.5	***EEUFM1A471***
680	1240	0.041	8.0 x 15.0	3.5	***EEUFM1A681L***
680	1290	0.038	10.0 x 12.5	5.0	***EEUFM1A681***
1000	1560	0.030	8.0 x 20.0	3.5	***EEUFM1A102L***
1000	1790	0.026	10.0 x 16.0	5.0	***EEUFM1A102***
1200	2180	0.019	10.0 x 20.0	5.0	***EEUFM1A122***
1500	2470	0.018	10.0 x 25.0	5.0	***EEUFM1A152L***
2200	2600	0.018	12.5 x 20.0	5.0	***EEUFM1A222***
3300	3190	0.015	12.5 x 25.0	5.0	***EEUFM1A332***
3900	3630	0.013	12.5 x 30.0	5.0	***EEUFM1A392L***
3900	3300	0.017	16.0 x 20.0	7.5	***EEUFM1A392S***
4700	3750	0.012	12.5 x 35.0	5.0	***EEUFM1A472L***
5600	3820	0.014	16.0 x 25.0	7.5	***EEUFM1A562***
16 Volt					
68	280	0.300	5.0 x 11.0	2.0	***EEUFM1C680***
120	455	0.130	6.0 x 11.2	2.5	***EEUFM1C121***
330	950	0.056	8.0 x 11.5	3.5	***EEUFM1C331***
470	1240	0.041	8.0 x 15.0	3.5	***EEUFM1C471L***
470	1290	0.038	10.0 x 12.5	5.0	***EEUFM1C471***
680	1560	0.030	8.0 x 20.0	3.5	***EEUFM1C681L***
680	1790	0.026	10.0 x 16.0	5.0	***EEUFM1C681***
1000	2180	0.019	10.0 x 20.0	5.0	***EEUFM1C102***
1200	2470	0.018	10.0 x 25.0	5.0	***EEUFM1C122L***
1500	2600	0.018	12.5 x 20.0	5.0	***EEUFM1C152***
2200	3190	0.015	12.5 x 30.0	5.0	***EEUFM1C222***
2700	3630	0.013	12.5 x 30.0	5.0	***EEUFM1C272L***
2700	3300	0.017	16.0 x 20.0	7.5	***EEUFM1C272S***
3300	3750	0.012	12.5 x 35.0	5.0	***EEUFM1C332L***
3900	3820	0.014	16.0 x 25.0	7.5	***EEUFM1C392***

continued > > > >

continuation

ORDER CODES					
Value (µF)	Ripple Current (mA)	Impedance (Ω)	Dia. x L (mm)	Pitch (mm)	Loose
25 Volt					
47	280	0.300	5.0 x 11.0	2.0	***EEUFM1E470***
100	455	0.130	6.0 x 11.2	2.5	***EEUFM1E101***
220	950	0.056	8.0 x 11.5	3.5	***EEUFM1E221***
330	1240	0.041	8.0 x 15.0	3.5	***EEUFM1E331L***
330	1290	0.038	10.0 x 12.5	5.0	***EEUFM1E331***
470	1560	0.030	8.0 x 20.0	3.5	***EEUFM1E471L***
470	1790	0.026	10.0 x 16.0	5.0	***EEUFM1E471***
680	2180	0.019	10.0 x 20.0	5.0	***EEUFM1E681***
820	2470	0.018	10.0 x 25.0	5.0	***EEUFM1E821L***
1000	2600	0.018	12.5 x 20.0	5.0	***EEUFM1E102***
1500	3190	0.015	12.5 x 25.0	5.0	***EEUFM1E152***
1800	3630	0.013	12.5 x 30.0	5.0	***EEUFM1E182L***
1800	3300	0.017	16.0 x 20.0	7.5	***EEUFM1E182S***
2200	3750	0.012	12.5 x 35.0	5.0	***EEUFM1E222L***
2700	3820	0.014	16.0 x 25.0	7.5	***EEUFM1E272***
35 Volt					
33	280	0.300	5.0 x 11.0	2.0	***EEUFM1V330***
68	455	0.130	6.0 x 11.2	2.5	***EEUFM1V680***
150	950	0.056	8.0 x 11.5	3.5	***EEUFM1V151***
220	1240	0.041	8.0 x 15.0	3.5	***EEUFM1V221L***
220	1290	0.038	10.0 x 12.5	5.0	***EEUFM1V221***
330	1560	0.030	8.0 x 20.0	3.5	***EEUFM1V331L***
330	1790	0.026	10.0 x 16.0	5.0	***EEUFM1V331***
470	2180	0.019	10.0 x 20.0	5.0	***EEUFM1V471***
560	2470	0.018	10.0 x 25.0	5.0	***EEUFM1V561L***
680	2600	0.018	12.5 x 20.0	5.0	***EEUFM1V681***
1000	3190	0.015	12.5 x 25.0	5.0	***EEUFM1V102***
1200	3630	0.013	12.5 x 30.0	5.0	***EEUFM1V122L***
1200	3300	0.017	16.0 x 20.0	7.5	***EEUFM1V122S***
1500	3750	0.012	12.5 x 35.0	5.0	***EEUFM1V152L***
1800	3820	0.014	16.0 x 25.0	7.5	***EEUFM1V182***
50 Volt					
22	250	0.340	5.0 x 11.0	2.0	***EEUFM1H220***
56	405	0.140	6.0 x 11.2	2.5	***EEUFM1H560***
100	870	0.061	8.0 x 11.5	3.5	***EEUFM1H101***
120	1140	0.045	8.0 x 15.0	3.5	***EEUFM1H121L***
150	1170	0.042	10.0 x 12.5	5.0	***EEUFM1H151***
180	1430	0.033	8.0 x 20.0	3.5	***EEUFM1H181L***
220	1650	0.030	10.0 x 16.0	5.0	***EEUFM1H221***
270	1890	0.023	10.0 x 20.0	5.0	***EEUFM1H271***
330	2150	0.022	10.0 x 25.0	5.0	***EEUFM1H331L***
470	2260	0.022	12.5 x 20.0	5.0	***EEUFM1H471***
560	2660	0.018	12.5 x 25.0	5.0	***EEUFM1H561***
680	3160	0.016	12.5 x 30.0	5.0	***EEUFM1H681L***
820	3270	0.014	12.5 x 35.0	5.0	***EEUFM1H821L***
820	2870	0.019	16.0 x 20.0	7.5	***EEUFM1H821S***
1000	3320	0.016	16.0 x 25.0	7.5	***EEUFM1H102***

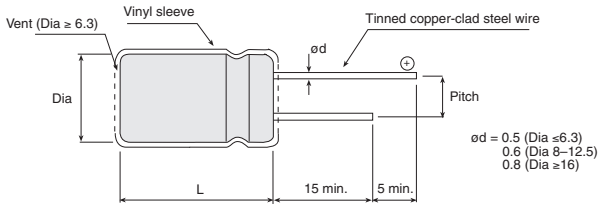


NOVER type LL

A range of low leakage, radial aluminium electrolytic capacitors suitable for timing circuits and low signal coupling applications. The entire range of values and voltages manufactured are listed below and supplied loose or taped and boxed.

- **Low leakage** **≤0.002CV**
- Stable during storage
- Solvent resistant
- Maximum temperature **85°C**
- Capacitance tolerance **20%**
- Body colour **Orange**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification

Conforms to JIS C5141-1982 Char.W

	LL
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C (see also multiplier table below)
Operating temperature range	-40°C to +85°C
Leakage current	≤0.002CV or 0.3μA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

*Add 0.02 for every 1000μF above 1000μF

Rated voltage	6.3V	10V	16V	25V	35V	50V	dc
Tan δ (max)*	0.20	0.17	0.13	0.10	0.10	0.08	

Surge voltage capability

Rated voltage	6.3V	10V	16V	25V	35V	50V	dc
Surge voltage	8V	13V	20V	32V	44V	63V	dc

Multiplier for ripple current

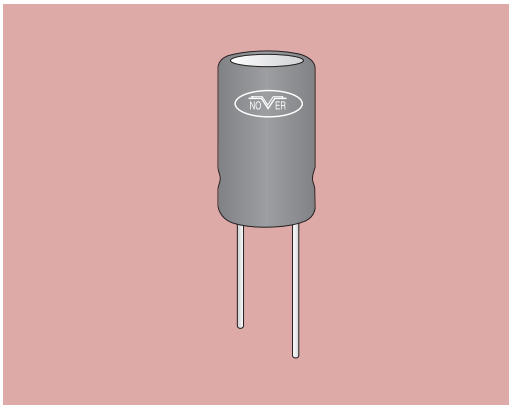
Frequency coefficient						
Rated Voltage (V)	Freq (Hz) / CV (μF.WV)	50/60	120	1k	10k	100k
6.3 ~ 10		0.8	1.0	1.1	1.2	1.2
16 ~ 25	≤1000	0.8	1.0	1.5	1.7	1.7
	>1000	0.8	1.0	1.2	1.3	1.3
35 ~ 50		0.8	1.0	1.6	1.9	1.9

Temperature coefficient		
Temperature (°C)	+70	+85
Factor	1.35	1.0

ORDER CODES

Value (μF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
6.3 Volt					
220	240	8.0 x 11.5	3.5(5)	***059002***	***059002T***
330	300	8.0 x 11.5	3.5(5)	***059003***	***059003T***
470	420	10.0 x 12.5	5.0	***059004***	***059004T***
1000	740	10.0 x 20.0	5.0	***059005***	***059005T***
2200	1220	12.5 x 20.0	5.0	***059006***	***059006T***
10 Volt					
22	56	5.0 x 11.0	2.0(5)	***059007***	***059007T***
33	70	5.0 x 11.0	2.0(5)	***059008***	***059008T***
47	80	5.0 x 11.0	2.0(5)	***059009***	***059009T***
100	140	6.3 x 11.0	2.5(5)	***059010***	***059010T***
220	240	8.0 x 11.5	3.5(5)	***059011***	***059011T***
330	380	10.0 x 12.5	5.0	***059012***	***059012T***
470	500	10.0 x 16.0	5.0	***059013***	***059013T***
1000	910	12.5 x 20.0	5.0	***059014***	***059014T***
2200	1710	12.5 x 25.0	5.0	***059015***	***059015T***
16 Volt					
10	43	5.0 x 11.0	2.0(5)	***059016***	***059016T***
22	74	5.0 x 11.0	2.0(5)	***059017***	***059017T***
33	80	5.0 x 11.0	2.0(5)	***059018***	***059018T***
47	90	5.0 x 11.0	2.0(5)	***059019***	***059019T***
100	200	8.0 x 11.5	3.5(5)	***059020***	***059020T***
220	360	10.0 x 12.5	5.0	***059021***	***059021T***
330	500	10.0 x 16.0	5.0	***059022***	***059022T***
470	620	10.0 x 20.0	5.0	***059023***	***059023T***
1000	1040	12.5 x 25.0	5.0	***059024***	***059024T***
2200	1900	16.0 x 31.5	7.5	***059025***	–
25 Volt					
4.7	34	5.0 x 11.0	2.0(5)	***059026***	***059026T***
10	52	5.0 x 11.0	2.0(5)	***059027***	***059027T***
22	72	5.0 x 11.0	2.0(5)	***059028***	***059028T***
33	100	6.3 x 11.0	2.5(5)	***059029***	***059029T***
47	114	6.3 x 11.0	2.5(5)	***059030***	***059030T***
100	210	8.0 x 11.5	3.5(5)	***059031***	***059031T***
220	400	10.0 x 16.0	5.0	***059032***	***059032T***
330	540	10.0 x 20.0	5.0	***059033***	***059033T***
470	740	12.5 x 20.0	5.0	***059034***	***059034T***
1000	1350	16.0 x 25.0	7.5	***059035***	–
35 Volt					
4.7	34	5.0 x 11.0	2.0(5)	***059036***	***059036T***
10	52	5.0 x 11.0	2.0(5)	***059037***	***059037T***
22	74	6.3 x 11.0	2.5(5)	***059038***	***059038T***
33	100	6.3 x 11.0	2.5(5)	***059039***	***059039T***
47	150	8.0 x 11.5	3.5(5)	***059040***	***059040T***
100	260	10.0 x 12.5	5.0	***059041***	***059041T***
220	460	10.0 x 20.0	5.0	***059042***	***059042T***
330	650	12.5 x 20.0	5.0	***059043***	***059043T***
470	850	12.5 x 25.0	5.0	***059044***	***059044T***
1000	1550	16.0 x 25.0	7.5	***059045***	–
50 Volt					
0.1	5	5.0 x 11.0	2.0(5)	***059046***	***059046T***
0.22	7	5.0 x 11.0	2.0(5)	***059047***	***059047T***
0.33	9	5.0 x 11.0	2.0(5)	***059048***	***059048T***
0.47	14	5.0 x 11.0	2.0(5)	***059049***	***059049T***
1.0	20	5.0 x 11.0	2.0(5)	***059050***	***059050T***
2.2	26	5.0 x 11.0	2.0(5)	***059051***	***059051T***
3.3	32	5.0 x 11.0	2.0(5)	***059052***	***059052T***
4.7	43	5.0 x 11.0	2.0(5)	***059053***	***059053T***
10	70	5.0 x 11.0	2.0(5)	***059054***	***059054T***
22	110	8.0 x 11.5	3.5(5)	***059055***	***059055T***
33	160	10.0 x 12.5	5.0	***059056***	***059056T***
47	210	10.0 x 16.0	5.0	***059057***	***059057T***
100	380	12.5 x 20.0	5.0	***059058***	***059058T***
220	720	16.0 x 25.0	7.5	***059059***	***059059T***
330	880	16.0 x 25.0	7.5	***059060***	***059060T***
470	1150	16.0 x 31.5	7.5	***059061***	–

(5) Leads pre-formed to 5mm pitch on taped part

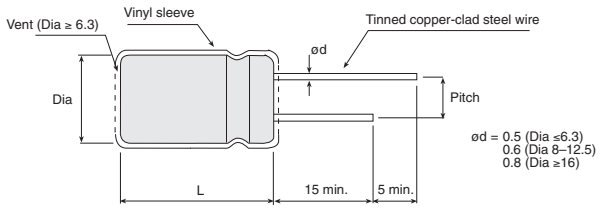


NOVER type RB

A range of bi-polar (non-polarised) radial aluminium electrolytic capacitors suitable for applications where reverse voltage may be applied. Endurance test 2000 hours at 85°C. The most popular values are listed below with other values and voltages being available to order. Supplied loose or taped and boxed.

- **Bi-polar (non-polarised)**
- Longer life
- Endurance **2000 hours at 85°C**
- Solvent resistant
- Capacitance tolerance **20%**
- Body colour **Red**
- Supplied loose or taped & boxed

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.0 to L (2.0 L≥20)

Specification to EIAJ RC-3803

	RB
Endurance test	2000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C (see also multiplier table below)
Operating temperature range	-40°C to +85°C
Leakage current	≤0.03CV + 3µA after 5 min.

Dissipation factor (120Hz, 20°C)

Rated voltage	**50V**	dc
Tan δ (max)	0.14	dc

Surge voltage capability

Rated voltage	**50V**	dc
Surge voltage	63V	dc

Multiplier for ripple current

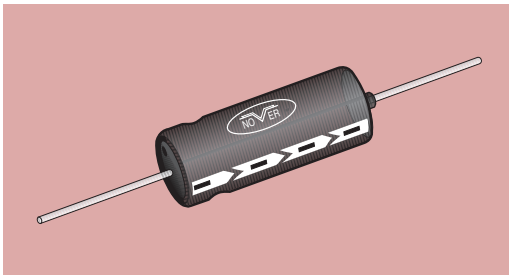
Frequency coefficient					
Freq (Hz)	50/60	120	1k	10k	100k
Factor	0.8	1.0	1.6	1.9	1.9
Temperature coefficient					
Temperature (°C)	+70		+85		
Factor	1.35		1.0		

ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Pitch (mm)	Loose	Taped & Boxed
50 Volt					
0.1	4	5.0 x 11.0	2.0(5)	***050046***	***050046T***
0.22	7	5.0 x 11.0	2.0(5)	***050047***	***050047T***
0.33	8	5.0 x 11.0	2.0(5)	***050048***	***050048T***
0.47	10	5.0 x 11.0	2.0(5)	***050049***	***050049T***
1.0	14	5.0 x 11.0	2.0(5)	***050050***	***050050T***
2.2	21	5.0 x 11.0	2.0(5)	***050051***	***050051T***
3.3	26	5.0 x 11.0	2.0(5)	***050052***	***050052T***
4.7	31	5.0 x 11.0	2.0(5)	***050053***	***050053T***
10	45	5.0 x 11.0	2.0(5)	***050054***	***050054T***
22	77	6.3 x 11.0	2.5(5)	***050055***	***050055T***
33	111	8.0 x 11.5	3.5(5)	***050056***	***050056T***
47	157	10.0 x 12.5	5.0	***050057***	***050057T***
100	273	10.0 x 20.0	5.0	***050058***	***050058T***
220	506	12.5 x 25.0	5.0	***050059***	***050059T***
330	620	12.5 x 25.0	5.0	***050060***	***050060T***
470	861	16.0 x 25.0	7.5	***050061***	***050061T***

(5) Leads pre-formed to 5mm pitch on taped part

Other values and voltages are available to order. Please contact our Sales Desk for details.

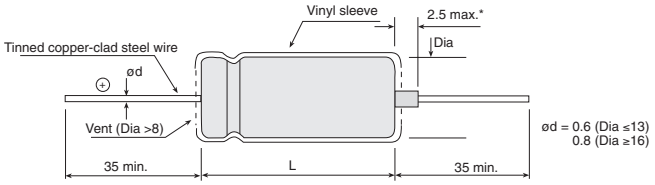


NOVER type TE

Axial lead aluminium electrolytic capacitors manufactured to be highly cost effective whilst maintaining high levels of quality and reliability. Supplied loose, with taped and reeled product available to order.

- **Standard range**
- Maximum temperature **85°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Black**
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.5 to L

* N.B. Allow 2.5mm max. protrusion from -ve lead pip

Specification

Conforms to JIS C5141-1982 Char. W

	TE
Capacitance tolerance	±20% at 120Hz, 25°C
Ripple current (as listed)	measured at 120Hz, 85°C
Operating temperature range	-40°C to +85°C
Leakage current	≤0.01CV or 3µA (≤100V) (whichever is greater) after 2 mins. ≤0.01CV +100µA (>100V) after 5 mins.

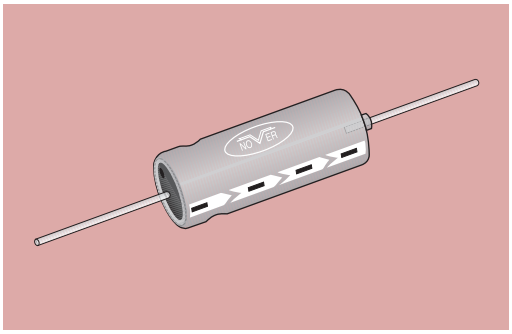
Rated voltage	10V	16V	25V	35V	40V	63V	100V	250V	350V	450V	dc
Surge voltage	13V	20V	32V	44V	50V	79V	125V	300V	400V	500V	dc
Tan δ (max)*	0.20	0.16	0.14	0.12	0.11	0.10	0.08	0.20	0.20	0.25	

*Add 0.02 for every 1000µF above 1000µF.

Taped & reeled product available to order.
Please contact our Sales Desk for details.

ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Loose
10 Volt			
47	75	5.0 x 12.5	***051006***
100	180	6.3 x 12.5	***051007***
220	204	6.3 x 16.0	***051008***
470	400	8.0 x 20.0	***051010***
1000	585	10.0 x 20.0	***051011***
2200	920	13.0 x 25.0	***051012***
4700	1200	16.0 x 30.0	***051014***
16 Volt			
10	40	5.0 x 12.5	***051016***
22	64	5.0 x 12.5	***051017***
47	92	6.3 x 12.5	***051019***
100	160	6.3 x 12.5	***051020***
220	280	8.0 x 16.0	***051021***
470	450	8.0 x 20.0	***051023***
1000	760	10.0 x 25.0	***051024***
2200	1200	13.0 x 26.0	***051025***
4700	1900	16.0 x 34.0	***051027***
25 Volt			
10	47	5.0 x 12.5	***051000***
22	70	6.3 x 12.5	***051028***
47	100	6.3 x 12.5	***051030***
100	180	6.3 x 16.5	***051031***
220	300	8.0 x 16.0	***051032***
470	500	10.0 x 20.0	***051034***
1000	950	13.0 x 21.0	***051035***
2200	1450	16.0 x 29.0	***051036***
4700	2160	16.0 x 40.0	***051037***
40 Volt			
10	38	5.0 x 12.5	***051038***
22	67	6.3 x 12.5	***051039***
47	113	8.0 x 16.0	***051041***
100	189	8.0 x 20.0	***051042***
220	335	10.0 x 20.0	***051043***
470	590	13.0 x 26.0	***051045***
1000	1095	16.0 x 34.0	***051046***
2200	1624	18.0 x 40.0	***051047***
4700 (35V)	2300	18.0 x 40.0	***051049***
63 Volt			
1.0	16	5.0 x 12.5	***051058***
2.2	21	5.0 x 12.5	***051059***
4.7	38	6.3 x 12.5	***051061***
10	62	6.3 x 12.5	***051062***
22	100	6.3 x 12.5	***051063***
47	180	8.0 x 16.0	***051065***
100	280	10.0 x 16.0	***051066***
220	470	10.0 x 25.0	***051067***
470	900	13.0 x 26.0	***051069***
1000	1500	16.0 x 40.0	***051070***
2200	2060	22.0 x 40.0	***051071***
100 Volt			
1.0	12	5.0 x 12.5	***051073***
2.2	21	6.3 x 12.5	***051074***
4.7	39	6.3 x 12.5	***051076***
10	75	6.3 x 16.5	***051077***
22	120	8.0 x 16.0	***051078***
47	230	10.0 x 20.0	***051080***
100	420	13.0 x 21.0	***051081***
220	700	13.0 x 30.0	***051082***
470	1031	16.0 x 40.0	***051084***
1000	1447	22.0 x 40.0	***051085***
250 Volt			
1.0	13	6.3 x 16.0	***051099***
2.2	23	8.0 x 16.0	***051100***
4.7	37	8.0 x 20.0	***051102***
10	57	10.0 x 16.0	***051103***
22	101	10.0 x 25.0	***051104***
47	184	13.0 x 25.0	***051106***
350 Volt			
10	62	10.0 x 20.0	***051114***
22	109	13.0 x 20.0	***051115***
47	147	16.0 x 33.0	***051117***
450 Volt			
1.0	19	8.0 x 16.0	***051121***
2.2	30	10.0 x 20.0	***051122***
4.7	50	10.0 x 25.0	***051124***
10	80	13.0 x 20.0	***051125***
22	130	13.0 x 30.0	***051126***
47	230	18.0 x 40.0	***051128***
100	470	22.0 x 40.0	***051129***

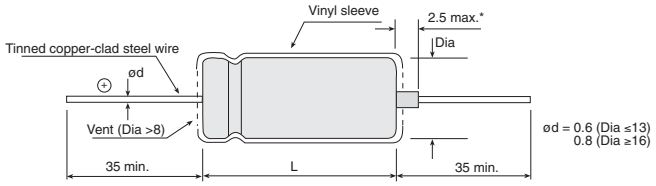


NOVER type TH

Axial lead aluminium electrolytic capacitors with an extended upper temperature limit of 105°C. Ideal for equipment running at high ambient temperatures where a greater climatic safety margin and improved reliabilty is required. Supplied loose, with taped and reeled product available to order.

- **High temperature**
- Maximum temperature **105°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Light Green**
- Supplied loose

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 0.5 to Dia and 1.5 to L

* N.B. Allow 2.5mm max. protrusion from -ve lead pip

Specification

Conforms to JIS C5141-1982 Char. W

	TH
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Operating temperature range	-40°C to +105°C
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

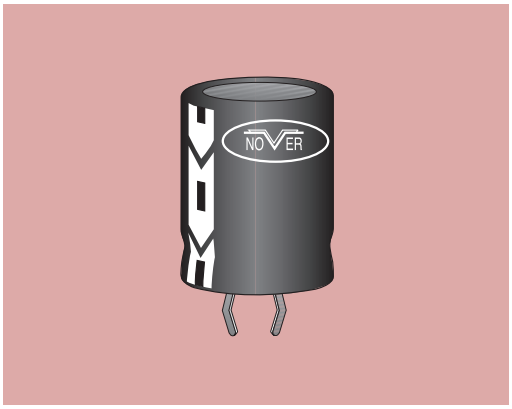
Rated voltage	10V	16V	25V	35V	63V	100V	dc
Surge voltage	13V	20V	32V	44V	79V	125V	dc
Tan δ (max.)*	0.20	0.17	0.15	0.12	0.10	0.08	

*Add 0.02 for every 1000µF above 1000µF.

Taped & reeled product available to order.
Please contact our Sales Desk for details.

ORDER CODES

Value (µF)	Ripple Current (mA)	Dia. x L (mm)	Loose
10 Volt			
22	38	5.0 x 12.5	***062004***
47	56	5.0 x 12.5	***062006***
100	93	6.3 x 12.5	***062007***
220	177	6.3 x 16.0	***062008***
470	267	8.0 x 20.0	***062010***
1000	488	10.0 x 20.0	***062011***
2200	783	13.0 x 25.0	***062012***
4700	1483	16.0 x 30.0	***062014***
16 Volt			
22	38	5.0 x 12.5	***062017***
47	61	6.3 x 12.5	***062019***
100	101	6.3 x 16.0	***062020***
220	177	8.0 x 16.0	***062021***
470	329	10.0 x 16.0	***062023***
1000	572	10.0 x 25.0	***062024***
2200	912	13.0 x 30.0	***062025***
4700	1585	16.0 x 40.0	***062027***
25 Volt			
10	27	5.0 x 12.5	***062000***
22	44	6.3 x 12.5	***062028***
47	73	6.3 x 12.5	***062030***
100	127	8.0 x 16.0	***062031***
220	210	8.0 x 20.0	***062032***
470	384	10.0 x 20.0	***062034***
1000	672	13.0 x 25.0	***062035***
2200	1099	16.0 x 30.0	***062036***
4700	1498	18.0 x 40.0	***062037***
35 Volt			
10	30	5.0 x 12.5	***062038***
22	49	6.3 x 12.5	***062039***
47	82	6.3 x 16.0	***062041***
100	158	8.0 x 16.0	***062042***
220	266	10.0 x 16.0	***062043***
470	467	10.0 x 25.0	***062045***
1000	816	13.0 x 30.0	***062046***
2200	1140	16.0 x 40.0	***062047***
4700	1550	22.0 x 40.0	***062049***
63 Volt			
1.0	10	5.0 x 12.5	***062058***
2.2	15	5.0 x 12.5	***062059***
4.7	25	6.3 x 12.5	***062061***
10	36	6.3 x 12.5	***062062***
22	61	6.3 x 16.0	***062063***
47	117	8.0 x 16.0	***062065***
100	196	10.0 x 16.0	***062066***
220	346	10.0 x 25.0	***062067***
470	597	13.0 x 30.0	***062069***
1000	1163	16.0 x 40.0	***062070***
2200	1320	22.0 x 40.0	***062071***
100 Volt			
1.0	10	5.0 x 12.5	***062073***
2.2	17	6.3 x 12.5	***062074***
4.7	25	6.3 x 12.5	***062076***
10	45	6.3 x 16.0	***062077***
22	81	8.0 x 16.0	***062078***
47	134	10.0 x 20.0	***062080***
100	255	10.0 x 25.0	***062081***
220	439	13.0 x 30.0	***062082***

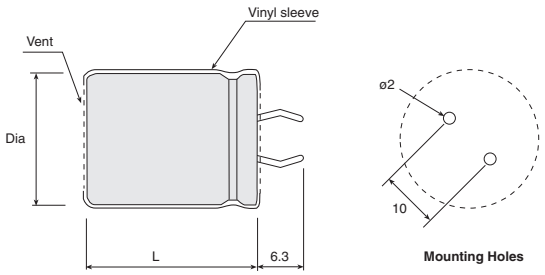


NOVER type LS

A range of high CV, high ripple current, aluminium electrolytic capacitors suitable for general purpose use. Housed in compact bodies and fitted with two snap-in pcb terminals on a standard 10mm pitch. Endurance test 2000 hours at 85°C. N.B. Other values, voltages and can sizes are available to order.

- **General purpose**
- High CV
- High ripple current
- Compact body
- Snap-in terminals **10mm pitch**
- Endurance test **2000 hours at 85°C**
- Maximum temperature **85°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Black**

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 1.0 to Dia and 2.0 to L

Specification

Conforms to JIS C5141-1982 Char. W

	LS
Endurance test	2000 hours at 85°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C (see also multiplier table below)
Operating temperature range	-40°C to +85°C (16 ~ 100V) -25°C to +85°C (200 ~ 450V)
Leakage current	≤0.01CV or 3µA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

*Add 0.02 for every 1000µF above 5000µF

Rated voltage	16V	25V	35V	50V	63V	100V	dc
Tan δ (max)*	0.40	0.30	0.25	0.20	0.15	0.15	
Rated voltage	200V	250V	400V	450V			dc
Tan δ (max)	0.15	0.15	0.15	0.15			

Surge voltage capability

Rated voltage	16V	25V	35V	50V	63V	100V	dc
Surge voltage	20V	32V	44V	63V	79V	125V	dc
Rated voltage	200V	250V	400V	450V			dc
Surge voltage	250V	300V	450V	500V			dc

Multiplier for ripple current

Frequency coefficient					
Freq (Hz) / Rated Voltage(V)	50	120	1k	10k	20k
16 ~ 50	0.95	1.0	1.10	1.15	1.15
63 ~ 100	0.95	1.0	1.16	1.30	1.33
200 ~ 450	0.90	1.0	1.20	1.50	1.55

Temperature coefficient				
Temperature (°C) / Rated Voltage(V)	+40	+55	+70	+85
<200	2.1	1.8	1.5	1.0
≥200	1.7	1.5	1.3	1.0

ORDER CODES

Value (µF)	Ripple Current (A)	Dia. x L (mm)	Order Code
16 Volt			
4700	2.20	22.0 x 25.0	***054002***
6800	2.33	22.0 x 25.0	***054003***
8200	2.56	22.0 x 30.0	***054053***
10000	2.81	22.0 x 30.0	***054004***
15000	3.64	25.0 x 30.0	***054005***
22000	4.44	25.0 x 40.0	***054006***
33000	5.38	30.0 x 45.0	***054007***
25 Volt			
4700	2.18	22.0 x 25.0	***054101***
6800	2.56	22.0 x 30.0	***054102***
8200	2.80	22.0 x 35.0	***054123***
8200	2.86	25.0 x 40.0	***054103***
10000	3.12	22.0 x 40.0	***054125***
10000	3.16	25.0 x 30.0	***054105***
15000	4.00	25.0 x 40.0	***054106***
22000	5.19	30.0 x 40.0	***054107***
35 Volt			
3300	2.14	22.0 x 25.0	***054203***
4700	2.24	22.0 x 30.0	***054224***
4700	2.28	25.0 x 25.0	***054204***
6800	2.89	25.0 x 35.0	***054205***
8200	3.33	25.0 x 40.0	***054255***
10000	3.59	25.0 x 40.0	***054226***
10000	3.62	25.0 x 45.0	***054206***
10000	3.70	30.0 x 40.0	***054216***
15000	4.80	30.0 x 45.0	***054207***
22000	6.40	30.0 x 50.0	***054208***
50 Volt			
2200	1.93	22.0 x 30.0	***054303***
3300	2.41	22.0 x 30.0	***054304***
4700	3.01	22.0 x 40.0	***054305***
4700	3.01	35.0 x 25.0	***054315***
6800	3.79	25.0 x 40.0	***054326***
6800	3.87	30.0 x 35.0	***054306***
8200	4.42	30.0 x 40.0	***054356***
10000	5.02	30.0 x 40.0	***054327***
10000	5.06	30.0 x 45.0	***054307***
15000	6.44	35.0 x 50.0	***054308***
63 Volt			
2200	2.24	22.0 x 30.0	***054414***
2200	2.30	25.0 x 25.0	***054424***
2200	2.35	25.0 x 30.0	***054404***
3300	2.69	25.0 x 30.0	***054425***
3300	2.73	25.0 x 40.0	***054405***
4700	1.96	35.0 x 25.0	***054436***
4700	3.32	25.0 x 40.0	***054426***
4700	3.37	30.0 x 30.0	***054416***
4700	3.42	30.0 x 40.0	***054406***
6800	4.41	30.0 x 40.0	***054427***
6800	4.47	30.0 x 50.0	***054407***
8200	4.90	30.0 x 50.0	***054428***
10000	5.32	35.0 x 40.0	***054438***
10000	5.49	35.0 x 50.0	***054408***

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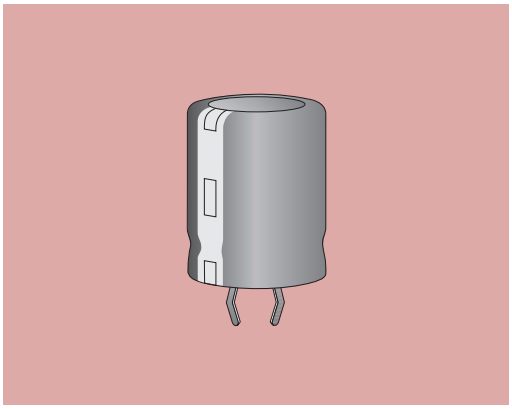
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ORDER CODES

Value (µF)	Ripple Current (A)	Dia. x L (mm)	Order Code
100 Volt			
1000	2.10	22.0 x 30.0	***054504***
2200	3.20	30.0 x 40.0	***054506***
3300	4.10	35.0 x 45.0	***054507***
4700	5.10	35.0 x 40.0	***054528***
4700	5.14	35.0 x 45.0	***054508***
200 Volt			
220	1.10	22.0 x 30.0	***054703***
330	1.48	22.0 x 30.0	***054734***
330	1.50	25.0 x 30.0	***054724***
330	1.50	22.0 x 40.0	***054704***
470	1.86	25.0 x 35.0	***054725***
470	1.90	25.0 x 40.0	***054705***
680	2.36	25.0 x 40.0	***054736***
680	2.40	25.0 x 45.0	***054726***
680	2.44	25.0 x 50.0	***054706***
820	2.69	30.0 x 40.0	***054756***
1000	2.88	35.0 x 30.0	***054727***
1000	3.05	35.0 x 40.0	***054707***
250 Volt			
220	1.30	22.0 x 35.0	***054803***
330	1.68	25.0 x 35.0	***054804***
470	2.05	25.0 x 40.0	***054805***
680	2.78	30.0 x 45.0	***054806***
820	3.13	30.0 x 50.0	***054807***
1000	3.50	35.0 x 50.0	***054808***
400 Volt			
47	0.50	22.0 x 25.0	***054902***
100	0.72	22.0 x 30.0	***054904***
150	0.95	25.0 x 30.0	***054905***
220	1.23	30.0 x 30.0	***054926***
220	1.25	30.0 x 35.0	***054906***
330	1.61	30.0 x 40.0	***054927***
330	1.68	30.0 x 45.0	***054907***
470	2.10	35.0 x 40.0	***054928***
470	2.15	35.0 x 45.0	***054908***
450 Volt			
47	0.56	22.0 x 25.0	***054973***
100	0.70	25.0 x 35.0	***054975***
150	1.08	25.0 x 40.0	***054976***
220	1.30	30.0 x 45.0	***054977***
330	1.49	35.0 x 45.0	***054978***
470	1.92	35.0 x 50.0	***054979***

Other values, voltages and can sizes are available to order.
Please contact our Sales Desk for details.

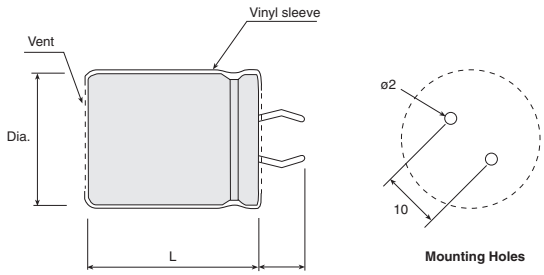


PANASONIC TS-UP Series

General purpose aluminium electrolytic capacitors with a 2 pin, snap-in terminal configuration on a standard 10mm pitch and offering a choice of terminal length. Housed in compact bodies, the devices are available in a wide range of values and voltages and are endurance tested up to 3000 hours at 85°C. Other values and voltages are available to order.

- **General purpose**
- Compact body
- Snap-in terminals **10mm pitch**
- Choice of terminal length
- Endurance test **Up to 3000 hours at 85°C**
- Capacitance tolerance **20%**
- Leakage current **$\leq 3\sqrt{CV}$**

Dimensions (mm)



ECEC 4.0mm terminal length
ECOS 6.3mm terminal length

Dia. x L are can sizes only. To allow for sleeve add 1.0 to Dia. and 2.0 to L

Specification

Specification	TS-UP
Endurance test	3000 hours at 85°C (2000 hours L = 20)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 85°C
Dissipation factor (see table)	Tan δ (max.) measured at 120Hz, 20°C
Operating temperature range	-40°C to +85°C (16V to 250V) -25°C to +85°C (>250V)
Leakage current	$\leq 3\sqrt{CV}$ (µA) after 5 min.

Surge voltage capability & dissipation factor

Rated voltage	16V	25V	35V	50V	63V	100V	200V	250V	400V	450V	500V	dc
Surge voltage	20V	32V	44V	63V	79V	125V	250V	300V	450V	500V	525V	dc
Tan δ (max.)*	0.50	0.40	0.35	0.30	0.25	0.20	0.15	0.15	0.15	0.20	0.15	

* For capacitance values >33000µF, add the sum of: $\frac{\text{Value (µF) - 33000µF}}{\text{10000µF}}$ x 0.1

ORDER CODES

Value (µF)	Ripple Current (A)	Dimensions (mm) Dia. x L	4.0mm Terminals	6.3mm Terminals
16 Volt				
4700	1.60	22 x 20	***ECEC1CP472BL***	***ECOS1CP472BL***
6800	3.15	20 x 25	***ECEC1CP682AA***	***ECOS1CP682AA***
6800	1.80	25 x 20	***ECEC1CP682CL***	***ECOS1CP682CL***
8200	3.47	20 x 30	***ECEC1CP822AA***	***ECOS1CP822AA***
10000	3.78	22 x 30	***ECEC1CP103BA***	***ECOS1CP103BA***
10000	3.78	25 x 25	***ECEC1CP103CA***	***ECOS1CP103CA***
12000	4.52	25 x 25	***ECEC1CP123CA***	***ECOS1CP123CA***
15000	5.26	25 x 30	***ECEC1CP153CA***	***ECOS1CP153CA***
22000	6.10	25 x 35	***ECEC1CP223CA***	***ECOS1CP223CA***
33000	6.84	25 x 50	***ECEC1CP333CA***	***ECOS1CP333CA***
33000	6.84	35 x 30	***ECEC1CP333EA***	***ECOS1CP333EA***
47000	7.47	30 x 50	***ECEC1CP473DA***	***ECOS1CP473DA***
47000	7.47	35 x 40	***ECEC1CP473EA***	***ECOS1CP473EA***
68000	9.05	35 x 50	***ECEC1CP683EA***	***ECOS1CP683EA***
25 Volt				
3300	1.60	22 x 20	***ECEC1EP332BL***	***ECOS1EP332BL***
4700	3.05	20 x 25	***ECEC1EP472AA***	***ECOS1EP472AA***
6800	3.47	22 x 30	***ECEC1EP682BA***	***ECOS1EP682BA***
8200	3.57	22 x 30	***ECEC1EP822BA***	***ECOS1EP822BA***
10000	3.78	25 x 30	***ECEC1EP103CA***	***ECOS1EP103CA***
12000	4.10	25 x 35	***ECEC1EP123CA***	***ECOS1EP123CA***
15000	4.63	25 x 40	***ECEC1EP153CA***	***ECOS1EP153CA***
22000	6.10	30 x 40	***ECEC1EP223DA***	***ECOS1EP223DA***
33000	6.84	35 x 40	***ECEC1EP333EA***	***ECOS1EP333EA***
47000	8.00	35 x 50	***ECEC1EP473EA***	***ECOS1EP473EA***
35 Volt				
2200	1.40	22 x 20	***ECEC1VP222BL***	***ECOS1VP222BL***
3300	2.73	20 x 25	***ECEC1VP332AA***	***ECOS1VP332AA***
4700	3.26	22 x 30	***ECEC1VP472BA***	***ECOS1VP472BA***
4700	3.26	25 x 25	***ECEC1VP472CA***	***ECOS1VP472CA***
6800	3.68	22 x 35	***ECEC1VP682BA***	***ECOS1VP682BA***
6800	3.68	25 x 30	***ECEC1VP682CA***	***ECOS1VP682CA***
8200	4.00	25 x 35	***ECEC1VP822CA***	***ECOS1VP822CA***
10000	4.42	25 x 40	***ECEC1VP103CA***	***ECOS1VP103CA***
10000	4.42	30 x 30	***ECEC1VP103DA***	***ECOS1VP103DA***
12000	5.05	30 x 35	***ECEC1VP123DA***	***ECOS1VP123DA***
15000	5.57	30 x 40	***ECEC1VP153DA***	***ECOS1VP153DA***
22000	6.10	30 x 50	***ECEC1VP223DA***	***ECOS1VP223DA***
33000	7.15	35 x 50	***ECEC1VP333EA***	***ECOS1VP333EA***

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Screw cap and stud mount types are also available from EPCOS, B41xxx & B43xxx series.

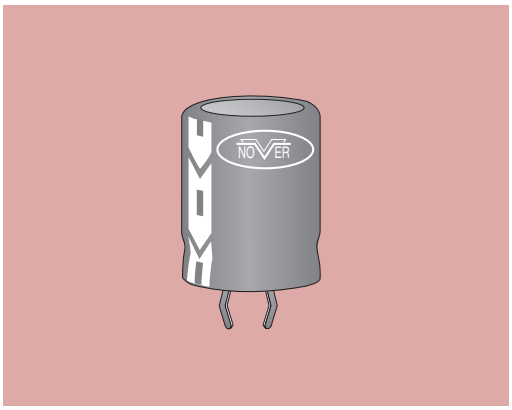
Please contact our Sales Desk for details.

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ORDER CODES

Value (µF)	Ripple Current (A)	Dimensions (mm) Dia. x L	4.0mm Terminals	6.3mm Terminals
50 Volt				
1500	1.20	22.0 x 20.0	ECEC1HP152BL	ECOS1HP152BL
2200	2.26	20.0 x 25.0	ECEC1HP222AA	ECOS1HP222AA
3300	2.73	22.0 x 30.0	ECEC1HP332BA	ECOS1HP332BA
4700	3.03	22.0 x 35.0	ECEC1HP472BA	ECOS1HP472BA
4700	3.03	30.0 x 25.0	ECEC1HP472DA	ECOS1HP472DA
6800	3.85	30.0 x 30.0	ECEC1HP682DA	ECOS1HP682DA
8200	4.41	30.0 x 35.0	ECEC1HP822DA	ECOS1HP822DA
10000	4.97	30.0 x 40.0	ECEC1HP103DA	ECOS1HP103DA
10000	4.97	35.0 x 30.0	ECEC1HP103EA	ECOS1HP103EA
12000	5.58	35.0 x 35.0	ECEC1HP123EA	ECOS1HP123EA
15000	6.44	35.0 x 40.0	ECEC1HP153EA	ECOS1HP153EA
22000	7.57	35.0 x 50.0	ECEC1HP223EA	ECOS1HP223EA
63 Volt				
1000	1.20	22.0 x 20.0	ECEC1JP102BL	ECOS1JP102BL
1500	1.30	25.0 x 20.0	ECEC1JP152CL	ECOS1JP152CL
2200	2.52	22.0 x 30.0	ECEC1JP222BA	ECOS1JP222BA
2200	2.52	25.0 x 25.0	ECEC1JP222CA	ECOS1JP222CA
3300	4.10	25.0 x 30.0	ECEC1JP332CA	ECOS1JP332CA
4700	4.86	25.0 x 40.0	ECEC1JP472CA	ECOS1JP472CA
4700	4.86	30.0 x 30.0	ECEC1JP472DA	ECOS1JP472DA
6800	5.84	30.0 x 40.0	ECEC1JP682DA	ECOS1JP682DA
6800	5.84	35.0 x 30.0	ECEC1JP682EA	ECOS1JP682EA
8200	6.00	35.0 x 35.0	ECEC1JP822EA	ECOS1JP822EA
10000	6.52	35.0 x 40.0	ECEC1JP103EA	ECOS1JP103EA
12000	7.15	35.0 x 50.0	ECEC1JP123EA	ECOS1JP123EA
100 Volt				
470	1.00	22.0 x 20.0	ECEC2AP471BL	ECOS2AP471BL
680	1.61	22.0 x 25.0	ECEC2AP681BA	ECOS2AP681BA
1000	1.96	20.0 x 35.0	ECEC2AP102AA	ECOS2AP102AA
1000	1.96	22.0 x 30.0	ECEC2AP102BA	ECOS2AP102BA
1200	2.31	22.0 x 35.0	ECEC2AP122BA	ECOS2AP122BA
1500	2.57	25.0 x 30.0	ECEC2AP152CA	ECOS2AP152CA
2200	3.14	25.0 x 40.0	ECEC2AP222CA	ECOS2AP222CA
2200	3.14	30.0 x 30.0	ECEC2AP222DA	ECOS2AP222DA
3300	4.06	25.0 x 50.0	ECEC2AP332CA	ECOS2AP332CA
3300	4.06	30.0 x 40.0	ECEC2AP332DA	ECOS2AP332DA
4700	5.13	30.0 x 50.0	ECEC2AP472DA	ECOS2AP472DA
4700	5.13	35.0 x 40.0	ECEC2AP472EA	ECOS2AP472EA
6800	6.60	35.0 x 50.0	ECEC2AP682EA	ECOS2AP682EA
200 Volt				
150	0.65	22.0 x 20.0	ECEC2DP151BL	ECOS2DP151BL
220	0.87	25.0 x 20.0	ECEC2DP221CL	ECOS2DP221CL
330	1.56	22.0 x 30.0	ECEC2DP331BA	ECOS2DP331BA
470	1.85	25.0 x 30.0	ECEC2DP471CA	ECOS2DP471CA
680	2.68	25.0 x 35.0	ECEC2DP681CA	ECOS2DP681CA
820	2.93	30.0 x 35.0	ECEC2DP821DA	ECOS2DP821DA
1000	3.25	25.0 x 50.0	ECEC2DP102CA	ECOS2DP102CA
1000	3.25	35.0 x 30.0	ECEC2DP102EA	ECOS2DP102EA
1200	3.50	35.0 x 35.0	ECEC2DP122EA	ECOS2DP122EA
1500	3.87	30.0 x 50.0	ECEC2DP152DA	ECOS2DP152DA
2200	4.92	35.0 x 50.0	ECEC2DP222EA	ECOS2DP222EA
250 Volt				
120	0.45	22.0 x 20.0	ECEC2EP121BL	ECOS2EP121BL
150	0.65	25.0 x 20.0	ECEC2EP151CL	ECOS2EP151CL
220	1.17	22.0 x 30.0	ECEC2EP221BA	ECOS2EP221BA
330	1.75	22.0 x 35.0	ECEC2EP331BA	ECOS2EP331BA
330	1.10	35.0 x 20.0	ECEC2EP331EL	ECOS2EP331EL
470	2.11	25.0 x 40.0	ECEC2EP471CA	ECOS2EP471CA
470	2.11	30.0 x 30.0	ECEC2EP471DA	ECOS2EP471DA
680	2.50	25.0 x 50.0	ECEC2EP681CA	ECOS2EP681CA
820	2.77	35.0 x 35.0	ECEC2EP821EA	ECOS2EP821EA
1000	3.32	30.0 x 50.0	ECEC2EP102DA	ECOS2EP102DA
1000	3.32	35.0 x 40.0	ECEC2EP102EA	ECOS2EP102EA
1200	3.53	35.0 x 45.0	ECEC2EP122EA	ECOS2EP122EA
1500	4.04	35.0 x 50.0	ECEC2EP152EA	ECOS2EP152EA
400 Volt				
47	0.25	22.0 x 20.0	ECEC2GP470BL	ECOS2GP470BL
68	0.69	22.0 x 25.0	ECEC2GP680BA	ECOS2GP680BA
82	0.83	20.0 x 30.0	ECEC2GP820AA	ECOS2GP820AA
100	0.92	22.0 x 30.0	ECEC2GP101BA	ECOS2GP101BA
120	1.02	25.0 x 30.0	ECEC2GP121CA	ECOS2GP121CA
150	1.16	25.0 x 30.0	ECEC2GP151CA	ECOS2GP151CA
220	1.49	25.0 x 40.0	ECEC2GP221CA	ECOS2GP221CA
220	1.49	30.0 x 30.0	ECEC2GP221DA	ECOS2GP221DA
330	1.90	30.0 x 40.0	ECEC2GP331DA	ECOS2GP331DA
330	1.90	35.0 x 35.0	ECEC2GP331EA	ECOS2GP331EA
470	2.39	35.0 x 45.0	ECEC2GP471EA	ECOS2GP471EA
560	2.69	35.0 x 50.0	ECEC2GP561EA	ECOS2GP561EA
450 Volt				
33	0.20	22.0 x 20.0	ECEC2WP330BL	ECOS2WP330BL
47	0.29	25.0 x 20.0	ECEC2WP470CL	ECOS2WP470CL
68	0.76	22.0 x 30.0	ECEC2WP680BA	ECOS2WP680BA
82	0.83	22.0 x 30.0	ECEC2WP820BA	ECOS2WP820BA
100	0.93	25.0 x 30.0	ECEC2WP101CA	ECOS2WP101CA
120	1.04	25.0 x 30.0	ECEC2WP121CA	ECOS2WP121CA
150	1.19	25.0 x 40.0	ECEC2WP151CA	ECOS2WP151CA
220	1.55	25.0 x 50.0	ECEC2WP221CA	ECOS2WP221CA
220	1.55	30.0 x 40.0	ECEC2WP221DA	ECOS2WP221DA
330	2.01	30.0 x 50.0	ECEC2WP331DA	ECOS2WP331DA
330	2.01	35.0 x 40.0	ECEC2WP331EA	ECOS2WP331EA
470	2.53	35.0 x 50.0	ECEC2WP471EA	ECOS2WP471EA
500 Volt				
47	0.63	22.0 x 25.0	ECEC2HP470BA	ECOS2HP470BA
56	0.70	22.0 x 30.0	ECEC2HP560BA	ECOS2HP560BA
68	0.78	25.0 x 25.0	ECEC2HP680CA	ECOS2HP680CA
82	0.88	25.0 x 30.0	ECEC2HP820CA	ECOS2HP820CA
100	0.99	25.0 x 35.0	ECEC2HP101CA	ECOS2HP101CA
120	1.13	25.0 x 40.0	ECEC2HP121CA	ECOS2HP121CA
150	1.29	30.0 x 35.0	ECEC2HP151DA	ECOS2HP151DA
180	1.38	30.0 x 40.0	ECEC2HP181DA	ECOS2HP181DA
220	1.50	30.0 x 45.0	ECEC2HP221DA	ECOS2HP221DA
270	1.76	35.0 x 40.0	ECEC2HP271EA	ECOS2HP271EA
330	1.99	35.0 x 45.0	ECEC2HP331EA	ECOS2HP331EA

Other values and voltages are available to order.
Please contact our Sales Desk for details.

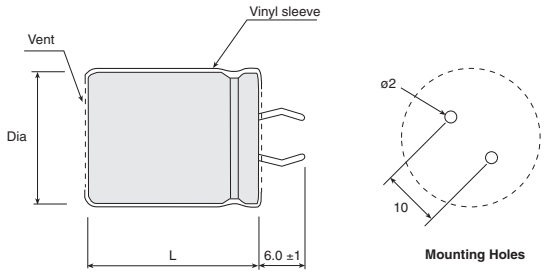


NOVER type LH

Offering a high temperature capability of 105°C and an endurance of 2000 hours, the LH aluminium electrolytic 2 pin, snap-in capacitor range is designed for applications where ambient conditions may exceed the operating specification of the general purpose LS series. The most popular values are listed below with other values and voltages being available to order. Supplied loose.

- **High temperature** **105°C**
- High CV
- High ripple current
- Snap-in terminals **10mm pitch**
- Endurance **2000 hours at 105°C**
- Capacitance tolerance **20%**
- Leakage current **≤0.01CV**
- Body colour **Grey**

Dimensions (mm)



Dia x L are can sizes only. To allow for sleeve add 1.0 to Dia and 2.0 to L

Specification

Conforms to JIS C5141-1982 Char. W

	LH
Endurance test	2000 hours at 105°C
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C (see also multiplier table below)
Operating temperature range	-40°C to +105°C (16 ~ 100V) -25°C to +105°C (200 ~ 400V)
Leakage current	≤0.01CV or 3μA (whichever is greater) after 2 min.

Dissipation factor (120Hz, 20°C)

*Add 0.01 for every 1000μF above 5000μF

Rated voltage	16V	25V	35V	50V	63V	100V	200V	400V	dc
Tan δ (max.)*	0.40	0.30	0.25	0.20	0.15	0.15	0.15	0.15	

Surge voltage capability

Rated voltage	16V	25V	35V	50V	63V	100V	200V	400V	dc
Surge voltage	20V	32V	44V	63V	79V	125V	250V	450V	dc

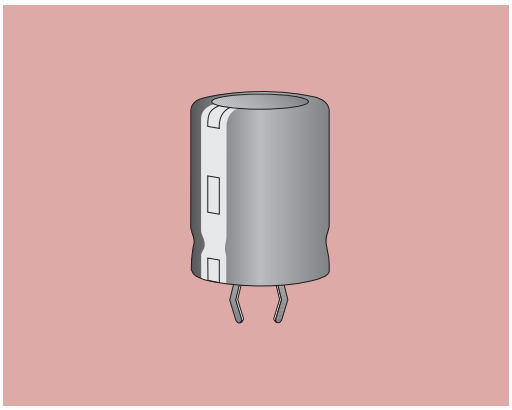
Multiplier for ripple current

Frequency coefficient					
Freq (Hz) / Rated Voltage (V)	50	120	1k	10k	20k
16 ~ 50	0.95	1.0	1.10	1.15	1.15
63 ~ 100	0.95	1.0	1.16	1.30	1.33
200 ~ 400	0.90	1.0	1.20	1.50	1.55
Temperature coefficient					
Temperature (°C)	+40	+55	+70	+85	+105
Factor	2.7	2.5	2.1	1.7	1.0

Other values, voltages and can sizes are available to order. Please contact our Sales Desk for details.

ORDER CODES

Value (μF)	Ripple Current (A)	Dimensions (mm) Dia. x L	Order Code
16 Volt			
4700	1.60	22.0 x 25.0	***055002***
6800	1.75	22.0 x 25.0	***055003***
8200	2.00	22.0 x 30.0	***055053***
10000	2.10	22.0 x 30.0	***055004***
22000	3.36	25.0 x 45.0	***055006***
33000	4.30	30.0 x 45.0	***055007***
25 Volt			
4700	1.61	22.0 x 30.0	***055101***
6800	2.00	22.0 x 40.0	***055104***
6800	2.09	25.0 x 30.0	***055102***
8200	2.34	25.0 x 35.0	***055123***
10000	2.61	25.0 x 40.0	***055105***
22000	4.04	30.0 x 45.0	***055107***
35 Volt			
3300	1.57	22.0 x 30.0	***055203***
4700	2.02	25.0 x 30.0	***055204***
6800	2.31	25.0 x 40.0	***055205***
8200	2.73	25.0 x 45.0	***055255***
10000	3.04	25.0 x 45.0	***055226***
10000	3.05	25.0 x 50.0	***055206***
22000	4.92	35.0 x 50.0	***055208***
50 Volt			
2200	1.60	22.0 x 35.0	***055303***
3300	1.97	25.0 x 35.0	***055304***
4700	2.43	25.0 x 40.0	***055305***
6800	3.30	30.0 x 40.0	***055306***
8200	3.60	30.0 x 45.0	***055356***
10000	4.05	30.0 x 50.0	***055307***
63 Volt			
2200	1.75	25.0 x 30.0	***055404***
3300	2.33	25.0 x 40.0	***055405***
4700	1.96	35.0 x 25.0	***055436***
4700	2.86	30.0 x 40.0	***055406***
6800	3.65	30.0 x 50.0	***055407***
8200	4.04	35.0 x 50.0	***055527***
10000	4.48	35.0 x 50.0	***055408***
100 Volt			
1000	1.47	22.0 x 30.0	***055504***
2200	2.53	25.0 x 50.0	***055514***
2200	2.55	30.0 x 40.0	***055506***
3300	3.30	35.0 x 45.0	***055507***
4700	3.80	35.0 x 50.0	***055508***
200 Volt			
220	0.83	22.0 x 25.0	***055723***
220	1.00	22.0 x 30.0	***055703***
330	1.20	25.0 x 30.0	***055704***
470	1.44	25.0 x 35.0	***055705***
680	1.76	25.0 x 45.0	***055706***
820	2.11	30.0 x 40.0	***055756***
1000	2.40	35.0 x 40.0	***055707***
400 Volt			
47	0.32	22.0 x 25.0	***055902***
100	0.62	22.0 x 35.0	***055904***
150	0.75	22.0 x 40.0	***055905***
150	0.85	25.0 x 40.0	***055925***
220	1.24	30.0 x 40.0	***055906***
330	1.47	30.0 x 50.0	***055907***
470	1.87	35.0 x 50.0	***055908***

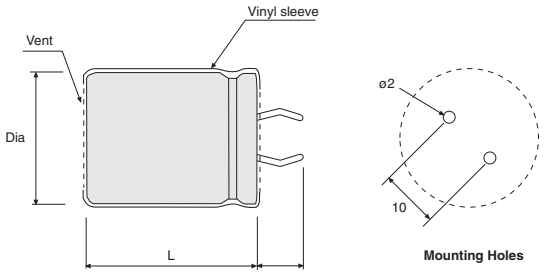


PANASONIC TS-HA/HB Series

High temperature aluminium electrolytic capacitors with a 2 pin, snap-in terminal configuration on a standard 10mm pitch and offering a choice of terminal length. Housed in compact bodies, the devices are available in a wide range of values and voltages and are endurance tested up to 3000 hours at 85°C.

- **High temperature** 105°C
- Compact body
- Snap-in terminals **10mm pitch**
- Choice of terminal length
- Endurance test **Up to 3000 hours at 105°C**
- Capacitance tolerance **20%**
- Leakage current $\leq 3\sqrt{CV}$

Dimensions (mm)



ECEC 4.0mm terminal length
ECOS 6.3mm terminal length

Dia x L are can sizes only. To allow for sleeve add 1.0 to Dia and 2.0 to L

Specification

	TS-HA/HB
Endurance test	3000 hours at 105°C (2000 hours L = 20)
Capacitance tolerance	±20% at 120Hz, 20°C
Ripple current (as listed)	measured at 120Hz, 105°C
Dissipation factor (see table)	Tan δ measured at 120Hz, 20°C
Operating temperature range	-40°C to 105°C (10V to 250V) -25°C to 105°C (>250V)
Leakage current	$\leq 3\sqrt{CV}$ (μA) after 5 min.

Surge voltage capability & dissipation factor

Rated voltage	10V	16V	25V	35V	50V	63V	80V	100V	160V	200V	250V	dc
Surge voltage	13V	20V	32V	44V	63V	79V	100V	125V	200V	250V	300V	dc
Tan δ (max.)*	0.55	0.45	0.35	0.30	0.25	0.20	0.17	0.15	0.15	0.15	0.15	

Rated voltage	385V	400V	420V	450V	dc
Surge voltage	425V	450V	470V	500V	dc
Tan δ (max.)*	0.15	0.15	0.15	0.15	

* For capacitance values >33000μF, add the sum of: $\frac{\text{Value (μF)} - 33000\mu F}{10000\mu F} \times 0.1$

ORDER CODES

Value (μF)	Ripple Current (A)	Dia. x L (mm)	4.0mm Terminals	6.3mm Terminals
10 Volt				
10000	1.80	22.0 x 25.0	***ECEC1AA103BA***	***ECOS1AA103BA***
12000	2.20	22.0 x 30.0	***ECEC1AA123BA***	***ECOS1AA123BA***
15000	2.30	22.0 x 35.0	***ECEC1AA153BA***	***ECOS1AA153BA***
15000	2.30	25.0 x 25.0	***ECEC1AA153CA***	***ECOS1AA153CA***
18000	2.40	22.0 x 40.0	***ECEC1AA183BA***	***ECOS1AA183BA***
18000	2.40	25.0 x 30.0	***ECEC1AA183CA***	***ECOS1AA183CA***
22000	2.60	22.0 x 45.0	***ECEC1AA223BA***	***ECOS1AA223BA***
22000	2.60	25.0 x 35.0	***ECEC1AA223CA***	***ECOS1AA223CA***
22000	2.60	30.0 x 25.0	***ECEC1AA223DA***	***ECOS1AA223DA***
27000	3.10	22.0 x 50.0	***ECEC1AA273BA***	***ECOS1AA273BA***
27000	3.10	25.0 x 40.0	***ECEC1AA273CA***	***ECOS1AA273CA***
27000	3.10	30.0 x 30.0	***ECEC1AA273DA***	***ECOS1AA273DA***
27000	3.10	35.0 x 25.0	***ECEC1AA273EA***	***ECOS1AA273EA***
33000	3.40	25.0 x 45.0	***ECEC1AA333CA***	***ECOS1AA333CA***
33000	3.40	30.0 x 35.0	***ECEC1AA333DA***	***ECOS1AA333DA***
33000	3.40	35.0 x 30.0	***ECEC1AA333EA***	***ECOS1AA333EA***
39000	3.70	25.0 x 50.0	***ECEC1AA393CA***	***ECOS1AA393CA***
39000	3.70	30.0 x 40.0	***ECEC1AA393DA***	***ECOS1AA393DA***
39000	3.70	35.0 x 30.0	***ECEC1AA393EA***	***ECOS1AA393EA***
47000	4.20	30.0 x 45.0	***ECEC1AA473DA***	***ECOS1AA473DA***
47000	4.20	35.0 x 35.0	***ECEC1AA473EA***	***ECOS1AA473EA***
56000	5.00	30.0 x 50.0	***ECEC1AA563DA***	***ECOS1AA563DA***
56000	5.00	35.0 x 40.0	***ECEC1AA563EA***	***ECOS1AA563EA***
68000	5.50	35.0 x 50.0	***ECEC1AA683EA***	***ECOS1AA683EA***
16 Volt				
3300	1.30	22.0 x 20.0	***ECEC1CA332BL***	***ECOS1CA332BL***
4700	1.60	25.0 x 20.0	***ECEC1CA472CL***	***ECOS1CA472CL***
6800	2.20	22.0 x 25.0	***ECEC1CA682BA***	***ECOS1CA682BA***
6800	1.80	30.0 x 20.0	***ECEC1CA682DL***	***ECOS1CA682DL***
8200	2.40	22.0 x 30.0	***ECEC1CA822BA***	***ECOS1CA822BA***
10000	2.60	22.0 x 30.0	***ECEC1CA103BA***	***ECOS1CA103BA***
10000	2.60	25.0 x 25.0	***ECEC1CA103CA***	***ECOS1CA103CA***
10000	2.40	35.0 x 20.0	***ECEC1CA103EL***	***ECOS1CA103EL***
12000	2.90	22.0 x 35.0	***ECEC1CA123BA***	***ECOS1CA123BA***
12000	2.90	25.0 x 30.0	***ECEC1CA123CA***	***ECOS1CA123CA***
12000	2.90	30.0 x 25.0	***ECEC1CA123DA***	***ECOS1CA123DA***
15000	3.20	22.0 x 40.0	***ECEC1CA153BA***	***ECOS1CA153BA***
15000	3.20	25.0 x 35.0	***ECEC1CA153CA***	***ECOS1CA153CA***
15000	3.20	30.0 x 30.0	***ECEC1CA153DA***	***ECOS1CA153DA***
18000	3.50	22.0 x 45.0	***ECEC1CA183BA***	***ECOS1CA183BA***
18000	3.50	25.0 x 40.0	***ECEC1CA183CA***	***ECOS1CA183CA***
18000	3.50	30.0 x 30.0	***ECEC1CA183DA***	***ECOS1CA183DA***
18000	3.50	35.0 x 25.0	***ECEC1CA183EA***	***ECOS1CA183EA***
22000	3.80	25.0 x 45.0	***ECEC1CA223CA***	***ECOS1CA223CA***
22000	3.80	30.0 x 35.0	***ECEC1CA223DA***	***ECOS1CA223DA***
22000	3.80	35.0 x 30.0	***ECEC1CA223EA***	***ECOS1CA223EA***
27000	4.20	25.0 x 50.0	***ECEC1CA273CA***	***ECOS1CA273CA***
27000	4.20	30.0 x 40.0	***ECEC1CA273DA***	***ECOS1CA273DA***
27000	4.20	35.0 x 30.0	***ECEC1CA273EA***	***ECOS1CA273EA***
33000	4.70	30.0 x 45.0	***ECEC1CA333DA***	***ECOS1CA333DA***
33000	4.70	35.0 x 35.0	***ECEC1CA333EA***	***ECOS1CA333EA***
39000	5.10	30.0 x 50.0	***ECEC1CA393DA***	***ECOS1CA393DA***
39000	5.10	35.0 x 40.0	***ECEC1CA393EA***	***ECOS1CA393EA***
47000	5.50	35.0 x 45.0	***ECEC1CA473EA***	***ECOS1CA473EA***
56000	6.00	35.0 x 50.0	***ECEC1CA563EA***	***ECOS1CA563EA***

Screw cap and stud mount types are also available from EPCOS, B41xxx & B43xxx series.

Please contact our Sales Desk for details.

Panasonic TS-HA/HB Series
continued overleaf > > > >

continuation

ORDER CODES

Value (µF)	Ripple Current (A)	Dia. x L (mm)	4.0mm Terminals	6.3mm Terminals
25 Volt				
2200	1.30	22.0 x 20.0	ECEC1EA222BL	ECOS1EA222BL
3300	1.60	25.0 x 20.0	ECEC1EA332CL	ECOS1EA332CL
4700	2.00	22.0 x 25.0	ECEC1EA472BA	ECOS1EA472BA
4700	1.80	30.0 x 20.0	ECEC1EA472DL	ECOS1EA472DL
5600	2.20	22.0 x 30.0	ECEC1EA562BA	ECOS1EA562BA
6800	2.40	22.0 x 30.0	ECEC1EA682BA	ECOS1EA682BA
6800	2.40	25.0 x 25.0	ECEC1EA682CA	ECOS1EA682CA
6800	2.30	35.0 x 20.0	ECEC1EA682EL	ECOS1EA682EL
8200	2.70	22.0 x 35.0	ECEC1EA822BA	ECOS1EA822BA
8200	2.70	25.0 x 30.0	ECEC1EA822CA	ECOS1EA822CA
8200	2.70	30.0 x 25.0	ECEC1EA822DA	ECOS1EA822DA
10000	3.00	22.0 x 40.0	ECEC1EA103BA	ECOS1EA103BA
10000	3.00	25.0 x 35.0	ECEC1EA103CA	ECOS1EA103CA
10000	3.00	30.0 x 30.0	ECEC1EA103DA	ECOS1EA103DA
12000	3.20	22.0 x 45.0	ECEC1EA123BA	ECOS1EA123BA
12000	3.20	25.0 x 40.0	ECEC1EA123CA	ECOS1EA123CA
12000	3.20	30.0 x 30.0	ECEC1EA123DA	ECOS1EA123DA
12000	3.20	35.0 x 25.0	ECEC1EA123EA	ECOS1EA123EA
15000	3.60	25.0 x 45.0	ECEC1EA153CA	ECOS1EA153CA
15000	3.60	30.0 x 35.0	ECEC1EA153DA	ECOS1EA153DA
15000	3.60	35.0 x 30.0	ECEC1EA153EA	ECOS1EA153EA
18000	3.90	25.0 x 50.0	ECEC1EA183CA	ECOS1EA183CA
18000	3.90	30.0 x 40.0	ECEC1EA183DA	ECOS1EA183DA
18000	3.90	35.0 x 35.0	ECEC1EA183EA	ECOS1EA183EA
22000	4.30	30.0 x 45.0	ECEC1EA223DA	ECOS1EA223DA
22000	4.30	35.0 x 35.0	ECEC1EA223EA	ECOS1EA223EA
27000	4.80	35.0 x 45.0	ECEC1EA273EA	ECOS1EA273EA
33000	5.50	35.0 x 50.0	ECEC1EA333EA	ECOS1EA333EA
35 Volt				
1500	1.10	22.0 x 20.0	ECEC1VA152BL	ECOS1VA152BL
2200	1.40	25.0 x 20.0	ECEC1VA222CL	ECOS1VA222CL
3300	1.90	22.0 x 25.0	ECEC1VA332BA	ECOS1VA332BA
3300	1.70	30.0 x 20.0	ECEC1VA332DL	ECOS1VA332DL
3900	2.00	22.0 x 30.0	ECEC1VA392BA	ECOS1VA392BA
4700	2.20	22.0 x 35.0	ECEC1VA472BA	ECOS1VA472BA
4700	2.20	25.0 x 25.0	ECEC1VA472CA	ECOS1VA472CA
4700	2.00	35.0 x 20.0	ECEC1VA472EL	ECOS1VA472EL
5600	2.40	22.0 x 35.0	ECEC1VA562BA	ECOS1VA562BA
5600	2.40	25.0 x 30.0	ECEC1VA562CA	ECOS1VA562CA
5600	2.40	30.0 x 25.0	ECEC1VA562DA	ECOS1VA562DA
6800	2.60	22.0 x 40.0	ECEC1VA682BA	ECOS1VA682BA
6800	2.60	25.0 x 35.0	ECEC1VA682CA	ECOS1VA682CA
6800	2.60	30.0 x 30.0	ECEC1VA682DA	ECOS1VA682DA
8200	2.90	22.0 x 50.0	ECEC1VA822BA	ECOS1VA822BA
8200	2.90	25.0 x 40.0	ECEC1VA822CA	ECOS1VA822CA
8200	2.90	30.0 x 30.0	ECEC1VA822DA	ECOS1VA822DA
8200	2.90	35.0 x 25.0	ECEC1VA822EA	ECOS1VA822EA
10000	3.20	25.0 x 45.0	ECEC1VA103CA	ECOS1VA103CA
10000	3.20	30.0 x 35.0	ECEC1VA103DA	ECOS1VA103DA
10000	3.20	35.0 x 30.0	ECEC1VA103EA	ECOS1VA103EA
12000	3.50	25.0 x 50.0	ECEC1VA123CA	ECOS1VA123CA
12000	3.50	30.0 x 40.0	ECEC1VA123DA	ECOS1VA123DA
12000	3.50	35.0 x 30.0	ECEC1VA123EA	ECOS1VA123EA
15000	3.90	30.0 x 45.0	ECEC1VA153DA	ECOS1VA153DA
15000	3.90	35.0 x 35.0	ECEC1VA153EA	ECOS1VA153EA
18000	4.30	35.0 x 40.0	ECEC1VA183EA	ECOS1VA183EA
22000	5.00	35.0 x 50.0	ECEC1VA223EA	ECOS1VA223EA
50 Volt				
1000	0.90	22.0 x 20.0	ECEC1HA102BL	ECOS1HA102BL
1500	1.20	25.0 x 20.0	ECEC1HA152CL	ECOS1HA152CL
1800	1.50	22.0 x 25.0	ECEC1HA182BA	ECOS1HA182BA
2200	1.70	22.0 x 30.0	ECEC1HA222BA	ECOS1HA222BA
2200	1.40	30.0 x 20.0	ECEC1HA222DL	ECOS1HA222DL
2700	1.80	22.0 x 30.0	ECEC1HA272BA	ECOS1HA272BA
2700	1.80	25.0 x 25.0	ECEC1HA272CA	ECOS1HA272CA
3300	2.00	22.0 x 35.0	ECEC1HA332BA	ECOS1HA332BA
3300	2.00	25.0 x 30.0	ECEC1HA332CA	ECOS1HA332CA
3300	1.70	35.0 x 20.0	ECEC1HA332EL	ECOS1HA332EL
3900	2.20	22.0 x 40.0	ECEC1HA392BA	ECOS1HA392BA
3900	2.20	25.0 x 35.0	ECEC1HA392CA	ECOS1HA392CA
3900	2.20	30.0 x 25.0	ECEC1HA392DA	ECOS1HA392DA
4700	2.50	22.0 x 45.0	ECEC1HA472BA	ECOS1HA472BA
4700	2.50	25.0 x 40.0	ECEC1HA472CA	ECOS1HA472CA
4700	2.50	30.0 x 30.0	ECEC1HA472DA	ECOS1HA472DA
4700	2.50	35.0 x 25.0	ECEC1HA472EA	ECOS1HA472EA
5600	2.80	22.0 x 50.0	ECEC1HA562BA	ECOS1HA562BA
5600	2.80	25.0 x 40.0	ECEC1HA562CA	ECOS1HA562CA
5600	2.80	30.0 x 35.0	ECEC1HA562DA	ECOS1HA562DA
5600	2.80	35.0 x 30.0	ECEC1HA562EA	ECOS1HA562EA
6800	3.30	25.0 x 50.0	ECEC1HA682CA	ECOS1HA682CA
6800	3.30	30.0 x 40.0	ECEC1HA682DA	ECOS1HA682DA
6800	3.30	35.0 x 30.0	ECEC1HA682EA	ECOS1HA682EA
8200	3.60	30.0 x 45.0	ECEC1HA822DA	ECOS1HA822DA
8200	3.60	35.0 x 35.0	ECEC1HA822EA	ECOS1HA822EA
10000	4.00	30.0 x 50.0	ECEC1HA103DA	ECOS1HA103DA
10000	4.00	35.0 x 40.0	ECEC1HA103EA	ECOS1HA103EA
12000	4.50	35.0 x 45.0	ECEC1HA123EA	ECOS1HA123EA
15000	4.80	35.0 x 50.0	ECEC1HA153EA	ECOS1HA153EA

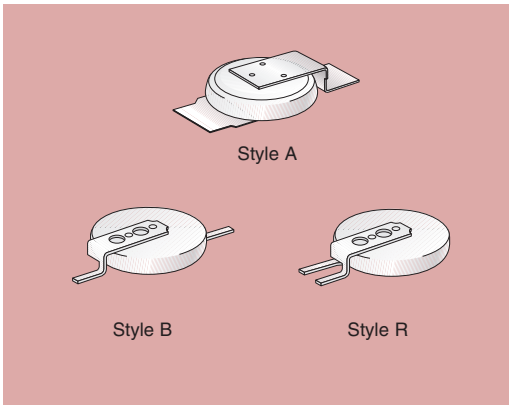
Value (µF)	Ripple Current (A)	Dia. x L (mm)	4.0mm Terminals	6.3mm Terminals
63 Volt				
680	0.90	22.0 x 20.0	ECEC1JA681BL	ECOS1JA681BL
1000	1.20	25.0 x 20.0	ECEC1JA102CL	ECOS1JA102CL
1200	1.40	22.0 x 25.0	ECEC1JA122BA	ECOS1JA122BA
1500	1.50	22.0 x 30.0	ECEC1JA152BA	ECOS1JA152BA
1500	1.30	30.0 x 20.0	ECEC1JA152DL	ECOS1JA152DL
1800	1.70	22.0 x 30.0	ECEC1JA182BA	ECOS1JA182BA
1800	1.70	25.0 x 25.0	ECEC1JA182CA	ECOS1JA182CA
2200	2.00	22.0 x 35.0	ECEC1JA222BA	ECOS1JA222BA
2200	2.00	25.0 x 30.0	ECEC1JA222CA	ECOS1JA222CA
2200	1.50	35.0 x 20.0	ECEC1JA222EL	ECOS1JA222EL
2700	2.20	22.0 x 40.0	ECEC1JA272BA	ECOS1JA272BA
2700	2.20	25.0 x 35.0	ECEC1JA272CA	ECOS1JA272CA
2700	2.20	30.0 x 25.0	ECEC1JA272DA	ECOS1JA272DA
3300	2.50	22.0 x 50.0	ECEC1JA332BA	ECOS1JA332BA
3300	2.50	25.0 x 40.0	ECEC1JA332CA	ECOS1JA332CA
3300	2.50	30.0 x 30.0	ECEC1JA332DA	ECOS1JA332DA
3300	2.50	35.0 x 25.0	ECEC1JA332EA	ECOS1JA332EA
3900	2.70	25.0 x 45.0	ECEC1JA392CA	ECOS1JA392CA
3900	2.70	30.0 x 35.0	ECEC1JA392DA	ECOS1JA392DA
3900	2.70	35.0 x 30.0	ECEC1JA392EA	ECOS1JA392EA
4700	3.00	25.0 x 50.0	ECEC1JA472CA	ECOS1JA472CA
4700	3.00	30.0 x 40.0	ECEC1JA472DA	ECOS1JA472DA
4700	3.00	35.0 x 30.0	ECEC1JA472EA	ECOS1JA472EA
5600	3.30	30.0 x 45.0	ECEC1JA562DA	ECOS1JA562DA
5600	3.30	35.0 x 35.0	ECEC1JA562EA	ECOS1JA562EA
6800	3.60	30.0 x 50.0	ECEC1JA682DA	ECOS1JA682DA
6800	3.60	35.0 x 40.0	ECEC1JA682EA	ECOS1JA682EA
8200	3.90	35.0 x 45.0	ECEC1JA822EA	ECOS1JA822EA
10000	4.40	35.0 x 50.0	ECEC1JA103EA	ECOS1JA103EA
80 Volt				
470	0.80	22.0 x 20.0	ECEC1KA471BL	ECOS1KA471BL
560	1.00	25.0 x 20.0	ECEC1KA681CL	ECOS1KA681CL
820	1.20	22.0 x 25.0	ECEC1KA821BA	ECOS1KA821BA
1000	1.30	22.0 x 30.0	ECEC1KA102BA	ECOS1KA102BA
1000	1.30	25.0 x 25.0	ECEC1KA102CA	ECOS1KA102CA
1000	1.20	30.0 x 20.0	ECEC1KA102DL	ECOS1KA102DL
1200	1.50	22.0 x 30.0	ECEC1KA122BA	ECOS1KA122BA
1200	1.50	25.0 x 25.0	ECEC1KA122CA	ECOS1KA122CA
1500	1.70	22.0 x 35.0	ECEC1KA152BA	ECOS1KA152BA
1500	1.70	25.0 x 30.0	ECEC1KA152CA	ECOS1KA152CA
1500	1.40	35.0 x 20.0	ECEC1KA152EL	ECOS1KA152EL
1800	1.80	22.0 x 40.0	ECEC1KA182BA	ECOS1KA182BA
1800	1.80	25.0 x 35.0	ECEC1KA182CA	ECOS1KA182CA
1800	1.80	30.0 x 25.0	ECEC1KA182DA	ECOS1KA182DA
2200	2.10	22.0 x 45.0	ECEC1KA222BA	ECOS1KA222BA
2200	2.10	25.0 x 35.0	ECEC1KA222CA	ECOS1KA222CA
2200	2.10	30.0 x 30.0	ECEC1KA222DA	ECOS1KA222DA
2200	2.10	35.0 x 25.0	ECEC1KA222EA	ECOS1KA222EA
2700	2.40	25.0 x 45.0	ECEC1KA272CA	ECOS1KA272CA
2700	2.40	30.0 x 35.0	ECEC1KA272DA	ECOS1KA272DA
2700	2.40	35.0 x 30.0	ECEC1KA272EA	ECOS1KA272EA
3300	2.60	25.0 x 50.0	ECEC1KA332CA	ECOS1KA332CA
3300	2.60	30.0 x 40.0	ECEC1KA332DA	ECOS1KA332DA
3300	2.60	35.0 x 30.0	ECEC1KA332EA	ECOS1KA332EA
3900	3.00	30.0 x 45.0	ECEC1KA392DA	ECOS1KA392DA
3900	3.00	35.0 x 35.0	ECEC1KA392EA	ECOS1KA392EA
4700	3.30	30.0 x 50.0	ECEC1KA472DA	ECOS1KA472DA
4700	3.30	35.0 x 40.0	ECEC1KA472EA	ECOS1KA472EA
5600	3.70	35.0 x 45.0	ECEC1KA562EA	ECOS1KA562EA
6800	3.90	35.0 x 50.0	ECEC1KA682EA	ECOS1KA682EA
100 Volt				
330	0.80	22.0 x 20.0	ECEC2AA331BL	ECOS2AA331BL
470	1.00	25.0 x 20.0	ECEC2AA471CL	ECOS2AA471CL
560	1.10	22.0 x 25.0	ECEC2AA561BA	ECOS2AA561BA
680	1.10	30.0 x 20.0	ECEC2AA681DL	ECOS2AA681DL
820	1.40	22.0 x 30.0	ECEC2AA821BA	ECOS2AA821BA
820	1.40	25.0 x 25.0	ECEC2AA821CA	ECOS2AA821CA
1000	1.70	22.0 x 35.0	ECEC2AA102BA	ECOS2AA102BA
1000	1.70	25.0 x 30.0	ECEC2AA102CA	ECOS2AA102CA
1000	1.20	35.0 x 20.0	ECEC2AA102EL	ECOS2AA102EL
1200	1.80	22.0 x 40.0	ECEC2AA122BA	ECOS2AA122BA
1200	1.80	25.0 x 35.0	ECEC2AA122CA	ECOS2AA122CA
1200	1.80	30.0 x 25.0	ECEC2AA122DA	ECOS2AA122DA
1500	2.10	22.0 x 45.0	ECEC2AA152BA	ECOS2AA152BA
1500	2.10	25.0 x 40.0	ECEC2AA152CA	ECOS2AA152CA
1500	2.10	30.0 x 30.0	ECEC2AA152DA	ECOS2AA152DA
1500	2.10	35.0 x 25.0	ECEC2AA152EA	ECOS2AA152EA
1800	2.30	25.0 x 45.0	ECEC2AA182CA	ECOS2AA182CA
1800	2.30	30.0 x 35.0	ECEC2AA182DA	ECOS2AA182DA
1800	2.30	35.0 x 30.0	ECEC2AA182EA	ECOS2AA182EA
2200	2.60	25.0 x 50.0	ECEC2AA222CA	ECOS2AA222CA
2200	2.60	30.0 x 40.0	ECEC2AA222DA	ECOS2AA222DA
2200	2.60	35.0 x 30.0	ECEC2AA222EA	ECOS2AA222EA
2700	2.90	30.0 x 45.0	ECEC2AA272DA	ECOS2AA272DA
2700	2.90	35.0 x 35.0	ECEC2AA272EA	ECOS2AA272EA
3300	3.20	30.0 x 50.0	ECEC2AA332DA	ECOS2AA332DA
3300	3.20	35.0 x 40.0	ECEC2AA332EA	ECOS2AA332EA
3900	3.60	35.0 x 45.0	ECEC2AA392EA	ECOS2AA392EA
4700	3.80	35.0 x 50.0	ECEC2AA472EA	ECOS2AA472EA

continuation

ORDER CODES

Value (µF)	Ripple Current (A)	Dia. x L (mm)	4.0mm Terminals	6.3mm Terminals
160 Volt				
470	1.40	22.0 x 30.0	ECEC2CB471BA	ECOS2CB471BA
560	1.50	22.0 x 35.0	ECEC2CB561BA	ECOS2CB561BA
680	1.70	22.0 x 40.0	ECEC2CB681BA	ECOS2CB681BA
680	1.70	25.0 x 30.0	ECEC2CB681CA	ECOS2CB681CA
820	2.00	22.0 x 45.0	ECEC2CB821BA	ECOS2CB821BA
820	2.00	25.0 x 35.0	ECEC2CB821CA	ECOS2CB821CA
1000	2.20	22.0 x 50.0	ECEC2CB102BA	ECOS2CB102BA
1000	2.20	25.0 x 40.0	ECEC2CB102CA	ECOS2CB102CA
1000	2.20	30.0 x 30.0	ECEC2CB102DA	ECOS2CB102DA
1000	2.20	35.0 x 25.0	ECEC2CB102EA	ECOS2CB102EA
1200	2.30	25.0 x 45.0	ECEC2CB122CA	ECOS2CB122CA
1200	2.30	30.0 x 35.0	ECEC2CB122DA	ECOS2CB122DA
1200	2.30	35.0 x 30.0	ECEC2CB122EA	ECOS2CB122EA
1500	2.50	30.0 x 40.0	ECEC2CB152DA	ECOS2CB152DA
1500	2.50	35.0 x 30.0	ECEC2CB152EA	ECOS2CB152EA
1800	2.70	30.0 x 45.0	ECEC2CB182DA	ECOS2CB182DA
1800	2.70	35.0 x 35.0	ECEC2CB182EA	ECOS2CB182EA
2200	2.90	35.0 x 45.0	ECEC2CB222EA	ECOS2CB222EA
2700	3.10	35.0 x 50.0	ECEC2CB272EA	ECOS2CB272EA
200 Volt				
390	1.30	22.0 x 30.0	ECEC2DB391BA	ECOS2DB391BA
390	1.30	25.0 x 25.0	ECEC2DB391CA	ECOS2DB391CA
470	1.40	22.0 x 35.0	ECEC2DB471BA	ECOS2DB471BA
470	1.40	25.0 x 30.0	ECEC2DB471CA	ECOS2DB471CA
560	1.50	22.0 x 40.0	ECEC2DB561BA	ECOS2DB561BA
560	1.50	25.0 x 30.0	ECEC2DB561CA	ECOS2DB561CA
560	1.50	30.0 x 25.0	ECEC2DB561DA	ECOS2DB561DA
680	1.70	22.0 x 45.0	ECEC2DB681BA	ECOS2DB681BA
680	1.70	25.0 x 35.0	ECEC2DB681CA	ECOS2DB681CA
820	2.00	25.0 x 45.0	ECEC2DB821CA	ECOS2DB821CA
820	2.00	30.0 x 30.0	ECEC2DB821DA	ECOS2DB821DA
820	2.00	35.0 x 25.0	ECEC2DB821EA	ECOS2DB821EA
1000	2.20	25.0 x 50.0	ECEC2DB102CA	ECOS2DB102CA
1000	2.20	30.0 x 35.0	ECEC2DB102DA	ECOS2DB102DA
1000	2.20	35.0 x 30.0	ECEC2DB102EA	ECOS2DB102EA
1200	2.30	30.0 x 40.0	ECEC2DB122DA	ECOS2DB122DA
1200	2.30	35.0 x 35.0	ECEC2DB122EA	ECOS2DB122EA
1500	2.50	30.0 x 50.0	ECEC2DB152DA	ECOS2DB152DA
1500	2.50	35.0 x 40.0	ECEC2DB152EA	ECOS2DB152EA
1800	2.70	35.0 x 45.0	ECEC2DB182EA	ECOS2DB182EA
2200	2.90	35.0 x 50.0	ECEC2DB222EA	ECOS2DB222EA
250 Volt				
180	0.90	22.0 x 25.0	ECEC2EB181BA	ECOS2EB181BA
220	1.00	22.0 x 30.0	ECEC2EB221BA	ECOS2EB221BA
270	1.10	22.0 x 35.0	ECEC2EB271BA	ECOS2EB271BA
330	1.20	22.0 x 40.0	ECEC2EB331BA	ECOS2EB331BA
330	1.20	25.0 x 30.0	ECEC2EB331CA	ECOS2EB331CA
390	1.30	22.0 x 45.0	ECEC2EB391BA	ECOS2EB391BA
390	1.30	30.0 x 25.0	ECEC2EB391DA	ECOS2EB391DA
470	1.40	22.0 x 50.0	ECEC2EB471BA	ECOS2EB471BA
470	1.40	25.0 x 40.0	ECEC2EB471CA	ECOS2EB471CA
470	1.40	30.0 x 30.0	ECEC2EB471DA	ECOS2EB471DA
560	1.50	25.0 x 45.0	ECEC2EB561CA	ECOS2EB561CA
560	1.50	35.0 x 25.0	ECEC2EB561EA	ECOS2EB561EA
680	1.70	25.0 x 50.0	ECEC2EB681CA	ECOS2EB681CA
680	1.70	30.0 x 40.0	ECEC2EB681DA	ECOS2EB681DA
680	1.70	35.0 x 30.0	ECEC2EB681EA	ECOS2EB681EA
820	2.00	30.0 x 45.0	ECEC2EB821DA	ECOS2EB821DA
820	2.00	35.0 x 35.0	ECEC2EB821EA	ECOS2EB821EA
1000	2.20	30.0 x 50.0	ECEC2EB102DA	ECOS2EB102DA
1000	2.20	35.0 x 40.0	ECEC2EB102EA	ECOS2EB102EA
1200	2.30	35.0 x 45.0	ECEC2EB122EA	ECOS2EB122EA
1500	2.50	35.0 x 50.0	ECEC2EB152EA	ECOS2EB152EA
385 Volt				
82	0.64	22.0 x 30.0	ECEC2TB820BA	ECOS2TB820BA
100	0.69	22.0 x 30.0	ECEC2TB101BA	ECOS2TB101BA
100	0.69	25.0 x 25.0	ECEC2TB101CA	ECOS2TB101CA
120	0.75	22.0 x 35.0	ECEC2TB121BA	ECOS2TB121BA
120	0.75	25.0 x 30.0	ECEC2TB121CA	ECOS2TB121CA
150	0.82	22.0 x 40.0	ECEC2TB151BA	ECOS2TB151BA
150	0.82	25.0 x 30.0	ECEC2TB151CA	ECOS2TB151CA
150	0.82	30.0 x 25.0	ECEC2TB151DA	ECOS2TB151DA
180	0.95	22.0 x 45.0	ECEC2TB181BA	ECOS2TB181BA
180	0.95	25.0 x 35.0	ECEC2TB181CA	ECOS2TB181CA
180	0.95	30.0 x 30.0	ECEC2TB181DA	ECOS2TB181DA
220	1.10	25.0 x 45.0	ECEC2TB221CA	ECOS2TB221CA
220	1.10	30.0 x 30.0	ECEC2TB221DA	ECOS2TB221DA
220	1.10	35.0 x 25.0	ECEC2TB221EA	ECOS2TB221EA
270	1.20	25.0 x 50.0	ECEC2TB271CA	ECOS2TB271CA
270	1.20	35.0 x 30.0	ECEC2TB271EA	ECOS2TB271EA
330	1.35	30.0 x 45.0	ECEC2TB331DA	ECOS2TB331DA
330	1.35	35.0 x 35.0	ECEC2TB331EA	ECOS2TB331EA
390	1.55	30.0 x 50.0	ECEC2TB391DA	ECOS2TB391DA
470	1.75	35.0 x 45.0	ECEC2TB471EA	ECOS2TB471EA
560	1.80	35.0 x 50.0	ECEC2TB561EA	ECOS2TB561EA

Value (µF)	Ripple Current (A)	Dia. x L (mm)	4.0mm Terminals	6.3mm Terminals
400 Volt				
82	0.64	22.0 x 30.0	ECEC2GB820BA	ECOS2GB820BA
100	0.69	22.0 x 30.0	ECEC2GB101BA	ECOS2GB101BA
100	0.69	25.0 x 25.0	ECEC2GB101CA	ECOS2GB101CA
120	0.75	22.0 x 35.0	ECEC2GB121BA	ECOS2GB121BA
120	0.75	25.0 x 30.0	ECEC2GB121CA	ECOS2GB121CA
150	0.82	22.0 x 40.0	ECEC2GB151BA	ECOS2GB151BA
150	0.82	25.0 x 30.0	ECEC2GB151CA	ECOS2GB151CA
150	0.82	30.0 x 25.0	ECEC2GB151DA	ECOS2GB151DA
180	0.95	22.0 x 45.0	ECEC2GB181BA	ECOS2GB181BA
180	0.95	25.0 x 35.0	ECEC2GB181CA	ECOS2GB181CA
180	0.95	30.0 x 30.0	ECEC2GB181DA	ECOS2GB181DA
220	1.10	25.0 x 45.0	ECEC2GB221CA	ECOS2GB221CA
220	1.10	30.0 x 30.0	ECEC2GB221DA	ECOS2GB221DA
220	1.10	35.0 x 25.0	ECEC2GB221EA	ECOS2GB221EA
270	1.20	25.0 x 50.0	ECEC2GB271CA	ECOS2GB271CA
270	1.20	30.0 x 35.0	ECEC2GB271DA	ECOS2GB271DA
270	1.20	35.0 x 30.0	ECEC2GB271EA	ECOS2GB271EA
330	1.35	30.0 x 45.0	ECEC2GB331DA	ECOS2GB331DA
330	1.35	35.0 x 35.0	ECEC2GB331EA	ECOS2GB331EA
390	1.55	30.0 x 50.0	ECEC2GB391DA	ECOS2GB391DA
390	1.55	35.0 x 40.0	ECEC2GB391EA	ECOS2GB391EA
470	1.75	35.0 x 45.0	ECEC2GB471EA	ECOS2GB471EA
560	1.80	35.0 x 50.0	ECEC2GB561EA	ECOS2GB561EA
420 Volt				
100	0.64	22.0 x 30.0	ECEC2SB101BA	ECOS2SB101BA
100	0.64	25.0 x 25.0	ECEC2SB101CA	ECOS2SB101CA
120	0.72	22.0 x 35.0	ECEC2SB121BA	ECOS2SB121BA
120	0.72	25.0 x 30.0	ECEC2SB121CA	ECOS2SB121CA
150	0.79	22.0 x 40.0	ECEC2SB151BA	ECOS2SB151BA
150	0.79	25.0 x 30.0	ECEC2SB151CA	ECOS2SB151CA
150	0.79	30.0 x 25.0	ECEC2SB151DA	ECOS2SB151DA
180	0.87	22.0 x 45.0	ECEC2SB181BA	ECOS2SB181BA
180	0.87	25.0 x 40.0	ECEC2SB181CA	ECOS2SB181CA
180	0.87	30.0 x 30.0	ECEC2SB181DA	ECOS2SB181DA
220	1.00	25.0 x 45.0	ECEC2SB221CA	ECOS2SB221CA
220	1.00	30.0 x 30.0	ECEC2SB221DA	ECOS2SB221DA
220	1.00	35.0 x 25.0	ECEC2SB221EA	ECOS2SB221EA
270	1.19	25.0 x 50.0	ECEC2SB271CA	ECOS2SB271CA
270	1.19	30.0 x 40.0	ECEC2SB271DA	ECOS2SB271DA
270	1.19	35.0 x 30.0	ECEC2SB271EA	ECOS2SB271EA
330	1.38	30.0 x 45.0	ECEC2SB331DA	ECOS2SB331DA
330	1.38	35.0 x 35.0	ECEC2SB331EA	ECOS2SB331EA
390	1.55	30.0 x 50.0	ECEC2SB391DA	ECOS2SB391DA
390	1.55	35.0 x 40.0	ECEC2SB391EA	ECOS2SB391EA
470	1.74	35.0 x 45.0	ECEC2SB471EA	ECOS2SB471EA
560	1.90	35.0 x 50.0	ECEC2SB561EA	ECOS2SB561EA
450 Volt				
82	0.56	22.0 x 30.0	ECEC2WB820CA	ECOS2WB820CA
82	0.56	25.0 x 25.0	ECEC2WB820BA	ECOS2WB820BA
100	0.64	22.0 x 35.0	ECEC2WB101BA	ECOS2WB101BA
100	0.64	25.0 x 30.0	ECEC2WB101CA	ECOS2WB101CA
120	0.72	22.0 x 40.0	ECEC2WB121BA	ECOS2WB121BA
120	0.72	25.0 x 35.0	ECEC2WB121CA	ECOS2WB121CA
120	0.72	30.0 x 25.0	ECEC2WB121DA	ECOS2WB121DA
150	0.79	22.0 x 50.0	ECEC2WB151BA	ECOS2WB151BA
150	0.79	25.0 x 40.0	ECEC2WB151CA	ECOS2WB151CA
150	0.79	30.0 x 30.0	ECEC2WB151DA	ECOS2WB151DA
150	0.79	35.0 x 25.0	ECEC2WB151EA	ECOS2WB151EA
180	0.87	25.0 x 45.0	ECEC2WB181CA	ECOS2WB181CA
180	0.87	30.0 x 35.0	ECEC2WB181DA	ECOS2WB181DA
220	1.00	25.0 x 50.0	ECEC2WB221CA	ECOS2WB221CA
220	1.00	30.0 x 40.0	ECEC2WB221DA	ECOS2WB221DA
220	1.00	35.0 x 30.0	ECEC2WB221EA	ECOS2WB221EA
270	1.19	30.0 x 45.0	ECEC2WB271DA	ECOS2WB271DA
270	1.19	35.0 x 35.0	ECEC2WB271EA	ECOS2WB271EA
330	1.38	30.0 x 50.0	ECEC2WB331DA	ECOS2WB331DA
330	1.38	35.0 x 40.0	ECEC2WB331EA	ECOS2WB331EA
390	1.55	35.0 x 45.0	ECEC2WB391EA	ECOS2WB391EA
470	1.74	35.0 x 50.0	ECEC2WB471EA	ECOS2WB471EA



PANASONIC type EM & EN

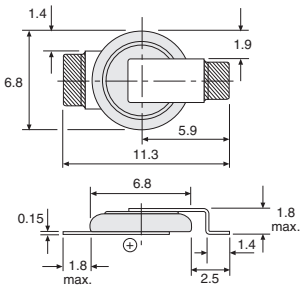
GOLD CAPACITOR

Surface mount, electric double layer capacitors designed for a wide range of IC back-up applications. Due to their miniature size (diameter 6.8mm) and very low profile (height 1.8mm max.), they are ideal for use in memory cards and many portable products such as those found in the telecommunication, data acquisition and photographic industries. Offered with a capacitance value of 0.2F, the devices are available with a rated voltage of either 2.5V (type EM) or 3.3V (type EN), each providing a choice of termination style. Suitable for reflow soldering, the capacitors are supplied taped and reeled.

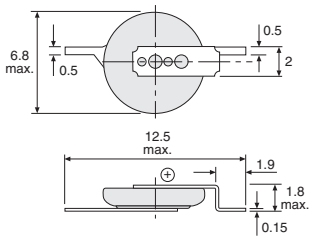
- **IC memory back-up (µA range)**
- Rated voltage **2.5V** (EM) or **3.3V** (EN)
- Value **0.2F**
- Miniature size **6.8mm dia., 1.8mm max. height**
- Very light weight **0.2g**
- Choice of termination style
- Suitable for reflow soldering
- Supplied taped & reeled

Dimensions (mm)

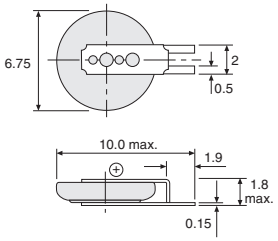
Style A



Style B



Style R



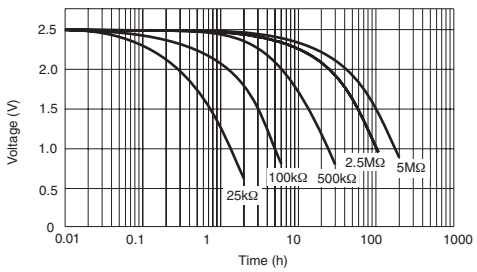
Specification

Specification	EM & EN
Endurance test	500 hours at 70°C
Capacitance tolerance	-20%, +80% at 20°C
Internal resistance (as listed)	measured at 1kHz
Operating temperature range	-25°C to +70°C (EM) -10°C to +60°C (EN)
Temperature stability	
Capacitance change (over oper. temp. range)	±30% capacitance value at +20°C
Internal resistance (-25°C)	≤5 x resistance value at +20°C

Packaging

Tape	8mm width, 4mm pitch
Reel	178mm dia.

Typical Discharge Characteristic

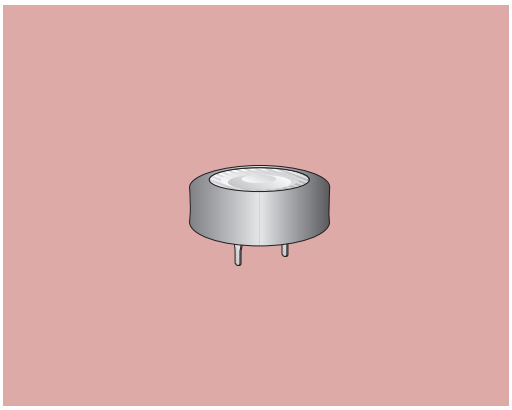


Conditions

Sample type :	**EECEM0E204A** (2.5V, 0.2F)
Method :	Constant resistance discharge
Charge voltage:	2.5V
Charge time :	24 hours
Ambient temperature :	+20°C

ORDER CODES

Value (F)	Internal Resistance (Ω)	Termination Style	Order Code
***2.5 Volt** (EM)*			
0.2	≤100	A	***EECEM0E204A***
0.2	≤100	B	***EECEM0E204B***
0.2	≤100	R	***EECEM0E204R***
***3.3 Volt** (EN)*			
0.2	≤200	A	***EECEN0F204A***
0.2	≤200	B	***EECEN0F204B***
0.2	≤200	R	***EECEN0F204R***



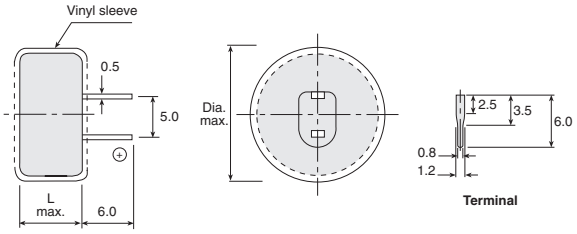
PANASONIC type NF

GOLD CAPACITOR

Electric double layer capacitors designed for a wide range of IC back-up applications in products such as A/V, telecommunications, computers and data acquisition equipment. Manufactured with a standard 5mm pitch and a maximum height of only 8mm, the NF series offers excellent specification/size characteristics and is capable of handling repeated charge/discharge conditions.

- **IC memory back-up (µA range)**
- Rated voltage **5.5V**
- Values **0.1F to 1.5F**
- Low profile
- 5mm pitch
- Wide range of applications
- Supplied loose

Dimensions (mm)

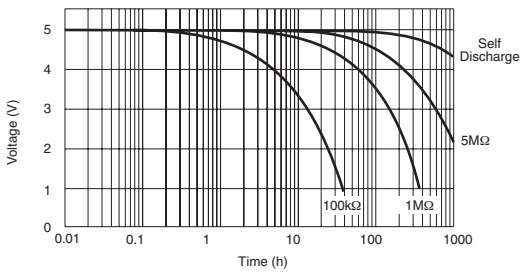


Specification	NF
Endurance test	1000 hours at 70°C
Capacitance tolerance	-20%, +80% at 20°C
Internal resistance (as listed)	measured at 1kHz
Operating temperature range	-25°C to +70°C
Temperature stability	
Capacitance change (-25°C to +70°C)	±30% capacitance value at +20°C
Internal resistance (-25°C)	≤5 x resistance value at +20°C
Solvent resistance	5 minutes max. immersion, ultrasonic or vapour cleaning

ORDER CODES

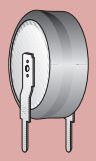
Value (F)	Internal Resistance (Ω)	Dimensions (mm) Dia. x L	Order Code
5.5 Volt			
0.1	≤75	13.5 x 7.5	***EECF5R5U104***
0.22	≤75	13.5 x 7.5	***EECF5R5U224***
0.47	≤30	21.5 x 8.0	***EECF5R5U474***
1.0	≤30	21.5 x 8.0	***EECF5R5U105***
1.5	≤30	21.5 x 8.0	***EECF5R5U155***

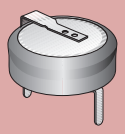
Typical Discharge Characteristic



Conditions

Sample type : **EECF5R5U105** (5.5V, 1.0F)
Method : Constant resistance discharge
Charge voltage: 5.0V
Charge time : 24 hours
Ambient temperature : +20°C


Vertical Mount


Horizontal Mount

PANASONIC type SD

GOLD CAPACITOR

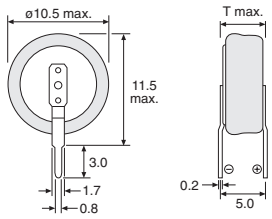
The SD series of electric double layer capacitors is a high performance IC back up device housed within a compact package with standard 5mm or 10mm pitches. Suitable for memory retention on chips situated in products such as A/V equipment, CMOS, RAM and industrial microcontrollers, the capacitors are available either vertically or horizontally mounted.

- **IC memory back-up (µA range)**
- Rated voltage **5.5V**
- Values **0.022F to 0.33F**
- High volumetric efficiency
- Vertical or horizontal versions
- Supplied loose

Dimensions (mm)

Vertical Mount

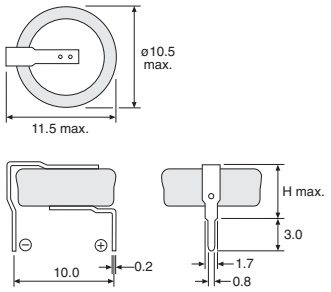
Fig. A



Value (F)	T max.
0.022 - 0.22	5.0
0.33	5.5

Horizontal Mount

Fig. B

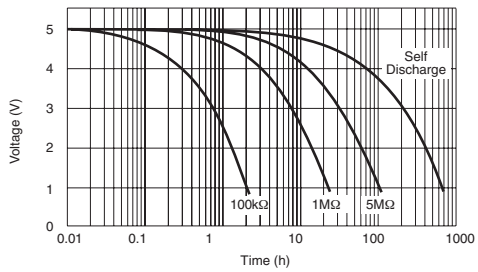


Value (F)	H max.
0.022 - 0.1	5.5
0.22	6.0
0.33	6.5

Specification

Specification	SD
Endurance test	1000 hours at 70°C
Capacitance tolerance	-20%, +80% at 20°C
Internal resistance (as listed)	measured at 1kHz
Operating temperature range	-25°C to +70°C
Temperature stability	
Capacitance change (-25°C to +70°C)	±30% capacitance value at +20°C
Internal resistance (-25°C)	≤5 x resistance value at +20°C

Typical Discharge Characteristic

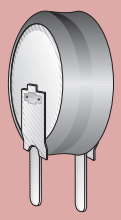


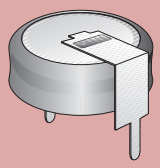
Conditions

Sample type : **EECS0HD473V** (5.5V, 0.047F)
Method : Constant resistance discharge
Charge voltage: 5.0V
Charge time : 24 hours
Ambient temperature : +20°C

ORDER CODES

Value (F)	Internal Resistance (Ω)	Fig.	Order Code
5.5 Volt			
Vertical Mount			
0.022	≤150	A	***EECS0HD223V***
0.047	≤120	A	***EECS0HD473V***
0.1	≤75	A	***EECS0HD104V***
0.22	≤75	A	***EECS0HD224V***
0.33	≤75	A	***EECS0HD334V***
Horizontal Mount			
0.022	≤150	B	***EECS0HD223H***
0.047	≤120	B	***EECS0HD473H***
0.1	≤75	B	***EECS0HD104H***
0.22	≤75	B	***EECS0HD224H***
0.33	≤75	B	***EECS0HD334H***


Vertical Mount


Horizontal Mount

PANASONIC type SG

GOLD CAPACITOR

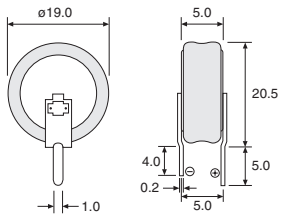
The SG series of compact, vertical or horizontal mount electric double layer capacitors are designed for general purpose IC memory back-up such as CMOS, RAM and industrial microcontrollers. Housed within small packages employing 5mm or 20mm mounting pitches, the devices feature high volumetric efficiency and lightweight construction.

- **IC memory back-up (µA range)**
- Rated voltage **5.5V**
- Values **0.47F to 1.5F**
- High volumetric efficiency
- Vertical or horizontal versions
- Light weight
- Supplied loose

Dimensions (mm)

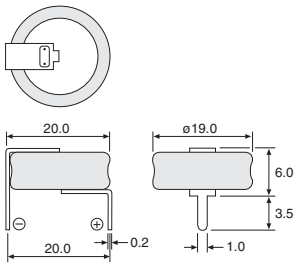
Vertical Mount

Fig. A



Horizontal Mount

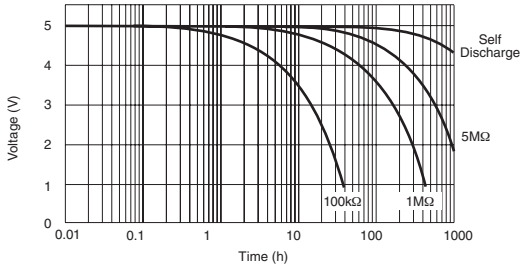
Fig. B



Specification

	SG
Endurance test	1000 hours at 70°C
Capacitance tolerance	-20%, +80% at 20°C
Internal resistance (as listed)	measured at 1kHz
Operating temperature range	-25°C to +70°C
Temperature stability	
Capacitance change (-25°C to +70°C)	±30% capacitance value at +20°C
Internal resistance (-25°C)	≤5 x resistance value at +20°C

Typical Discharge Characteristic

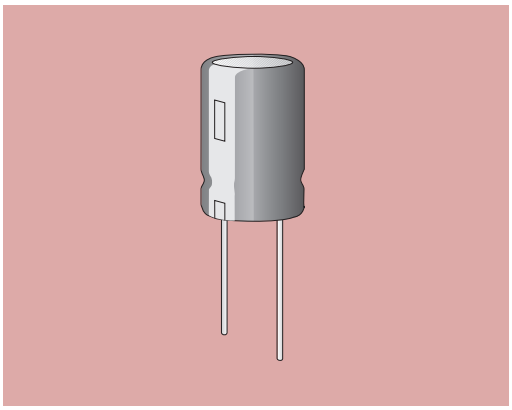


Conditions

Sample type :	**EECS5R5V105** (5.5V, 1.0F)
Method :	Constant resistance discharge
Charge voltage:	5.0V
Charge time :	24 hours
Ambient temperature :	+20°C

ORDER CODES

Value (F)	Internal Resistance (Ω)	Fig.	Order Code
5.5 Volt			
Vertical Mount			
0.47	≤30	A	***EECS5R5V474***
1.0	≤30	A	***EECS5R5V105***
1.5	≤30	A	***EECS5R5V155***
Horizontal Mount			
0.47	≤30	B	***EECS5R5H474***
1.0	≤30	B	***EECS5R5H105***
1.5	≤30	B	***EECS5R5H155***



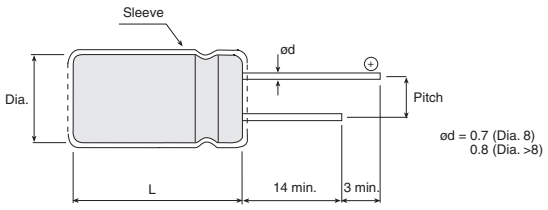
PANASONIC type HW

GOLD CAPACITOR

The HW series of electric double layer capacitors are housed in a conventional radial lead body and feature low internal resistance, high capacitance levels and excellent low temperature stability. Designed for repeated charge/discharge applications such as computer memory back-up, small motors and gas ignition equipment. This series replaces the AL series and offers smaller case sizes and higher capacitance.

- **Low internal resistance**
- **High capacitance (up to 50F)**
- Rated voltage **2.3V**
- Suitable for high charge/discharge & memory back-up
- Conventional radial lead body
- Supplied loose

Dimensions (mm)



Dia. x L are can sizes only. To allow for sleeve add 0.5 to Dia. and 2.0 to L.

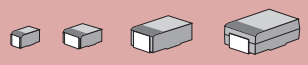
Specification

Specification	HW
Endurance test	1000 hours at 70°C (60°C*)
Capacitance tolerance	-20%, +40% at 20°C
Internal resistance (as listed)	measured at 1kHz
Operating temperature range	-25°C to +70°C (+60°C*)
Temperature stability	
Capacitance change (-25°C to +70°C (+60°C*))	±30% capacitance value at +20°C
Internal resistance (-25°C)	≤4 x resistance value at +20°C

* 60°C for values 30F & 50F

ORDER CODES

Value (F)	Internal Resistance (Ω)	Dimensions (mm) Pitch	Dia. x L	Order Code
2.3 Volt				
1.0	≤1.0	3.5	8.0 x 22.0	***EECHW0D105***
3.3	≤0.3	5	12.5 x 23.0	***EECHW0D335***
4.7	≤0.3	5	12.5 x 23.0	***EECHW0D475***
10	≤0.2	5	12.5 x 35.0	***EECHW0D106***
22	≤0.1	7.5	18.0 x 35.0	***EECHW0D226***
30	≤0.1	7.5	18.0 x 35.0	***EECHW0D306***
50	≤0.1	7.5	18.0 x 40.0	***EECHW0D506***

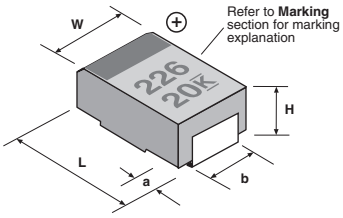


KEMET type T491

Surface mount, solid tantalum capacitors fully encapsulated to provide a mechanically robust construction whilst offering superior resistance to moisture and heat. Supplied taped and reeled.

- **General purpose**
- High performance & reliability
- High volumetric efficiency
- Fully moulded construction
- Suitable for wave & reflow soldering
- Capacitance tolerance **10%** (or 20%)
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H	a	b
R (0805)	2.0	1.3	1.2 max.	0.5	0.9
A (1206)	3.2	1.6	1.6	0.8	1.2
B	3.5	2.8	1.9	0.8	2.2
C	6.0	3.2	2.5	1.3	2.2
D	7.3	4.3	2.8	1.3	2.4
X (see Note 1)	7.3	4.3	4.0	1.3	2.4
E (see Note 2)	7.3	**6.0**	**3.6**	1.3	**4.1**

Notes :

[1] KEMET case X is same as industry standard case E

[2] KEMET case E is dimensionly different to industry standard case E (see bold figures)

Specification Meets EIA-535 BAAC

	T491
Capacitance tolerance	±10% (or ±20%) at 120Hz, 25°C
Operating temperature range	-55°C to +85°C (+125°C with voltage derating - see table below)
Leakage current (as listed)	measured at 25°C
Dissipation factor (as listed)	measured at 120Hz, 25°C
ESR (as listed)	measured at 100kHz, 25°C
Power dissipation	refer to table below
Ripple current	$\sqrt{(P \div R)}$ where P = power dissipation R = ESR

Rated voltage/surge voltage capability

Rated voltage (≤ +85°C)	**3V**	**4V**	**6V**	**10V**	**16V**	**20V**	**25V**	**35V**	**50V**	dc
Rated voltage (≤ +125°C)	2V	2.7V	4V	7V	10V	13V	17V	23V	33V	dc
Surge voltage (≤ +85°C)	4V	5.2V	8V	13V	20V	26V	32V	46V	65V	dc
Surge voltage (≤ +125°C)	2.4V	3.2V	5V	8V	12V	16V	20V	28V	40V	dc

Power dissipation

Case Size	**R**	**A**	**B**	**C**	**D**	**X**	**E**
Max. Power (W) at 25°C	0.025	0.075	0.085	0.11	0.15	0.165	0.20

Marking and Packaging

Marking		Capacitance value code (in pF) e.g. 226 = 22µF Rated voltage e.g. 20 = 20V Bar to indicate positive terminal
Tape	**Case Size**	
	R	8mm width, 4mm pitch
	A	8mm width, 4mm pitch
	B	8mm width, 4mm pitch
	C	12mm width, 8mm pitch
	D	12mm width, 8mm pitch
	X	12mm width, 8mm pitch
	E	12mm width, 8mm pitch
Reel		178mm dia.

KEMET type T491
continued overleaf > > > >

continuation

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
3 Volt					
33	A	1.0	6	4.0	*T491A336K003AT*
4 Volt					
3.3	A	0.5	6	8.0	*T491A335K004AT*
4.7	A	0.5	6	8.0	*T491A475K004AT*
6.8	A	0.5	6	6.0	*T491A685K004AT*
10	R	0.5	8	10.0	*T491R106K004AT*
10	A	0.5	6	6.0	*T491A106K004AT*
10	B	0.5	6	3.5	*T491B106K004AT*
15	A	0.6	6	4.0	*T491A156K004AT*
15	B	0.6	6	3.5	*T491B156K004AT*
22	A	0.9	6	4.0	*T491A226K004AT*
22	B	0.9	6	3.5	*T491B226K004AT*
22	C	0.9	6	1.8	*T491C226K004AT*
33	A	1.3	6	4.0	*T491A336K004AT*
33	B	1.3	6	3.5	*T491B336K004AT*
33	C	1.3	6	1.8	*T491C336K004AT*
47	A	1.9	12	2.5	*T491A476K004AT*
47	B	1.9	6	3.0	*T491B476K004AT*
47	C	1.9	6	1.8	*T491C476K004AT*
68	B	2.7	6	3.5	*T491B686K004AT*
68	C	2.7	6	1.6	*T491C686K004AT*
68	D	2.7	6	0.8	*T491D686K004AT*
100	B	4.0	8	1.0	*T491B107K004AT*
100	C	4.0	8	1.2	*T491C107K004AT*
100	D	4.0	8	0.8	*T491D107K004AT*
150	C	6.0	8	1.2	*T491C157K004AT*
150	D	6.0	8	0.8	*T491D157K004AT*
330	D	13.2	8	0.7	*T491D337K004AT*
470	D	18.8	8	0.5	*T491D477K004AT*
470	X	18.8	8	0.5	*T491X477K004AT*
680	X	27.2	12	0.5	*T491X687K004AT*
680	D	27.2	12	0.5	*T491D687K004AT*
1000	E	40.0	15	0.2	*T491E108K004AT*
6 Volt *					
2.2	A	0.5	6	8.0	*T491A225K006AT*
3.3	A	0.5	6	8.0	*T491A335K006AT*
4.7	A	0.5	6	6.0	*T491A475K006AT*
6.8	A	0.5	6	6.0	*T491A685K006AT*
6.8	B	0.5	6	3.5	*T491B685K006AT*
10†	R	0.6	8	10.0	*T491R106M006AT*
10	A	0.6	6	4.0	*T491A106K006AT*
10	B	0.6	6	3.5	*T491B106K006AT*
15	A	0.9	6	4.0	*T491A156K006AT*
15	B	0.9	6	3.5	*T491B156K006AT*
15	C	0.9	6	1.8	*T491C156K006AT*
22	A	1.4	6	4.0	*T491A226K006AT*
22	B	1.4	6	3.5	*T491B226K006AT*
22	C	1.4	6	1.8	*T491C226K006AT*
33	A	2.0	12	2.5	*T491A336K006AT*
33	B	2.0	6	3.0	*T491B336K006AT*
33	C	2.0	6	1.8	*T491C336K006AT*
47	B	2.9	6	3.5	*T491B476K006AT*
47	C	2.9	6	1.6	*T491C476K006AT*
47	D	2.9	6	0.8	*T491D476K006AT*
68	B	4.1	8	1.0	*T491B686K006AT*
68	C	4.1	6	1.2	*T491C686K006AT*
68	D	4.1	6	0.8	*T491D686K006AT*
100	C	6.0	8	1.2	*T491C107K006AT*
100	D	6.0	8	0.8	*T491D107K006AT*
150	C	9.0	8	1.2	*T491C157K006AT*
150	D	9.0	8	0.7	*T491D157K006AT*
220†	C	13.2	10	1.2	*T491C227M006AT*
220	C	13.2	10	1.2	*T491C227K006AT*
220	D	13.2	8	0.7	*T491D227K006AT*
220	X	13.2	8	0.7	*T491X227K006AT*
330	D	19.8	8	0.5	*T491D337K006AT*
330	X	19.8	8	0.5	*T491X337K006AT*
470	X	28.2	10	0.5	*T491X477K006AT*
470	D	28.2	12	0.5	*T491D477K006AT*
680	E	40.8	12	0.5	*T491E687K006AT*

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
10 Volt					
1.5	A	0.5	6	8.0	*T491A155K010AT*
2.2	A	0.5	6	8.0	*T491A225K010AT*
3.3	A	0.5	6	6.0	*T491A335K010AT*
4.7	R	0.5	8	10.0	*T491R475K010AT*
4.7	A	0.5	6	6.0	*T491A475K010AT*
4.7	B	0.5	6	3.5	*T491B475K010AT*
6.8	A	0.7	6	6.0	*T491A685K010AT*
6.8	B	0.7	6	3.5	*T491B685K010AT*
10	A	1.0	6	4.0	*T491A106K010AT*
10	B	1.0	6	3.5	*T491B106K010AT*
10	C	1.0	6	1.8	*T491C106K010AT*
15	A	1.5	8	6.0	*T491A156K010AT*
15	B	1.5	6	3.5	*T491B156K010AT*
15	C	1.5	6	1.8	*T491C156K010AT*
22†	A	2.2	10	6.0	*T491A226M010AT*
22	A	2.2	10	6.0	*T491A226K010AT*
22	B	2.2	6	3.0	*T491B226K010AT*
22	C	2.2	6	1.8	*T491C226K010AT*
33	B	3.3	6	3.5	*T491B336K010AT*
33	C	3.3	6	1.6	*T491C336K010AT*
33	D	3.3	6	0.8	*T491D336K010AT*
47†	B	4.7	8	1.0	*T491B476M010AT*
47	C	4.7	6	1.2	*T491C476K010AT*
47	D	4.7	6	0.8	*T491D476K010AT*
68	C	6.8	6	1.2	*T491C686K010AT*
68	D	6.8	6	0.8	*T491D686K010AT*
100	C	10	8	1.2	*T491C107K010AT*
100	D	10	8	0.7	*T491D107K010AT*
150	D	15	8	0.7	*T491D157K010AT*
150	X	15	8	0.7	*T491X157K010AT*
220	D	22	8	0.5	*T491D227K010AT*
220	X	22	8	0.5	*T491X227K010AT*
330	D	33	10	0.5	*T491D337K010AT*
330	X	33	10	0.5	*T491X337K010AT*
470	E	47	12	0.5	*T491E477K010AT*
16 Volt					
1.0	A	0.5	4	10.0	*T491A105K016AT*
1.5	A	0.5	6	8.0	*T491A155K016AT*
2.2	R	0.5	8	25.0	*T491R225K016AT*
2.2	A	0.5	6	6.0	*T491A225K016AT*
3.3	A	0.5	6	6.0	*T491A335K016AT*
3.3	B	0.5	6	3.5	*T491B335K016AT*
4.7	A	0.8	6	6.0	*T491A475K016AT*
4.7	B	0.8	6	3.5	*T491B475K016AT*
6.8	A	1.1	6	7.0	*T491A685K016AT*
6.8	B	1.1	6	3.5	*T491B685K016AT*
6.8	C	1.1	6	1.9	*T491C685K016AT*
10†	A	1.6	10	7.0	*T491A106M016AT*
10	A	1.6	10	7.0	*T491A106K016AT*
10	B	1.6	6	3.5	*T491B106K016AT*
10	C	1.6	6	1.8	*T491C106K016AT*
15	B	2.4	6	3.0	*T491B156K016AT*
15	C	2.4	6	1.8	*T491C156K016AT*
22	B	3.5	6	3.0	*T491B226K016AT*
22	C	3.6	6	1.6	*T491C226K016AT*
22	D	3.6	6	0.8	*T491D226K016AT*
33	C	5.3	6	1.2	*T491C336K016AT*
33	D	5.3	6	0.8	*T491D336K016AT*
47	C	7.5	6	1.2	*T491C476K016AT*
47	D	7.5	6	0.8	*T491D476K016AT*
68	D	10.9	6	0.7	*T491D686K016AT*
100	D	16	8	0.7	*T491D107K016AT*
100	X	16	8	0.7	*T491X107K016AT*
150	X	24	8	0.5	*T491X157K016AT*
220	X	35.2	10	0.5	*T491X227K016AT*

continued > > > >

Capacitance tolerance ±10% except values marked † which are ±20%

* 6 Volt rating equivalent to 6.3 Volt

Case sizes A to D are also available in lower profile style to order

continuation

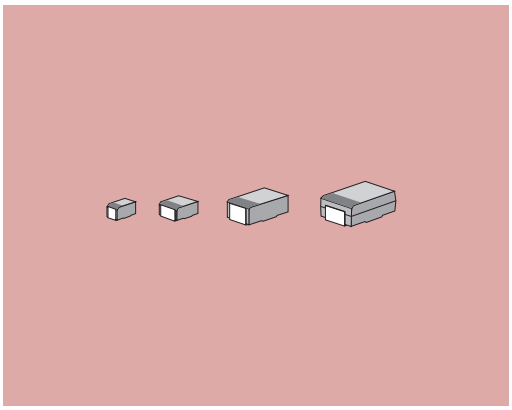
ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
20 Volt					
0.68	A	0.5	4	12.0	***T491A684K020AT***
1.0†	R	0.5	6	20.0	***T491R105M020AT***
1.0	A	0.5	4	10.0	***T491A105K020AT***
1.5	A	0.5	6	8.0	***T491A155K020AT***
2.2	A	0.5	6	7.0	***T491A225K020AT***
2.2	B	0.5	6	3.5	***T491B225K020AT***
3.3	A	0.7	6	7.0	***T491A335K020AT***
3.3	B	0.7	6	3.5	***T491B335K020AT***
4.7†	A	1.0	8	6.0	***T491A475M020AT***
4.7	B	1.0	6	3.5	***T491B475K020AT***
4.7	C	1.0	6	2.4	***T491C475K020AT***
6.8	B	1.4	6	3.5	***T491B685K020AT***
6.8	C	1.4	6	1.9	***T491C685K020AT***
10	B	2.0	6	3.0	***T491B106K020AT***
10	C	2.0	6	1.8	***T491C106K020AT***
15	C	3.0	6	1.7	***T491C156K020AT***
15	D	3.0	6	1.0	***T491D156K020AT***
22	C	4.4	6	1.2	***T491C226K020AT***
22	D	4.4	6	0.8	***T491D226K020AT***
33†	C	6.6	6	1.2	***T491C336M020AT***
33	D	6.6	6	0.8	***T491D336K020AT***
47	D	9.4	6	0.7	***T491D476K020AT***
68	D	13.6	8	0.7	***T491D686K020AT***
68	X	13.6	6	0.7	***T491X686K020AT***
100	X	20.0	8	0.5	***T491X107K020AT***
25 Volt					
0.33	A	0.5	4	15.0	***T491A334K025AT***
0.47	A	0.5	4	14.0	***T491A474K025AT***
0.68	A	0.5	4	10.0	***T491A684K025AT***
1.0	A	0.5	4	8.0	***T491A105K025AT***
1.0	B	0.5	4	5.0	***T491B105K025AT***
1.5	A	0.5	6	10.0	***T491A155K025AT***
1.5	B	0.5	6	5.0	***T491B155K025AT***
2.2	B	0.6	6	4.5	***T491B225K025AT***
2.2	C	0.6	6	3.5	***T491C225K025AT***
3.3	B	0.9	6	3.5	***T491B335K025AT***
3.3	C	0.9	6	2.5	***T491C335K025AT***
4.7†	B	1.2	6	1.5	***T491B475M025AT***
4.7	C	1.2	6	2.4	***T491C475K025AT***
6.8	C	1.7	6	1.9	***T491C685K025AT***
10.0	C	2.5	6	1.5	***T491C106K025AT***
10.0	D	2.5	6	1.0	***T491D106K025AT***
15.0	C	3.8	6	1.5	***T491C156K025AT***
15.0	D	3.8	6	1.0	***T491D156K025AT***
22.0	D	5.5	6	0.8	***T491D226K025AT***
33.0	D	8.3	6	0.7	***T491D336K025AT***
33.0	X	8.3	6	0.7	***T491X336K025AT***
47.0†	D	11.8	10	0.7	***T491D476M025AT***
47.0	X	11.8	6	0.7	***T491X476K025AT***
68.0†	X	17.0	8	0.7	***T491X686M025AT***

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
35 Volt					
0.1	A	0.5	4	20.0	***T491A104K035AT***
0.15	A	0.5	4	19.0	***T491A154K035AT***
0.22	A	0.5	4	18.0	***T491A224K035AT***
0.33	A	0.5	4	15.0	***T491A334K035AT***
0.47	A	0.5	4	14.0	***T491A474K035AT***
0.47	B	0.5	4	8.0	***T491B474K035AT***
0.68	A	0.5	4	10.0	***T491A684K035AT***
0.68	B	0.5	4	6.5	***T491B684K035AT***
1.0	A	0.5	4	10.0	***T491A105K035AT***
1.0	B	0.5	4	5.0	***T491B105K035AT***
1.5	B	0.5	6	5.0	***T491B155K035AT***
1.5	C	0.5	6	4.5	***T491C155K035AT***
2.2	B	0.8	6	4.0	***T491B225K035AT***
2.2	C	0.8	6	3.5	***T491C225K035AT***
3.3†	B	1.2	6	3.5	***T491B335M035AT***
3.3	C	1.2	6	2.5	***T491C335K035AT***
4.7	C	1.7	6	2.5	***T491C475K035AT***
4.7	D	1.7	6	1.5	***T491D475K035AT***
6.8	C	2.4	6	2.0	***T491C685K035AT***
6.8	D	2.4	6	1.3	***T491D685K035AT***
10†	C	3.5	6	2.0	***T491C106M035AT***
10	D	3.5	6	1.0	***T491D106K035AT***
15	D	5.3	6	0.8	***T491D156K035AT***
15	X	5.3	6	0.9	***T491X156K035AT***
22†	D	7.7	6	0.7	***T491D226M035AT***
22	X	7.7	6	0.7	***T491X226K035AT***
33	X	11.6	6	0.6	***T491X336K035AT***
47	X	16.5	10	0.5	***T491X476K035AT***
50 Volt					
0.1	A	0.5	4	20.0	***T491A104K050AT***
0.15	A	0.5	4	19.0	***T491A154K050AT***
0.15	B	0.5	4	16.0	***T491B154K050AT***
0.22	B	0.5	4	14.0	***T491B224K050AT***
0.33	B	0.5	4	10.0	***T491B334K050AT***
0.47	B	0.5	4	9.0	***T491B474K050AT***
0.47	C	0.5	4	8.0	***T491C474K050AT***
0.68	B	0.5	4	8.0	***T491B684K050AT***
0.68	C	0.5	4	7.0	***T491C684K050AT***
1.0	C	0.5	4	5.5	***T491C105K050AT***
1.5	C	0.8	6	4.5	***T491C155K050AT***
1.5	D	0.8	6	3.5	***T491D155K050AT***
2.2	C	1.1	6	3.5	***T491C225K050AT***
2.2	D	1.1	6	2.5	***T491D225K050AT***
3.3	D	1.7	6	2.0	***T491D335K050AT***
4.7	D	2.4	6	1.5	***T491D475K050AT***
6.8†	D	3.4	6	1.0	***T491D685M050AT***
6.8	X	3.5	6	1.0	***T491X685K050AT***
10.0†	X	5.0	6	0.7	***T491X106M050AT***
15.0	X	7.5	8	0.7	***T491X156K050AT***

Capacitance tolerance ±10% except values marked † which are ±20%

Case sizes A to D are also available in lower profile style to order

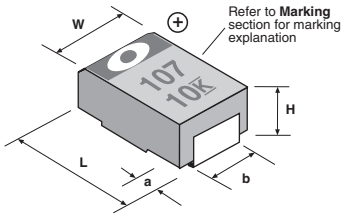


KEMET type T494, T495 & T510

Low ESR, surface mount, solid tantalum capacitors capable of handling higher ripple current and producing greater circuit efficiency. Utilisation of the latest technology ensures optimum performance. Fully encapsulated to provide a mechanically robust construction whilst offering superior resistance to moisture and heat. Comprises of three ranges: standard (T494), surge robust (T495) and ultra-low ESR (T510). Supplied taped and reeled.

- **Low ESR**
- High ripple current
- **Choice of three ranges**
- Optimised performance & reliability
- Fully moulded construction
- Suitable for wave & reflow soldering
- Capacitance tolerance **10%** (or 20%)
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H	a	b
R (0805)	2.0	1.3	1.2 max.	0.5	0.9
A (1206)	3.2	1.6	1.6	0.8	1.2
B	3.5	2.8	1.9	0.8	2.2
C	6.0	3.2	2.5	1.3	2.2
D	7.3	4.3	2.8	1.3	2.4
X (see Note 1)	7.3	4.3	4.0	1.3	2.4
E (see Note 2)	7.3	**6.0**	**3.6**	1.3	**4.1**

Notes :

[1] KEMET case X is same as industry standard case E

[2] KEMET case E is dimensionly different to industry standard case E (see bold figures)

Specification Meets EIA-535 BAAC

T494, T495 & T510

Capacitance tolerance	±10% (or ±20%) at 120Hz, 25°C
Operating temperature range	-55°C to +85°C (+125°C with voltage derating - see table below)
Leakage current (as listed)	measured at 25°C
Dissipation factor (as listed)	measured at 120Hz, 25°C
ESR (as listed)	measured at 100kHz, 25°C
Power dissipation	refer to table below
Ripple current	$\sqrt{(P \div R)}$ where P = power dissipation R = ESR

Rated voltage/surge voltage capability

Rated voltage (≤ +85°C)	**3V**	**4V**	**6V**	**10V**	**16V**	**20V**	**25V**	**35V**	**50V**	dc
Rated voltage (≤ +125°C)	2V	2.7V	4V	7V	10V	13V	17V	23V	33V	dc
Surge voltage (≤ +85°C)	4V	5.2V	8V	13V	20V	26V	32V	46V	65V	dc
Surge voltage (≤ +125°C)	2.4V	3.2V	5V	8V	12V	16V	20V	28V	40V	dc

Power dissipation

Case Size	R	A	B	C	D	X	X (T510)	E	E (T510)
Max. Power (W) at 25°C	0.025	0.075	0.085	0.11	0.15	0.165	0.27	0.20	0.285

Marking and Packaging

Marking		Capacitance value code (in pF) e.g. 107 = 100µF Rated voltage e.g. 10 = 10V Bar to indicate positive terminal with letter to indicate range: O = T494, R = T495, F = T510
Tape		
	Case Size	
	R	8mm width, 4mm pitch
	A	8mm width, 4mm pitch
	B	8mm width, 4mm pitch
	C	12mm width, 8mm pitch
	D	12mm width, 8mm pitch
	X	12mm width, 8mm pitch
	E	12mm width, 8mm pitch
Reel		178mm dia.

Order Codes for T494, T495 & T510 are listed on the following four pages > > > >

KEMET type T494 (standard)

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
3 Volt					
33	A	1.0	6	2.0	*T494A336K003AT*
4 Volt					
3.3	A	0.5	6	4.0	*T494A335K004AT*
4.7	A	0.5	6	3.5	*T494A475K004AT*
6.8	A	0.5	6	3.0	*T494A685K004AT*
10†	R	0.5	8	10.0	*T494R106M004AT*
10	A	0.5	6	2.0	*T494A106K004AT*
10	B	0.5	6	1.2	*T494B106K004AT*
15	A	0.6	6	1.5	*T494A156K004AT*
15	B	0.6	6	1.2	*T494B156K004AT*
22	A	0.9	6	1.5	*T494A226K004AT*
22	B	0.9	6	0.6	*T494B226K004AT*
22	C	0.9	6	0.5	*T494C226K004AT*
33	A	1.3	6	3.0	*T494A336K004AT*
33	B	1.3	6	0.5	*T494B336K004AT*
33	C	1.3	6	0.5	*T494C336K004AT*
47†	A	1.9	12	2.0	*T494A476M004AT*
47	B	1.9	6	0.5	*T494B476K004AT*
47	C	1.9	6	0.5	*T494C476K004AT*
68	B	2.7	6	2.0	*T494B686K004AT*
68	C	2.7	6	0.25	*T494C686K004AT*
68	D	2.7	6	0.2	*T494D686K004AT*
100	B	4.0	8	0.65	*T494B107K004AT*
100	C	4.0	8	0.2	*T494C107K004AT*
100	D	4.0	8	0.2	*T494D107K004AT*
150	C	6.0	8	0.3	*T494C157K004AT*
150	D	6.0	8	0.15	*T494D157K004AT*
330	D	13.2	8	0.15	*T494D337K004AT*
470	D	18.8	8	0.15	*T494D477K004AT*
470	X	18.8	8	0.15	*T494X477K004AT*
680†	D	27.2	12	0.15	*T494D687M004AT*
680†	X	27.2	12	0.1	*T494X687M004AT*
1000†	E	40.0	15	0.08	*T494E108M004AT*
6 Volt *					
2.2	A	0.5	6	6.0	*T494A225K006AT*
3.3	A	0.5	6	6.0	*T494A335K006AT*
4.7	A	0.5	6	3.5	*T494A475K006AT*
6.8	A	0.5	6	2.0	*T494A685K006AT*
6.8	B	0.5	6	1.2	*T494B685K006AT*
10†	R	0.6	8	10.0	*T494R106M006AT*
10	A	0.6	6	2.0	*T494A106K006AT*
10	B	0.6	6	1.0	*T494B106K006AT*
15	A	0.9	6	2.0	*T494A156K006AT*
15	B	0.9	6	0.7	*T494B156K006AT*
15	C	0.9	6	0.6	*T494C156K006AT*
22	A	1.4	6	3.0	*T494A226K006AT*
22	B	1.4	6	0.6	*T494B226K006AT*
22	C	1.4	6	0.5	*T494C226K006AT*
33	A	2.0	12	2.0	*T494A336K006AT*
33	B	2.0	6	0.6	*T494B336K006AT*
33	C	2.0	6	0.3	*T494C336K006AT*
47	B	2.9	6	2.0	*T494B476K006AT*
47	C	2.9	6	0.25	*T494C476K006AT*
47	D	2.9	6	0.22	*T494D476K006AT*
68	B	4.1	8	0.65	*T494B686K006AT*
68	C	4.1	6	0.2	*T494C686K006AT*
68	D	4.1	6	0.2	*T494D686K006AT*
100	C	6.0	8	0.3	*T494C107K006AT*
100	D	6.0	8	0.15	*T494D107K006AT*
150†	C	9.0	8	0.3	*T494C157M006AT*
150	D	9.0	8	0.15	*T494D157K006AT*
220†	C	13.2	10	0.3	*T494C227M006AT*
220	D	13.2	8	0.15	*T494D227K006AT*
220	X	13.2	8	0.15	*T494X227K006AT*
330	D	19.8	8	0.15	*T494D337K006AT*
330	X	19.8	8	0.15	*T494X337K006AT*
470	D	28.2	12	0.15	*T494D477K006AT*
470	X	28.2	10	0.1	*T494X477K006AT*
680	E	40.8	12	0.1	*T494E687K006AT*

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
10 Volt					
1.5	A	0.5	6	6.0	*T494A155K010AT*
2.2	A	0.5	6	6.0	*T494A225K010AT*
3.3	A	0.5	6	4.0	*T494A335K010AT*
4.7†	R	0.5	8	20.0	*T494R475M010AT*
4.7	A	0.5	6	3.0	*T494A475K010AT*
4.7	B	0.5	6	1.5	*T494B475K010AT*
6.8	A	0.7	6	3.0	*T494A685K010AT*
6.8	B	0.7	6	1.2	*T494B685K010AT*
10	A	1.0	6	2.0	*T494A106K010AT*
10	B	1.0	6	0.8	*T494B106K010AT*
10	C	1.0	6	0.6	*T494C106K010AT*
15	A	1.5	8	4.0	*T494A156K010AT*
15	B	1.5	6	0.7	*T494B156K010AT*
15	C	1.5	6	0.5	*T494C156K010AT*
22	A	2.2	10	4.5	*T494A226K010AT*
22	B	2.2	6	0.7	*T494B226K010AT*
22	C	2.2	6	0.4	*T494C226K010AT*
33	B	3.3	6	2.0	*T494B336K010AT*
33	C	3.3	6	0.3	*T494C336K010AT*
33	D	3.3	6	0.25	*T494D336K010AT*
47	B	4.7	8	0.65	*T494B476K010AT*
47	C	4.7	6	0.3	*T494C476K010AT*
47	D	4.7	6	0.22	*T494D476K010AT*
68	C	6.8	6	0.3	*T494C686K010AT*
68	D	6.8	6	0.2	*T494D686K010AT*
100	C	10	8	0.3	*T494C107K010AT*
100	D	10	8	0.15	*T494D107K010AT*
150	D	15	8	0.15	*T494D157K010AT*
150	X	15	8	0.15	*T494X157K010AT*
220	D	22	8	0.15	*T494D227K010AT*
220	X	22	8	0.15	*T494X227K010AT*
330	D	33	10	0.15	*T494D337K010AT*
330	X	33	10	0.1	*T494X337K010AT*
470	E	47	12	0.1	*T494E477K010AT*
16 Volt					
1.0	A	0.5	4	6.0	*T494A105K016AT*
1.5	A	0.5	6	6.0	*T494A155K016AT*
2.2	R	0.5	8	20.0	*T494R225K016AT*
2.2	A	0.5	6	4.0	*T494A225K016AT*
3.3	A	0.5	6	4.0	*T494A335K016AT*
3.3	B	0.5	6	2.0	*T494B335K016AT*
4.7	A	0.8	6	3.0	*T494A475K016AT*
4.7	B	0.8	6	1.5	*T494B475K016AT*
6.8	A	1.1	6	3.0	*T494A685K016AT*
6.8	B	1.1	6	1.2	*T494B685K016AT*
6.8	C	1.1	6	0.8	*T494C685K016AT*
10	A	1.6	10	3.0	*T494A106K016AT*
10	B	1.6	6	0.8	*T494B106K016AT*
10	C	1.6	6	0.6	*T494C106K016AT*
15	B	2.4	6	0.8	*T494B156K016AT*
15	C	2.4	6	0.4	*T494C156K016AT*
22	B	3.5	6	1.0	*T494B226K016AT*
22	C	3.6	6	0.35	*T494C226K016AT*
22	D	3.6	6	0.25	*T494D226K016AT*
33	C	5.3	6	0.3	*T494C336K016AT*
33	D	5.3	6	0.25	*T494D336K016AT*
47	C	7.5	6	0.5	*T494C476K016AT*
47	D	7.5	6	0.2	*T494D476K016AT*
68	D	10.9	6	0.15	*T494D686K016AT*
100	D	16	8	0.15	*T494D107K016AT*
100	X	16	8	0.15	*T494X107K016AT*
150	X	24	8	0.15	*T494X157K016AT*
220	X	35.2	7.2	0.5	*T494X227K016AT*

continued overleaf > > > >

Capacitance tolerance ±10% except values marked † which are ±20%

Case sizes A to D are also available in lower profile style to order

* 6 Volt rating equivalent to 6.3 Volt

KEMET type T494 (standard) continuation

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
20 Volt					
0.68	A	0.5	4	8.0	*T494A684K020AT*
1.0†	R	0.2	6	15.0	*T494R105M020AT*
1.0	A	0.5	4	5.5	*T494A105K020AT*
1.5	A	0.5	6	4.5	*T494A155K020AT*
2.2	A	0.5	6	4.0	*T494A225K020AT*
2.2	B	0.5	6	1.5	*T494B225K020AT*
3.3	A	0.7	6	4.0	*T494A335K020AT*
3.3	B	0.7	6	1.3	*T494B335K020AT*
4.7	A	1.0	8	3.0	*T494A475K020AT*
4.7	B	1.0	6	1.0	*T494B475K020AT*
4.7	C	1.0	6	0.6	*T494C475K020AT*
6.8	B	1.4	6	1.0	*T494B685K020AT*
6.8	C	1.4	6	0.6	*T494C685K020AT*
10	B	2.0	6	1.0	*T494B106K020AT*
10	C	2.0	6	0.5	*T494C106K020AT*
15	C	3.0	6	0.4	*T494C156K020AT*
15	D	3.0	6	0.35	*T494D156K020AT*
22	C	4.4	6	0.4	*T494C226K020AT*
22	D	4.4	6	0.3	*T494D226K020AT*
33	C	6.6	6	0.4	*T494C336K020AT*
33	D	6.6	6	0.25	*T494D336K020AT*
47	D	9.4	6	0.2	*T494D476K020AT*
68	D	13.6	8	0.2	*T494D686K020AT*
68	X	13.6	6	0.2	*T494X686K020AT*
100	X	20.0	8	0.15	*T494X107K020AT*
150	X	30.0	10	0.3	*T494X157K020AT*
25 Volt					
0.33	A	0.5	4	10.0	*T494A334K025AT*
0.47	A	0.5	4	9.0	*T494A474K025AT*
0.68	A	0.5	4	6.0	*T494A684K025AT*
1.0	A	0.5	4	4.0	*T494A105K025AT*
1.0	B	0.5	4	2.0	*T494B105K025AT*
1.5	A	0.5	6	5.0	*T494A155K025AT*
1.5	B	0.5	6	1.5	*T494B155K025AT*
2.2	B	0.6	6	1.2	*T494B225K025AT*
2.2	C	0.6	6	2.2	*T494C225K025AT*
3.3	B	0.9	6	2.0	*T494B335K025AT*
3.3	C	0.9	6	1.2	*T494C335K025AT*
4.7	B	1.2	6	1.0	*T494B475K025AT*
4.7	C	1.2	6	0.6	*T494C475K025AT*
6.8	C	1.7	6	0.6	*T494C685K025AT*
10.0	C	2.5	6	0.6	*T494C106K025AT*
10.0	D	2.5	6	0.4	*T494D106K025AT*
15.0	C	3.8	6	0.9	*T494C156K025AT*
15.0	D	3.8	6	0.35	*T494D156K025AT*
22.0	D	5.5	6	0.3	*T494D226K025AT*
33.0	D	8.3	6	0.4	*T494D336K025AT*
33.0	X	8.3	6	0.3	*T494X336K025AT*
47.0	D	11.8	10	0.2	*T494D476K025AT*
47.0	X	11.8	6	0.3	*T494X476K025AT*
68.0†	X	17.0	8	0.3	*T494X686M025AT*
100†	X	25.0	8	0.25	*T494X107M025AT*

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Order Code
35 Volt					
0.1	A	0.5	4	10.0	*T494A104K035AT*
0.15	A	0.5	4	6.0	*T494A154K035AT*
0.22	A	0.5	4	6.0	*T494A224K035AT*
0.33	A	0.5	4	6.0	*T494A334K035AT*
0.47	A	0.5	4	4.0	*T494A474K035AT*
0.47	B	0.5	4	2.5	*T494B474K035AT*
0.68	A	0.5	4	6.0	*T494A684K035AT*
0.68	B	0.5	4	2.5	*T494B684K035AT*
1.0	A	0.5	4	6.0	*T494A105K035AT*
1.0	B	0.5	4	2.0	*T494B105K035AT*
1.5	B	0.5	6	3.0	*T494B155K035AT*
1.5	C	0.5	6	2.5	*T494C155K035AT*
2.2	B	0.8	6	2.5	*T494B225K035AT*
2.2	C	0.8	6	1.5	*T494C225K035AT*
3.3	B	1.2	6	1.3	*T494B335K035AT*
3.3	C	1.2	6	0.8	*T494C335K035AT*
4.7	C	1.7	6	0.7	*T494C475K035AT*
4.7	D	1.7	6	0.7	*T494D475K035AT*
6.8	C	2.4	6	0.9	*T494C685K035AT*
6.8	D	2.4	6	0.5	*T494D685K035AT*
10	C	3.5	6	1.2	*T494C106K035AT*
10	D	3.5	6	0.4	*T494D106K035AT*
15	D	5.3	6	0.35	*T494D156K035AT*
15	X	5.3	6	0.3	*T494X156K035AT*
22	D	7.7	6	0.4	*T494D226K035AT*
22	X	7.7	6	0.3	*T494X226K035AT*
33	X	11.6	6	0.3	*T494X336K035AT*
47	X	16.5	8	0.5	*T494X476K035AT*
50 Volt					
0.1	A	0.5	4	10.0	*T494A104K050AT*
0.15	A	0.5	4	10.0	*T494A154K050AT*
0.15	B	0.5	4	10.0	*T494B154K050AT*
0.22	B	0.5	4	10.0	*T494B224K050AT*
0.33	B	0.5	4	2.5	*T494B334K050AT*
0.47	B	0.5	4	2.0	*T494B474K050AT*
0.47	C	0.5	4	1.8	*T494C474K050AT*
0.68	B	0.5	4	3.0	*T494B684K050AT*
0.68	C	0.5	4	1.6	*T494C684K050AT*
1.0	C	0.5	4	1.6	*T494C105K050AT*
1.5	C	0.8	6	1.5	*T494C155K050AT*
1.5	D	0.8	6	1.0	*T494D155K050AT*
2.2	C	1.1	6	1.5	*T494C225K050AT*
2.2	D	1.1	6	0.8	*T494D225K050AT*
3.3	D	1.7	6	0.8	*T494D335K050AT*
4.7	D	2.4	6	0.6	*T494D475K050AT*
6.8	D	3.4	6	0.7	*T494D685K050AT*
6.8	X	3.5	6	0.5	*T494X685K050AT*
10	X	5.0	6	0.4	*T494X106K050AT*
15	X	7.5	6	0.4	*T494X156K050AT*

Capacitance tolerance ±10% except values marked † which are ±20%

Case sizes A to D are also available in lower profile style to order

KEMET type T495 (surge robust)

Very low ESR tantalum capacitors offering a greater ripple current and a high surge current capability. Ideal for output filtering in SMPS and DC-DC converters. Also suitable for battery-ground input filter applications.

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (mΩ) max.	Ripple Current at 100kHz (mA) 25°C	85°C	125°C	Order Code
6 Volt *								
68	D	3.3	4	175	926	833	370	***T495D686K006AS***
100	C	6.0	8	150	856	770	342	***T495C107K006AS***
150†	C	9.0	8	200	742	668	297	***T495C157M006AS***
150	X	7.2	6	100	1285	1156	514	***T495X157K006AS***
220	D	13.2	8	100	1225	1102	490	***T495D227K006AS***
220	X	13.2	8	100	1285	1156	514	***T495X227K006AS***
330•	X	19.8	8	100	1285	1156	514	***T495X337K006AS***
470•	X	28.2	10	65	1593	1434	637	***T495X477K006AS***
10 Volt								
22	C	2.2	6	345	565	508	226	***T495C226K010AS***
47	D	3.8	4	200	866	780	346	***T495D476K010AS***
68	C	6.8	6	225	700	630	280	***T495C686K010AS***
68	D	6.8	6	150	1000	900	400	***T495D686K010AS***
68	X	5.4	4	150	1049	944	420	***T495X686K010AS***
100•	D	10	8	100	1225	1102	490	***T495D107K010AS***
100	X	8.0	6	100	1285	1156	514	***T495X107K010AS***
150	D	15	8	100	1225	1102	490	***T495D157K010AS***
150•	X	15	8	100	1285	1156	514	***T495X157K010AS***
220•	X	22	8	100	1285	1156	514	***T495X227K010AS***
16 Volt								
33	C	5.3	6	275	632	569	253	***T495C336K016AS***
33	D	4.2	4	225	816	735	326	***T495D336K016AS***
47	D	7.5	6	150	1000	900	400	***T495D476K016AS***
100	D	16	8	125	1095	986	438	***T495D107K016AS***
100•	X	16	8	100	1285	1156	514	***T495X107K016AS***
20 Volt								
15	D	2.4	4	275	738	665	295	***T495D156K020AS***
22	D	3.5	4	225	816	735	326	***T495D226K020AS***
33	D	6.6	6	200	866	780	346	***T495D336K020AS***
47	X	7.5	4	150	1049	944	420	***T495X476K020AS***
68	X	13.6	6	150	1049	944	420	***T495X686K020AS***
25 Volt								
6.8	C	1.7	6	500	469	422	188	***T495C685K025AS***
10	C	2.5	6	450	494	445	198	***T495C106K025AS***
15	D	3.8	6	275	738	665	295	***T495D156K025AS***
15	X	3.0	4	200	908	817	363	***T495X156K025AS***
22	D	5.5	6	200	866	780	346	***T495D226K025AS***
22	X	4.4	4	225	856	771	343	***T495X226K025AS***
33	X	6.6	4	175	971	874	388	***T495X336K025AS***
47†	X	11.8	6	200	908	817	363	***T495X476M025AS***
35 Volt								
4.7	C	1.7	6	600	428	385	171	***T495C475K035AS***
6.8	X	1.9	4	300	742	667	297	***T495X685K035AS***
10	D	3.5	6	300	707	636	283	***T495D106K035AS***
10	X	2.8	4	250	812	731	325	***T495X106K035AS***
15	D	5.3	6	300	707	636	283	***T495D156K035AS***
15	X	5.3	6	225	856	771	343	***T495X156K035AS***
22	X	7.7	6	275	775	697	410	***T495X226K035AS***
33	X	11.6	6	250	812	731	325	***T495X336K035AS***
50 Volt								
4.7	X	1.9	4	300	742	667	297	***T495X475K050AS***

Capacitance tolerance ±10% except values marked † which are ±20%

A lower profile case size D is also available to order on certain values

* 6 Volt rating equivalent to 6.3 Volt

• A lower ESR version with higher ripple current in the same case size is also available to order.

KEMET type T510 (ultra-low ESR)

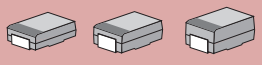
An innovative range of tantalum capacitors with a multi-element construction. Offers a high CV, an exceptionally low ESR and a very high ripple current, all within a small package size. Excellent for SMPS filtering and power decoupling in modern microprocessor designs.

ORDER CODES

Value (µF)	Case Size◊	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (mΩ) max.	Ripple Current at 100kHz (A) 25°C	85°C	125°C	Order Code
4 Volt								
680	X	27.2	6	30	3.0	2.7	1.2	***T510X687K004AT***
1000	E	40.0	6	10	5.3	4.8	2.1	***T510E108K004AT***
1000	E	40.0	6	18	4.0	3.6	1.6	***T510E108K004ATE18***
1000	X	40.0	6	18	3.9	3.5	1.5	***T510X108K004ATE18***
1000	X	40.0	6	23	3.4	3.0	1.3	***T510X108K004ATE23***
6 Volt *								
470	X	28.2	6	30	3.0	2.7	1.2	***T510X477K006AT***
680	E	40.8	6	12	4.8	4.3	1.9	***T510E687K006AT***
680	E	40.8	6	23	3.5	3.2	1.4	***T510E687K006ATE23***
10 Volt								
330	X	33.0	6	35	2.8	2.5	1.1	***T510X337K010AT***
16 Volt								
150	X	24.0	6	30	3.0	2.7	1.2	***T510X157K016ATE30***
150	X	24.0	6	40	2.6	2.3	1.0	***T510X157K016ATE40***
220	X	35.2	10	25	3.3	3.0	1.3	***T510X227K016ATE25***
220	X	35.2	10	40	2.6	2.3	1.0	***T510X227K016ATE40***
20 Volt								
100	X	20.0	8	35	2.8	2.5	1.1	***T510X107K020ATE35***
100	X	20.0	6	40	2.6	2.3	1.0	***T510X107K020ATE40***
100	X	20.0	6	45	2.4	2.2	0.9	***T510X107K020ATE45***
25 Volt								
100	E	25.0	8	50	2.4	2.1	1.0	***T510E107K025AT***
35 Volt								
22	X	7.7	6	60	2.1	1.9	0.8	***T510X226K035ATE60***
22	X	7.7	6	80	1.8	1.7	0.7	***T510X226K035ATE80***
22	X	7.7	6	100	1.6	1.4	0.6	***T510X226K035ATE00***
33	X	11.6	6	50	2.3	2.1	0.9	***T510X336K035ATE50***
47	X	16.5	8	55	2.2	2.0	0.9	***T510X476K035ATE55***
47	E	16.5	8	50	2.1	2.1	1.0	***T510E476K035ATE50***
47	X	16.5	8	65	2.0	1.8	0.8	***T510X476K035ATE65***
50 Volt								
10	X	5.0	8	90	1.7	1.6	0.7	***T510X106K050ATE90***
10	X	5.0	8	120	1.5	1.3	0.6	***T510X106K050ATE20***

* 6 Volt rating equivalent to 6.3 Volt

◊ For details of case sizes refer to page 60

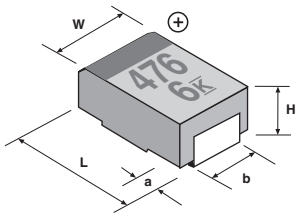


KEMET type AO-Cap (ultra-low ESR)

The AO-Cap, designated the A700 series, is a surface mount aluminium-polymer capacitor that features extremely low ESR making it suitable for high frequency applications whilst maintaining high capacitance. It is supplied in the same compact EIA industry standard packages and packaging as KEMET's surface mount Tantalum products.

- Capacitance values from 6.8µF to 470µF
- Voltage ratings from 2V to 16V
- Extremely low ESR down to 7mΩ
- High capacitance retention at high operating frequencies
- No voltage derating up to 125°C
- Cost savings by replacement of multiple devices with one AO-Cap
- Ideal for high frequency power
- Robust to the surface mount process
- No dry-out related failure mechanism
- Benign failure mode
- Environmentally friendly Lead (Pb)-free construction
- Industry standard surface mount packages
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H	a	b
V	7.3	4.3	1.9.	1.3	2.4
D	7.3	4.3	2.8	1.3	2.4
X	7.3	4.3	4.0	1.3	2.4

* KEMET case X is same as industry standard case E

Specification

	AO-Cap (A700)
Capacitance tolerance	±20°C at 120Hz, 25°C
Operating temperature range	-55°C to +155°C (with no voltage derating up to 125°C)
Leakage current (as listed)	measured at rated voltage, 25°C
Dissipation factor	6% measured at 120Hz, 25°C
ESR (as listed)	measured at 100kHz, 25°C
Power dissipation	refer to table below
Ripple current (as listed)	measured at 100kHz, 125°C

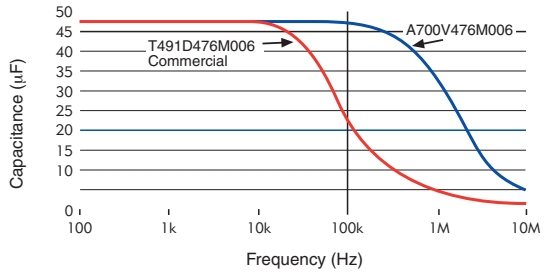
Rated voltage/surge voltage capability

Rated voltage (+55°C to 125°C)	2V	2.5V	4V	6.3V	8V	10V	dc
Surge voltage (+55°C to 125°C)	2.6V	3.2V	5.2V	8V	10.4V	13V	dc

Power dissipation

Case Size	V	D	X
Max. Power (W) at 25°C with 20% temp. rise	270	250	225

Capacitance vs. Frequency
T491 (MnO2) vs. A700 (Polymer)



These curves demonstrate the AO-Cap's superior high frequency characteristics.

Marking and Packaging

Marking	Capacitance value, Voltage code, Bar to indicate negative terminal
Tape	
Case Size	
V	12mm width, 8mm pitch
D	12mm width, 8mm pitch
X	12mm width, 8mm pitch
Reel	178mm dia.

Construction

AO-Cap is constructed using aluminium as the anode material, aluminium oxide as the dielectric, and a conductive organic polymer for its counter-electrode material. It is this innovative construction that allows the product to offer many advantages over more traditional capacitors.

Applications

Targeted at power management, de-coupling and filtering applications, the AO-Cap exhibits excellent high frequency performance with ESR values typically 10 times lower than traditional low ESR tantalum capacitors over wide frequency ranges. As a result of this outstanding performance, it can be used to reduce component count allowing design engineers to save board space and placement time offering a more cost-effective overall solution. Furthermore, not only can AO-Cap be used in place of low ESR Tantalum, but it can also replace High Cap Ceramics and low voltage Surface Mount Electrolytics.

Performance

In addition to its high frequency performance the AO-Cap has excellent surge current capability and long term reliability due to the self-healing properties of the dielectric. It can also be used over its entire operating temperature range of -55°C to +125°C without the need for de-rating. The approximate capacitance shift over this temperature range is ±15%.

Package

The AO-Cap has a moulded case and wraparound terminations. This provides strong protection against cracks (flex), often a problem when using high capacitance ceramics, and also offers a true surface mountable solution compared to the existing aluminium-organic capacitors found in the industry. Supplied taped and reeled.

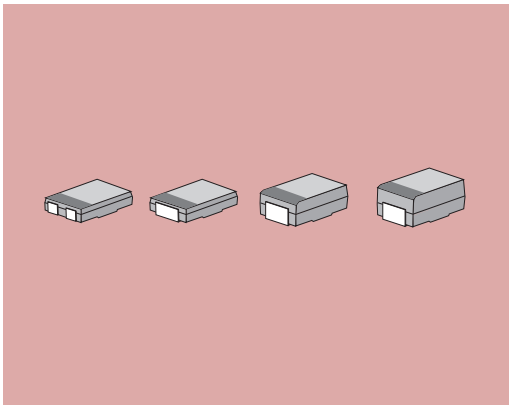
AO-Cap continued overleaf > > > >

continuation

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA)	ESR (mΩ)	Ripple Current (A)	Order Code
2 Volt					
100	V	12.0	18	3.9	*A700V107M002AT018*
100	V	12.0	25	3.3	*A700V107M002AT025*
100	V	12.0	28	3.1	*A700V107M002AT028*
120	V	14.4	18	3.9	*A700V127M002AT018*
120	V	14.4	25	3.3	*A700V127M002AT025*
120	V	14.4	28	3.1	*A700V127M002AT028*
150	V	18.0	9	5.4	*A700V157M002AT009*
150	V	18.0	18	3.9	*A700V157M002AT018*
150	V	18.0	25	3.3	*A700V157M002AT025*
150	V	18.0	28	3.1	*A700V157M002AT028*
180	D	21.6	15	4.1	*A700D187M002AT015*
180	D	21.6	18	3.7	*A700D187M002AT018*
220	V	26.4	9	5.5	*A700V227M002AT009*
220	D	26.4	15	4.1	*A700D227M002AT015*
220	D	26.4	18	3.7	*A700D227M002AT018*
270	X	32.4	10	4.7	*A700X277M002AT010*
270	X	32.4	12	4.3	*A700X277M002AT012*
270	X	32.4	15	3.9	*A700X277M002AT015*
330	D	39.6	7	6.0	*A700D337M002AT007*
330	X	39.6	10	4.7	*A700X337M002AT010*
330	X	39.6	15	3.9	*A700X337M002AT015*
390	X	46.8	10	4.7	*A700X397M002AT010*
390	X	46.8	15	3.9	*A700X397M002AT015*
470	X	56.4	10	4.7	*A700X477M002AT010*
470	X	56.4	15	3.9	*A700X477M002AT015*
2.5 Volt					
82	V	12.3	18	3.9	*A700V826M2R5AT018*
82	V	12.3	25	3.3	*A700V826M2R5AT025*
82	V	12.3	28	3.1	*A700V826M2R5AT028*
150	D	22.5	15	4.1	*A700D157M2R5AT015*
150	D	22.5	18	3.7	*A700D157M2R5AT018*
180	D	27.0	15	4.1	*A700D187M2R5AT015*
180	D	27.0	18	3.7	*A700D187M2R5AT018*
220	X	33.0	10	4.7	*A700X227M2R5AT010*
220	X	33.0	15	3.9	*A700X227M2R5AT015*
330	X	49.5	10	4.7	*A700X337M2R5AT010*
330	X	49.5	15	3.9	*A700X337M2R5AT015*
470	X	70.5	10	4.7	*A700X477M2R5AT010*
4 Volt					
82	V	19.7	18	3.9	*A700V826M004AT018*
82	V	19.7	25	3.3	*A700V826M004AT025*
82	V	19.7	28	3.1	*A700V826M004AT028*
120	D	28.8	15	4.1	*A700D127M004AT015*
120	D	28.8	18	3.7	*A700D127M004AT018*
150	D	36.0	15	4.1	*A700D157M004AT015*
150	D	36.0	18	3.7	*A700D157M004AT018*
180	D	43.2	15	4.1	*A700D187M004AT015*
180	D	43.2	18	3.7	*A700D187M004AT018*
180	X	43.2	10	4.7	*A700X187M004AT010*
180	X	43.2	15	3.9	*A700X187M004AT015*
220	X	52.8	9	5.3	*A700D227M004AT009*
220	X	52.8	9	5.3	*A700X227M004AT009*
220	X	52.8	10	4.7	*A700X227M004AT010*
220	X	52.8	15	3.9	*A700X227M004AT015*
270	X	64.8	10	4.7	*A700X277M004AT010*
270	X	64.8	15	3.9	*A700X277M004AT015*
330	X	79.2	10	4.7	*A700X337M004AT010*
330	X	79.2	15	3.9	*A700X337M004AT015*

Value (µF)	Case Size	DC Leakage Current (µA)	ESR (mΩ)	Ripple Current (A)	Order Code
6.3 Volt					
22	V	5.5	28	3.1	*A700V226M006AT028*
22	V	5.5	45	2.4	*A700V226M006AT045*
33	V	8.3	18	3.9	*A700V336M006AT018*
33	V	8.3	25	3.3	*A700V336M006AT025*
33	V	8.3	28	3.1	*A700V336M006AT028*
47	V	11.8	18	3.9	*A700V476M006AT018*
47	V	11.8	25	3.3	*A700V476M006AT025*
47	V	11.8	28	3.1	*A700V476M006AT028*
56	V	14.1	18	3.9	*A700V566M006AT018*
56	V	14.1	25	3.3	*A700V566M006AT025*
56	V	14.1	28	3.1	*A700V566M006AT028*
68	V	17.1	18	3.9	*A700V686M006AT018*
68	V	17.1	25	3.3	*A700V686M006AT025*
68	V	17.1	28	3.1	*A700V686M006AT028*
82	V	20.7	18	3.9	*A700V826M006AT018*
82	V	20.7	25	3.3	*A700V826M006AT025*
82	V	20.7	28	3.1	*A700V826M006AT028*
100	D	25.2	15	4.1	*A700D107M006AT015*
100	D	25.2	18	3.7	*A700D107M006AT018*
120	D	30.2	12	4.6	*A700D127M006AT012*
120	D	30.2	15	4.1	*A700D127M006AT015*
120	D	30.2	18	3.7	*A700D127M006AT018*
150	X	37.8	10	4.7	*A700X157M006AT010*
150	X	37.8	12	4.3	*A700X157M006AT012*
150	X	37.8	15	3.9	*A700X157M006AT015*
180	X	45.4	10	4.7	*A700X187M006AT010*
180	X	45.4	15	3.9	*A700X187M006AT015*
220	X	55.4	15	3.9	*A700X227M006AT015*
8 Volt					
22	V	7.0	28	3.1	*A700V226M008AT028*
22	V	7.0	45	2.4	*A700V226M008AT045*
33	V	10.6	18	3.9	*A700V336M008AT018*
33	V	10.6	25	3.3	*A700V336M008AT025*
33	V	10.6	28	3.1	*A700V336M008AT028*
56	D	17.9	15	4.1	*A700D566M008AT015*
56	D	17.9	18	3.7	*A700D566M008AT018*
68	D	21.8	15	4.1	*A700D686M008AT015*
68	D	21.8	18	3.7	*A700D686M008AT018*
100	X	32.0	10	4.7	*A700X107M008AT010*
100	X	32.0	12	4.3	*A700X107M008AT012*
100	X	32.0	15	3.9	*A700X107M008AT015*
10 Volt					
22	V	8.8	28	3.1	*A700V226M010AT028*
33	V	13.2	18	3.9	*A700V336M010AT018*
33	V	13.2	25	3.3	*A700V336M010AT025*
33	V	13.2	28	3.1	*A700V336M010AT028*
56	D	22.4	15	4.1	*A700D566M010AT015*
56	D	22.4	18	3.7	*A700D566M010AT018*
68	D	27.2	15	4.1	*A700D686M010AT015*
68	D	27.2	18	3.7	*A700D686M010AT018*
100	X	40.0	10	4.7	*A700X107M010AT010*
100	X	40.0	15	3.9	*A700X107M010AT015*
120	X	48.0	10	4.7	*A700X127M010AT010*
120	X	48.0	15	3.9	*A700X127M010AT015*
150	X	60.0	10	4.7	*A700X157M010AT010*
150	X	60.0	15	3.9	*A700X157M010AT015*
12.5 Volt					
10	V	7.5	40	2.6	*A700V106M12RAT040*
10	V	5.0	60	2.1	*A700V106M12RAT060*
15	V	7.5	40	2.6	*A700V156M12RAT040*
22	V	11.0	30	3.0	*A700V226M12RAT030*
47	D	55.4	25	3.2	*A700D476M12RAT025*
100	X	55.4	15	3.9	*A700X107M12RAT015*
16 Volt					
6.8	V	4.3	70	1.9	*A700V685M016AT070*
8.2	V	5.2	45	2.4	*A700V825M016AT045*
10	V	6.4	45	2.4	*A700V106M016AT045*
22	V	14.1	18	3.7	*A700D226M016AT018*
22	V	14.1	25	3.2	*A700D226M016AT025*

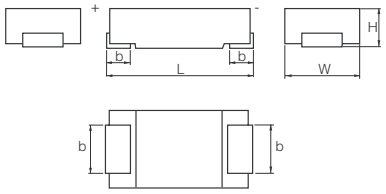


PANASONIC type SP-Cap

Aluminium-polymer surface mount capacitor that features extremely low ESR, making it suitable for high frequency applications whilst maintaining high capacitance. Housed in compact EIA industry standard packages but also offers 40% miniaturisation in the MC series. Lowest ESR can be achieved in the SL & SX series, whilst many values across the complete range give a choice of 240°C & 260°C reflow condition. Supplied taped and reeled.

- Capacitance values from 2.2µF to 560µF
- Voltage ratings from 2V to 16V
- Extremely low ESR down to 4.5mΩ
- Excellent noise-absorbent characteristics
- High ripple current
- Industry standard surface mount packages
- Available in miniature package
- Supplied taped & reeled

Dimensions (mm)



Series/Case Size	L	W	H max.	a	b
FD	7.3	4.3	1.2	1.3	2.4
CD	7.3	4.3	1.9	1.3	2.4
CX	7.3	4.3	2.1	1.3	2.4
UD	7.3	4.3	2.8	1.3	2.4
UE	7.3	4.3	4.2	1.3	2.4
SL	7.3	4.3	1.9	1.3	2.4
SX	7.3	4.3	2.1	1.3	2.4
MC	6.0	3.2	2.1	1.3	1.8

Specification

	SP-Cap
Capacitance tolerance	±20% at 120Hz, 20°C
Operating temperature range	-40°C to +105°C
Leakage current (µA) after 2 min.	Reflow 240°C : ≤0.06CV (2V-4V), ≤0.04CV or 3µA (6.3V - 16V) Reflow 260°C : ≤0.1CV
Dissipation factor	FD, CD, CX, SL, SX & MC series ≤6% (120Hz, 20°C) UD & UE series ≤10% (120Hz, 20°C)
ESR (as listed)	Measured at 100kHz, 20°C
Ripple current (as listed)	Measured at 100kHz, 20 to 105°C
Surge voltage	Rated voltage x 1.25 (15°C to 35°C)

Marking and Packaging

Marking	Capacitance value, Voltage code Bar to indicate negative terminal
Tape	12mm width, 8mm pitch

ORDER CODES

Value (µF)	Series/ Case Size	ESR (mΩ)	Ripple Current (A)	Order Code (240°C)	Order Code (260°C)
2 Volt					
68	FD	28	2.0	***EEFFD0D680R***	–
100	CD	18	2.5	***EEFCD0D101R***	***EEFCD0D101ER***
100	CD	15	2.7	***EEFCD0D101XR***	***EEFCD0D101XE***
100	SL	9	3.0	***EEFSL0D101R***	***EEFSL0D101ER***
120	CD	18	2.5	***EEFCD0D121R***	***EEFCD0D121ER***
120	CD	15	2.7	***EEFCD0D121XR***	***EEFCD0D121XE***
120	SL	9	3.0	***EEFSL0D121R***	***EEFSL0D121ER***
150	CD	18	2.5	***EEFCD0D151R***	***EEFCD0D151ER***
150	SL	9	3.0	***EEFSL0D151R***	***EEFSL0D151ER***
180	CD	8	2.5	***EEFCD0D181R***	***EEFCD0D181ER***
180	SL	9	3.0	***EEFSL0D181R***	***EEFSL0D181ER***
180	SX	9	3.0	***EEFSX0D181R***	***EEFSX0D181ER***
220	CD	18	2.5	***EEFCD0D221R***	***EEFCD0D221ER***
220	SL	9	3.0	***EEFSL0D221R***	***EEFSL0D221ER***
220	CX	15	2.7	***EEFCX0D221R***	–
220	SX	9	3.0	***EEFSX0D221R***	***EEFSX0D221ER***
270	SX	9	3.0	***EEFSX0D271R***	***EEFSX0D271ER***
270	SX	6	3.5	***EEFSX0D271XR***	***EEFSX0D271XE***
270	SX	4.5	3.8	–	***EEFSX0D271E4***
270	UD	12	3.3	***EEFUD0D271R***	***EEFUD0D271ER***
270	UD	10	3.5	***EEFUD0D271XR***	***EEFUD0D271XE***
330	CX	15	2.7	–	***EEFCX0D331R***
330	SX	9	3.0	***EEFSX0D331R***	***EEFSX0D331ER***
330	SX	6	3.5	***EEFSX0D331XR***	***EEFSX0D331XE***
330	SX	4.5	3.5	–	***EEFSX0D331E4***
330	UD	15	3.0	***EEFUD0D331R***	***EEFUD0D331ER***
330	UD	12	3.3	***EEFUD0D331XR***	***EEFUD0D331XE***
330	UE	12	3.3	***EEFUE0D331R***	***EEFUE0D331ER***
330	UE	10	3.5	***EEFUE0D331XR***	***EEFUE0D331XE***
390	CX	15	2.7	–	***EEFCX0D391R***
390	SX	9	3.0	***EEFSX0D391R***	***EEFSX0D391ER***
390	SX	6	3.5	***EEFSX0D391XR***	***EEFSX0D391XE***
390	SX	4.5	3.8	–	***EEFSX0D391E4***
390	UD	9	3.4	***EEFUD0D331LR***	***EEFUD0D331LE***
390	UD	15	3.0	***EEFUD0D391R***	***EEFUD0D391ER***
390	UD	9	3.4	***EEFUD0D391LR***	***EEFUD0D391LE***
390	UE	12	3.3	***EEFUE0D391R***	***EEFUE0D391ER***
390	UE	10	3.5	***EEFUE0D391XR***	***EEFUE0D391XE***
390	UE	7	3.7	***EEFUE0D391LR***	***EEFUE0D391LE***
470	CX	15	2.7	–	***EEFCX0D471R***
470	SX	9	3.0	***EEFSX0D471R***	***EEFSX0D471ER***
470	SX	6	3.5	***EEFSX0D471XR***	***EEFSX0D471XE***
470	SX	4.5	3.8	–	***EEFSX0D471E4***
470	UD	9	3.4	***EEFUD0D471LR***	***EEFUD0D471LE***
470	UE	12	3.3	***EEFUE0D471R***	***EEFUE0D471ER***
470	UE	10	3.5	***EEFUE0D471XR***	***EEFUE0D471XE***
470	UE	7	3.7	***EEFUE0D471LR***	***EEFUE0D471LE***
560	UE	12	3.3	***EEFUE0D561R***	***EEFUE0D561ER***
560	UE	7	3.7	***EEFUE0D561LR***	***EEFUE0D561LE***

Panasonic type SP-Cap
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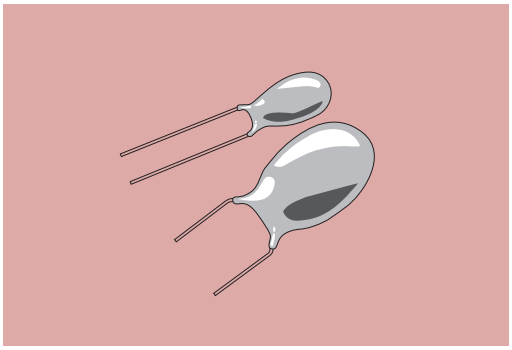
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continuation

ORDER CODES

Value (µF)	Series/ Case Size	ESR (mΩ)	Ripple Current (A)	Order Code (240°C)	Order Code (260°C)
2.5 Volt					
56	FD	28	2.0	*EEFFD0E560R*	–
82	CD	18	2.5	*EEFCD0E820R*	*EEFCD0E820ER*
82	CD	15	2.7	*EEFCD0E820XR*	*EEFCD0E820XE*
100	CD	18	2.5	*EEFCD0E101R*	*EEFCD0E101ER*
100	CD	15	2.7	*EEFCD0E101XR*	*EEFCD0E101XE*
100	SL	9	3.0	*EEFSL0E101R*	*EEFSL0E101ER*
120	CD	18	2.5	*EEFCD0E121R*	*EEFCD0E121ER*
120	SL	9	3.0	*EEFSL0E121R*	*EEFSL0E121ER*
150	CD	18	2.5	*EEFCD0E151R*	*EEFCD0E151ER*
150	SL	9	3.0	*EEFSL0E151R*	*EEFSL0E151ER*
150	SX	9	3.0	*EEFSX0E151R*	*EEFSX0E151ER*
180	SX	9	3.0	*EEFSX0E181R*	*EEFSX0E181ER*
220	CX	15	2.7	–	*EEFCX0E221R*
220	SX	9	3.0	*EEFSX0E221R*	*EEFSX0E221ER*
220	UD	15	3.0	*EEFUD0E221R*	*EEFUD0E221ER*
220	UD	12	3.3	*EEFUD0E221XR*	*EEFUD0E221XE*
220	UD	9	3.4	*EEFUD0E221LR*	*EEFUD0E221LE*
220	UE	12	3.3	*EEFUE0E221R*	*EEFUE0E221ER*
220	UE	10	3.5	*EEFUE0E221XR*	*EEFUE0E221XE*
270	UD	15	3.0	*EEFUD0E271R*	*EEFUD0E271ER*
270	UD	12	3.4	*EEFUD0E271LR*	*EEFUD0E271LE*
270	UE	12	3.3	*EEFUE0E271R*	*EEFUE0E271ER*
270	UE	10	3.5	*EEFUE0E271XR*	*EEFUE0E271XE*
330	CX	15	2.7	–	*EEFCX0E331R*
330	SX	9	3.0	*EEFSX0E331R*	*EEFSX0E331ER*
330	SX	6	3.5	*EEFSX0E331XR*	*EEFSX0E331XE*
330	UE	12	3.3	*EEFUE0E331R*	*EEFUE0E331ER*
330	UE	10	3.5	*EEFUE0E331XR*	*EEFUE0E331XE*
330	UE	7	3.7	*EEFUE0E331LR*	*EEFUE0E331LE*
390	CX	15	2.7	–	*EEFCX0E391R*
390	SX	9	3.0	*EEFSX0E391R*	*EEFSX0E391ER*
390	SX	6	3.5	*EEFSX0E391XR*	*EEFSX0E391XE*
390	UE	12	3.3	*EEFUE0E391R*	*EEFUE0E391ER*
390	UE	7	3.7	*EEFUE0E391LR*	*EEFUE0E391LE*
470	UE	12	3.3	*EEFUE0E471R*	*EEFUE0E471ER*
470	UE	7	3.7	*EEFUE0E471LR*	*EEFUE0E471LE*
4 Volt					
39	FD	28	2.0	*EEFFD0G390R*	–
47	FD	28	2.0	*EEFFD0G470R*	–
56	CD	18	2.5	*EEFCD0G560R*	*EEFCD0G560ER*
56	CD	15	2.7	*EEFCD0G560XR*	*EEFCD0G560XE*
68	CD	18	2.5	*EEFCD0G680R*	*EEFCD0G680ER*
68	CD	15	2.7	*EEFCD0G680XR*	*EEFCD0G680XE*
82	CD	18	2.5	*EEFCD0G820R*	*EEFCD0G820ER*
82	CD	15	2.7	*EEFCD0G820XR*	*EEFCD0G820XE*
82	SL	9	3.0	*EEFSL0G820R*	*EEFSL0G820ER*
82	SX	9	3.0	*EEFSX0G820R*	*EEFSX0G820ER*
100	CD	18	2.5	*EEFCD0G101R*	*EEFCD0G101ER*
100	SX	9	3.0	*EEFSX0G101R*	*EEFSX0G101ER*
100	UD	15	3.0	*EEFUD0J101R*	*EEFUD0J101ER*
100	UD	12	3.3	*EEFUD0J101XR*	*EEFUD0J101XE*
120	UD	15	3.0	*EEFUD0G121R*	*EEFUD0G121ER*
120	UD	12	3.4	*EEFUD0G121XR*	*EEFUD0G121XE*
120	UD	15	3.0	*EEFUD0J121R*	*EEFUD0J121ER*
120	UD	12	3.3	*EEFUD0J121XR*	*EEFUD0J121XE*
120	UD	9	3.4	*EEFUD0J121LR*	–
150	CX	15	2.7	–	*EEFCX0G151R*
150	SX	9	3.0	–	*EEFSX0G151ER*
150	UD	15	3.0	*EEFUD0G151R*	*EEFUD0G151ER*
150	UD	12	3.3	*EEFUD0G151XR*	*EEFUD0G151XE*
150	UD	9	3.4	*EEFUD0G151LR*	*EEFUD0G151LE*
150	UD	18	2.5	*EEFUD0J151R*	*EEFUD0J151ER*
150	UD	9	3.4	*EEFUD0J151LR*	–
180	CX	15	2.7	–	*EEFCX0G181R*
180	SX	9	3.0	–	*EEFSX0G181ER*
180	UD	18	2.5	*EEFUD0G181R*	*EEFUD0G181ER*
180	UD	9	3.4	*EEFUD0G181LR*	*EEFUD0G181LE*
180	UE	12	3.3	*EEFUE0G181R*	*EEFUE0G181ER*
180	UE	10	3.5	*EEFUE0G181XR*	*EEFUE0G181XE*
220	CX	15	2.7	–	*EEFCX0G221R*
220	SX	9	3.0	–	*EEFSX0G221ER*
220	UE	12	3.3	*EEFUE0G221R*	*EEFUE0G181ER*
220	UE	10	3.5	*EEFUE0G221XR*	*EEFUE0G181XE*
220	UE	7	3.7	*EEFUE0G221LR*	*EEFUE0G221LE*
270	UE	12	3.3	*EEFUE0G271R*	*EEFUE0G271ER*
270	UE	7	3.7	*EEFUE0G271LR*	*EEFUE0G271LE*
330	UE	12	3.3	*EEFUE0G331R*	*EEFUE0G331ER*

Value (µF)	Series/ Case Size	ESR (mΩ)	Ripple Current (A)	Order Code (240°C)	Order Code (260°C)
6.3 Volt					
10	CD	55	1.4	*EEFCD0J100R*	*EEFCD0J100ER*
22	CD	40	1.6	*EEFCD0J220R*	*EEFCD0J220ER*
33	FD	28	2.0	*EEFFD0J330R*	–
33	CD	28	2.0	*EEFCD0J330R*	*EEFCD0J330ER*
47	CD	18	2.5	*EEFCD0J470R*	*EEFCD0J470ER*
47	CD	15	2.7	*EEFCD0J470XR*	*EEFCD0J470XE*
56	SL	9	3.0	*EEFSL0J560R*	–
68	CD	18	2.5	*EEFCD0J680R*	*EEFCD0J680ER*
68	CD	15	2.7	*EEFCD0J680XR*	*EEFCD0J680XE*
100	CX	15	2.7	–	*EEFCX0J101R*
120	CX	15	2.7	–	*EEFCX0J121R*
150	CX	15	2.7	–	*EEFCX0J151R*
150	SX	9	3.0	–	*EEFSX0J151ER*
150	UE	12	3.3	*EEFUE0J151R*	*EEFUE0J151ER*
150	UE	10	3.5	*EEFUE0J151XR*	*EEFUE0J151XE*
180	UE	12	3.3	*EEFUE0J181R*	*EEFUE0J181ER*
180	UE	10	3.5	*EEFUE0J181XR*	*EEFUE0J181XE*
180	UE	7	3.7	*EEFUE0J181LR*	–
220	UE	15	3.0	*EEFUE0J221R*	*EEFUE0J221ER*
220	UE	7	3.7	*EEFUE0J221LR*	–
8 Volt					
8.2	CD	55	1.4	*EEFCD0K8R2R*	*EEFCD0K8R2ER*
15	CD	40	1.6	*EEFCD0K150R*	*EEFCD0K150ER*
22	FD	28	2.0	*EEFFD0K220R*	–
22	CD	28	1.8	*EEFCD0K220R*	*EEFCD0K220ER*
33	CD	18	2.5	*EEFCD0K330R*	*EEFCD0K330ER*
47	CD	25	2.5	*EEFCD0K470R*	*EEFCD0K470ER*
68	UD	15	3.0	*EEFUD0K680R*	*EEFUD0K680ER*
100	UD	18	2.5	*EEFUD0K101R*	*EEFUD0K101ER*
100	UE	12	3.3	*EEFUE0K101R*	*EEFUE0K101ER*
150	UE	15	3.0	*EEFUE0K151R*	*EEFUE0K151ER*
12.5 Volt					
4.7	CD	80	1.0	*EEFCD1B4R7R*	–
10	CD	60	1.0	*EEFCD1B100R*	–
15	FD	40	1.4	*EEFFD1B150R*	–
15	CD	50	1.3	*EEFCD1B150R*	–
22	CD	30	1.6	*EEFCD1B220R*	–
16 Volt					
2.2	CD	110	1.0	*EEFCD1C2R2R*	–
4.7	CD	80	1.0	*EEFCD1C4R7R*	–
6.8	CD	70	1.0	*EEFCD1C6R8R*	–
8.2	CD	45	1.3	*EEFCD1C8R2R*	–
Miniature Case Size 6mm x 3.2mm					
2 Volt					
120	MC	12	2.7000	–	*EEFMC0D121R*
2.5 Volt					
100	MC	12	2.7000	–	*EEFMC0E101R*
4 Volt					
82	MC	18	2.2000	–	*EEFMC0G820R*
6.3 Volt					
47	MC	18	2.2000	–	*EEFMC0J470R*



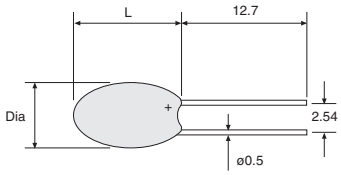
CTC type TR4

A economy range of miniature resin dipped solid bead tantalum capacitors offering high performance and stability.

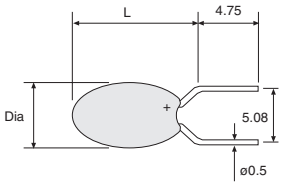
- **Economy range**
- **General purpose**
- High performance & stability
- High volumetric efficiency
- Flame retardant coating
- Choice of pitch
- Capacitance tolerance **20%**
- Body colour **Gold**

Dimensions (mm)

2.5mm Pitch



5mm Pitch



Case Size	L (max) 2.5mm Pitch	5mm Pitch	Dia. (max)
A	7	8.5	4.5
B	8	9.5	5
C	9.5	10.7	5.5
D	11	12.2	6.5
E	13	13	8.5
F	16.5	16.5	9.5

Specification

	TR4
Capacitance tolerance	±20% at 120Hz, 20°C
Operating temperature range	-55°C to +85°C (+125°C with voltage derating - see table)
Leakage current (as listed)	measured at 20°C
Dissipation factor (as listed)	measured at 120Hz, 20°C
ESR (as listed)	measured at 100kHz, 20°C
Power dissipation (as listed)	measured at 20°C
Ripple current	$\sqrt{(P \div R)}$ where P = power dissipation R = ESR

Rated voltage/surge voltage capability

Rated voltage (≤ +85°C)	6.3V	10V	16V	25V	35V	50V	dc
Rated voltage (≤ +125°C)	4V	6.3V	10V	16V	23V	33V	dc
Surge voltage (≤ +85°C)	8V	13V	20V	33V	46V	65V	dc
Surge voltage (≤ +125°C)	5V	8V	12V	20V	28V	40V	dc

ORDER CODES

Please state manufacturer when ordering

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Power Dissipation. (W) max.	Order Code 2.5mm Pitch	Order Code 5mm Pitch
6.3 Volt							
3.3	A	1.0	6	34.8	0.06	***058059***	***058059A***
4.7	A	1.0	6	19.0	0.06	***058060***	***058060A***
6.8	A	1.0	6	10.5	0.06	***058061***	***058061A***
10	B	1.3	8	9.5	0.08	***058001***	***058001A***
15	B	1.9	8	8.5	0.08	***058002***	***058002A***
22	C	2.8	8	5.0	0.08	***058003***	***058003A***
33	C	4.2	8	3.5	0.08	***058004***	***058004A***
47	D	5.9	8	2.7	0.08	***058005***	***058005A***
68	D	8.6	8	2.0	0.08	***058064***	***058064A***
100	E	12.6	10	1.7	0.10	***058006***	***058006A***
150	E	18.9	10	1.1	0.10	–	***058065A***
220	E	27.7	10	1.1	0.10	–	***058062A***
330	F	41.6	10	0.9	0.10	–	***058063A***
10 Volt							
2.2	A	1.0	6	37.9	0.06	***058007***	***058007A***
3.3	A	1.0	6	22.0	0.06	***058008***	***058008A***
4.7	A	1.0	6	12.0	0.06	***058009***	***058009A***
6.8	B	1.4	6	10.5	0.06	***058010***	***058010A***
10	B	2.0	8	9.5	0.08	***058011***	***058011A***
15	C	3.0	8	5.5	0.08	***058012***	***058012A***
22	C	4.4	8	3.5	0.08	***058013***	***058013A***
33	D	6.6	8	2.5	0.08	***058014***	***058014A***
47	D	9.4	8	2.2	0.08	***058015***	***058015A***
68	D	13.6	8	1.8	0.08	***058070***	***058070A***
100	E	20.0	10	1.2	0.10	–	***058071A***
150	E	30.0	10	0.9	0.10	–	***058072A***
220	F	44.0	10	0.7	0.10	–	***058073A***

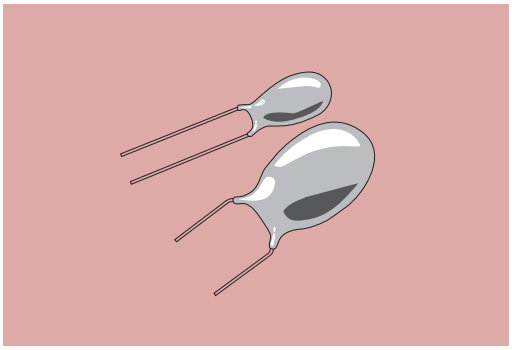
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continuation

ORDER CODES						Please state manufacturer when ordering	
Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Power Dissipation. (W) max.	Order Code 2.5mm Pitch	Order Code 5mm Pitch
16 Volt							
1.5	A	1.0	6	36.8	0.06	***058080***	***058080A***
2.2	A	1.0	6	25.0	0.06	***058016***	***058016A***
3.3	A	1.1	6	14.5	0.06	***058017***	***058017A***
4.7	B	1.5	6	12.0	0.06	***058050***	***058050A***
6.8	B	2.2	6	7.5	0.06	***058018***	***058018A***
10	B	3.2	8	6.5	0.08	***058019***	***058019A***
15	C	4.8	8	4.0	0.08	***058020***	***058020A***
22	C	7.0	8	2.8	0.08	***058021***	***058021A***
33	D	10.6	8	2.2	0.08	***058022***	***058022A***
47	D	15.0	8	1.9	0.08	***058023***	***058023A***
68	E	21.8	8	1.3	0.08	–	***058081A***
100	E	32.0	10	1.0	0.10	–	***058025A***
150	F	48.0	10	0.8	0.10	–	***058026A***
25 Volt							
1.0	A	1.0	6	30.0	0.04	***058201***	***058201A***
1.5	A	1.0	6	25.0	0.06	***058202***	***058202A***
2.2	A	1.1	6	17.0	0.06	***058203***	***058203A***
3.3	B	1.7	6	14.5	0.06	***058204***	***058204A***
4.7	B	2.4	6	10.0	0.06	***058205***	***058205A***
6.8	C	3.4	6	6.0	0.06	***058206***	***058206A***
10	C	5.0	8	5.0	0.08	***058207***	***058207A***
15	D	7.5	8	3.5	0.08	***058208***	***058208A***
22	D	11.0	8	2.5	0.08	***058209***	***058209A***
33	E	16.5	8	2.0	0.08	–	***058210A***
47	E	23.5	8	1.4	0.08	–	***058211A***
68	F	34.0	8	1.1	0.08	–	***058212A***
35 Volt							
0.1	A	1.0	6	300.0	0.04	***058036***	***058036A***
0.15	A	1.0	6	200.0	0.04	***058037***	***058037A***
0.22	A	1.0	6	150.0	0.04	***058038***	***058038A***
0.33	A	1.0	6	100.0	0.04	***058039***	***058039A***
0.47	A	1.0	6	68.0	0.04	***058040***	***058040A***
0.68	A	1.0	6	53.0	0.04	***058041***	***058041A***
1.0	A	1.0	6	33.0	0.04	***058042***	***058042A***
1.5	A	1.1	6	25.0	0.06	***058043***	***058043A***
2.2	B	1.5	6	17.0	0.06	***058044***	***058044A***
3.3	B	2.3	6	12.0	0.06	***058045***	***058045A***
4.7	C	3.3	6	8.0	0.06	***058046***	***058046A***
6.8	D	4.8	6	5.0	0.06	***058047***	***058047A***
10	D	7.0	8	3.5	0.08	***058048***	***058048A***
15	E	10.5	8	3.0	0.08	–	***058049A***
22	E	15.4	8	2.2	0.08	–	***058051A***
33	F	23.1	8	1.7	0.08	–	***058052A***
47	F	32.9	8	1.2	0.08	–	***058053A***
50 Volt							
0.1	A	1.0	6	300.0	0.04	***058501***	***058501A***
0.15	A	1.0	6	180.0	0.04	***058502***	***058502A***
0.22	A	1.0	6	130.0	0.04	***058503***	***058503A***
0.33	A	1.0	6	85.0	0.04	***058504***	***058504A***
0.47	A	1.0	6	60.0	0.04	***058505***	***058505A***
0.68	A	1.0	6	45.0	0.04	***058506***	***058506A***
1.0	B	1.0	6	32.0	0.04	***058507***	***058507A***
1.5	C	1.5	6	23.0	0.06	***058508***	***058508A***
2.2	C	2.2	6	15.0	0.06	***058509***	***058509A***
3.3	D	3.3	6	11.0	0.06	***058510***	***058510A***
4.7	D	4.7	6	7.0	0.06	***058511***	***058511A***
6.8	E	6.8	6	4.5	0.06	–	***058512A***
10	E	10.0	8	3.0	0.08	–	***058513A***
15	F	15.0	8	2.8	0.08	–	***058514A***
22	F	22.0	8	2.0	0.08	–	***058515A***



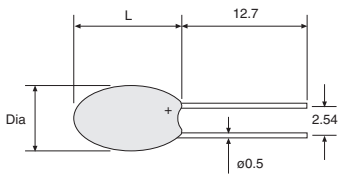
NOVER type TX

Miniature resin dipped solid bead tantalum capacitors ideally suited where high performance and stability is required. Offering low ESR, low leakage current and excellent temperature stability.

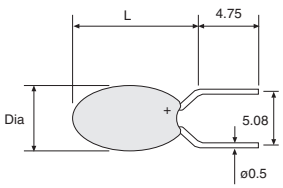
- **General purpose**
- High performance & stability
- **Low ESR**
- High volumetric efficiency
- Flame retardant coating
- Choice of pitch
- Capacitance tolerance **20%**
- Body colour **Gold**

Dimensions (mm)

2.5mm Pitch



5mm Pitch



Case Size	L (max) 2.5mm Pitch	5mm Pitch	Dia. (max)
A	7.1	8.6	4.5
B	7.6	8.9	4.5
C	8.4	9.6	5.0
D	8.6	9.9	5.0
E	8.9	10.2	5.5
F	9.9	11.2	6.0
G	10.2	11.4	6.3
H	10.2	11.9	7.6
J	–	14.0	8.4
K	–	15.5	8.9
L	–	18.1	8.9
M	–	18.8	10.2

Specification

	TX
Capacitance tolerance	±20% at 120Hz, 25°C
Operating temperature range	-55°C to +85°C (+125°C with voltage derating - see table)
Leakage current (as listed)	measured at 25°C
Dissipation factor (as listed)	measured at 120Hz, 25°C
ESR (as listed)	measured at 100kHz, 25°C
Power dissipation (as listed)	measured at 25°C
Ripple current	$\sqrt{(P \div R)}$ where P = power dissipation, R = ESR

Rated voltage / surge voltage capability

Rated voltage (≤ +85°C)	6.3V	10V	16V	25V	35V	50V	dc
Rated voltage (≤ +125°C)	4V	6.3V	10V	16V	23V	33V	dc
Surge voltage (≤ +85°C)	8V	13V	20V	33V	46V	65V	dc
Surge voltage (≤ +125°C)	5V	8V	12V	20V	28V	40V	dc

ORDER CODES

Please state manufacturer when ordering

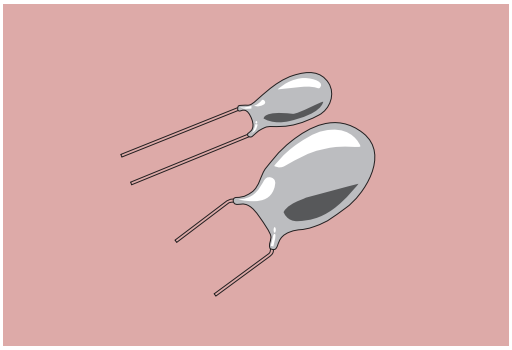
Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Power Dissipation. (W) max.	Order Code 2.5mm Pitch	Order Code 5mm Pitch
6.3 Volt							
3.3	A	0.5	5	13.0	0.04	***058059***	***058059A***
4.7	A	0.5	5	10.0	0.04	***058060***	***058060A***
6.8	A	0.5	5	8.0	0.04	***058061***	***058061A***
10	B	0.5	6	6.0	0.05	***058001***	***058001A***
15	C	0.7	6	5.0	0.06	***058002***	***058002A***
22	D	1.1	6	3.7	0.065	***058003***	***058003A***
33	E	1.6	6	3.0	0.07	***058004***	***058004A***
47	F	2.3	6	2.0	0.08	***058005***	***058005A***
68	G	3.3	6	1.8	0.09	***058064***	***058064A***
100	H	4.8	8	1.6	0.10	***058006***	***058006A***
150	J	7.2	8	0.9	0.11	–	***058065A***
220	K	10.0	8	0.9	0.12	–	***058062A***
330	L	10.0	8	0.7	0.13	–	***058063A***
10 Volt							
2.2	A	0.5	5	13.0	0.04	***058007***	***058007A***
3.3	A	0.5	5	10.0	0.04	***058008***	***058008A***
4.7	A	0.5	5	8.0	0.04	***058009***	***058009A***
6.8	B	0.5	5	6.0	0.05	***058010***	***058010A***
10	C	0.8	6	5.0	0.06	***058011***	***058011A***
15	E	1.2	6	3.7	0.07	***058012***	***058012A***
22	E	1.8	6	2.7	0.07	***058013***	***058013A***
33	F	2.6	6	2.1	0.08	***058014***	***058014A***
47	H	3.8	6	1.7	0.10	***058015***	***058015A***
68	H	5.4	6	1.3	0.10	***058070***	***058070A***
100	J	8.0	8	1.0	0.11	–	***058071A***
150	K	10.0	8	0.8	0.12	–	***058072A***
220	L	10.0	8	0.6	0.13	–	***058073A***

continued overleaf > > > >

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continuation

ORDER CODES						Please state manufacturer when ordering	
Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	ESR at 100kHz (Ω) max.	Power Dissipation. (W) max.	Order Code 2.5mm Pitch	Order Code 5mm Pitch
16 Volt							
1.5	A	0.5	5	10.0	0.04	***058080***	***058080A***
2.2	A	0.5	5	8.0	0.04	***058016***	***058016A***
3.3	A	0.5	5	6.0	0.04	***058017***	***058017A***
4.7	B	0.6	5	5.0	0.05	***058050***	***058050A***
6.8	C	0.9	5	4.0	0.06	***058018***	***058018A***
10	E	1.3	6	3.2	0.07	***058019***	***058019A***
15	E	1.8	6	2.5	0.07	***058020***	***058020A***
22	F	2.6	6	2.0	0.08	***058021***	***058021A***
33	H	4.0	6	1.6	0.10	***058022***	***058022A***
47	J	5.6	6	1.3	0.11	–	***058023A***
68	K	8.2	6	1.0	0.12	–	***058081A***
100	L	10.0	8	0.8	0.13	–	***058025A***
150	M	10.0	8	0.6	0.14	–	***058026A***
25 Volt							
1.0	A	0.5	3	10.0	0.04	***058201***	***058201A***
1.5	A	0.5	5	8.0	0.04	***058202***	***058202A***
2.2	B	0.5	5	6.0	0.05	***058203***	***058203A***
3.3	B	0.7	5	5.0	0.05	***058204***	***058204A***
4.7	C	0.9	5	4.0	0.06	***058205***	***058205A***
6.8	E	1.4	5	3.1	0.07	***058206***	***058206A***
10	E	2.0	6	2.5	0.07	***058207***	***058207A***
15	G	3.0	6	2.0	0.09	***058208***	***058208A***
22	H	4.4	6	1.5	0.10	***058209***	***058209A***
33	J	6.6	6	1.2	0.11	–	***058210A***
47	K	9.4	6	1.0	0.12	–	***058211A***
68	L	10.0	6	0.8	0.13	–	***058212A***
35 Volt							
0.1	A	0.5	3	26.0	0.04	***058036***	***058036A***
0.15	A	0.5	3	21.0	0.04	***058037***	***058037A***
0.22	A	0.5	3	17.0	0.04	***058038***	***058038A***
0.33	A	0.5	3	15.0	0.04	***058039***	***058039A***
0.47	A	0.5	3	13.0	0.04	***058040***	***058040A***
0.68	A	0.5	3	10.0	0.04	***058041***	***058041A***
1.0	A	0.5	3	8.0	0.04	***058042***	***058042A***
1.5	B	0.5	5	6.0	0.05	***058043***	***058043A***
2.2	C	0.6	5	5.0	0.06	***058044***	***058044A***
3.3	D	0.9	5	4.0	0.065	***058045***	***058045A***
4.7	E	1.3	5	3.0	0.07	***058046***	***058046A***
6.8	F	1.9	5	2.5	0.08	***058047***	***058047A***
10	G	2.8	6	2.0	0.09	***058048***	***058048A***
15	J	4.2	6	1.6	0.11	–	***058049A***
22	K	6.2	6	1.3	0.12	–	***058051A***
33	L	9.2	6	1.0	0.13	–	***058052A***
47	M	10.0	6	0.8	0.14	–	***058053A***
50 Volt							
0.1	A	0.5	3	26.0	0.04	***058501***	***058501A***
0.15	A	0.5	3	21.0	0.04	***058502***	***058502A***
0.22	A	0.5	3	17.0	0.04	***058503***	***058503A***
0.33	A	0.5	3	15.0	0.04	***058504***	***058504A***
0.47	B	0.5	3	13.0	0.05	***058505***	***058505A***
0.68	B	0.5	3	10.0	0.05	***058506***	***058506A***
1.0	B	0.5	3	8.0	0.05	***058507***	***058507A***
1.5	E	0.6	5	5.0	0.07	***058508***	***058508A***
2.2	E	0.9	5	3.5	0.07	***058509***	***058509A***
3.3	F	1.3	5	3.0	0.08	***058510***	***058510A***
4.7	G	1.9	5	2.5	0.09	***058511***	***058511A***
6.8	J	2.7	5	2.0	0.11	–	***058512A***
10	K	4.0	6	1.6	0.12	–	***058513A***
15	L	6.0	6	1.2	0.13	–	***058514A***
22	M	8.8	6	1.0	0.14	–	***058515A***



KEMET type T350 & T356

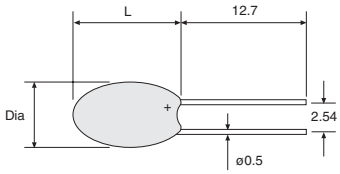
Ultradip II

Miniature resin dipped solid bead tantalum capacitors ideally suited where high performance and stability is required. The Ultradip II series exhibit low ESR and low leakage current, and offer excellent temperature stability.

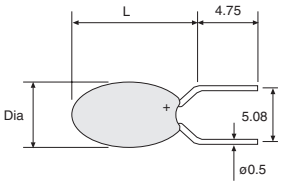
- **General purpose**
- High performance & stability
- **Low ESR**
- High volumetric efficiency
- Flame retardant coating
- Choice of pitch
- Capacitance tolerance **20%**

Dimensions (mm)

T350
2.5mm Pitch



T356
5mm Pitch



Case Size	L (max) 2.5mm Pitch	L (max) 5mm Pitch	Dia. (max)
A	7.1	8.6	4.5
B	7.6	8.9	4.5
C	8.4	9.6	5.0
D	8.6	9.9	5.0
E	8.9	10.2	5.5
F	9.9	11.2	6.0
G	10.2	11.4	6.3
H	10.2	11.9	7.6
J	-	14.0	8.4
K	-	15.5	8.9
L	-	18.1	8.9
M	-	18.8	10.2

Specification

Specification	T350 & T356
Capacitance tolerance	±20% at 120Hz, 25°C
Operating temperature range	-55°C to +85°C (+125°C with voltage derating - see table)
Leakage current (as listed)	measured at 25°C
Dissipation factor (as listed)	measured at 120Hz, 25°C
ESR (see reference table below)	measured at 100kHz, 25°C
Power dissipation (see table below)	measured at 25°C

The range of values listed on the following pages are 20% tolerance. 5% and 10% tolerances are available to order.

Rated voltage/surge voltage capability

Rated voltage (+85°C)	3V	6.3V	10V	16V	20V	25V	35V	50V	dc
Rated voltage (+125°C)	2V	4V	7V	10V	13V	16.5V	23V	33V	dc
Surge voltage (+85°C)	4V	8V	13V	20V	26V	33V	46V	65V	dc

ESR reference table

Cap µF	6.3V (Ω)	10V (Ω)	16V (Ω)	20V (Ω)	25V (Ω)	35V (Ω)	50V (Ω)
0.1	–	–	–	–	–	26	26
0.15	–	–	–	–	–	21	21
0.22	–	–	–	–	–	17	17
0.33	–	–	–	–	–	15	15
0.47	–	–	–	–	–	13	13
0.68	–	–	–	–	–	10	10
1.0	–	–	–	10	10	8.0	8.0
1.5	–	–	10	9.0	8	6.0	5.0
2.2	–	13	8.0	7.0	6	5.0	3.5
3.3	13	10	6.0	5.5	5	4.0	3.0
4.7	10	8.0	5.0	4.5	4	3.0	2.5
6.8	8.0	6.0	4.0	3.6	3.1	2.5	2.0
10	6.0	5.0	3.2	2.9	2.5	2.0	1.6
15	5.0	3.7	2.5	2.3	2	1.6	1.2
22	3.7	2.7	2.0	1.8	1.5	1.3	1.0
33	3.0	2.1	1.6	1.4	1.2	1.0	–
47	2.0	1.7	1.3	1.2	1	0.8	–
68	1.8	1.3	1.0	0.9	0.8	–	–
100	1.6	1.0	0.8	0.6	–	–	–
150	0.9	0.8	0.6	–	–	–	–
220	0.9	0.6	–	–	–	–	–
330	0.7	–	–	–	–	–	–

Power dissipation

Case Size	A	B	C	D	E	F	G	H	J	K	L	M
Max. Power (W) at 25°C	0.04	0.05	0.06	0.065	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14

Order Codes for T350 & T356 are listed on the following three pages > > > >

continuation

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	T350 2.5mm pitch	T356 5mm pitch
3 Volt					
4.7	A	0.5	5	*T350A475M003AT*	*T356A475M003AT*
5.6	A	0.5	5	*T350A565M003AT*	*T356A565M003AT*
6.8	A	0.5	5	*T350A685M003AT*	*T356A685M003AT*
8.2	A	0.5	6	*T350A825M003AT*	*T356A825M003AT*
10	A	0.5	6	*T350A106M003AT*	*T356A106M003AT*
12	B	0.5	6	*T350B126M003AT*	*T356B126M003AT*
15	B	0.5	6	*T350B156M003AT*	*T356B156M003AT*
18	C	0.5	6	*T350C186M003AT*	*T356C186M003AT*
22	C	0.5	6	*T350C226M003AT*	*T356C226M003AT*
27	D	0.6	6	*T350D276M003AT*	*T356D276M003AT*
33	D	0.8	6	*T350D336M003AT*	*T356D336M003AT*
39	E	0.9	6	*T350E396M003AT*	*T356E396M003AT*
47	E	1.1	6	*T350E476M003AT*	*T356E476M003AT*
56	F	1.3	6	*T350F566M003AT*	*T356F566M003AT*
68	F	1.6	6	*T350F686M003AT*	*T356F686M003AT*
82	G	2.0	8	*T350G826M003AT*	*T356G826M003AT*
100	G	2.4	8	*T350G107M003AT*	*T356G107M003AT*
120	H	2.9	8	*T350H127M003AT*	*T356H127M003AT*
150	H	3.6	8	*T350H157M003AT*	*T356H157M003AT*
180	J	4.3	8	–	*T356J187M003AT*
220	J	5.3	8	–	*T356J227M003AT*
270	K	6.5	8	–	*T356K277M003AT*
330	K	7.9	8	–	*T356K337M003AT*
390	L	9.4	9	–	*T356L397M003AT*
470	L	10	9	–	*T356L477M003AT*
560	M	10	9	–	*T356M567M003AT*
680	M	10	9	–	*T356M687M003AT*
6.3 Volt					
3.3	A	0.5	5	*T350A335M006AT*	*T356A335M006AT*
3.9	A	0.5	5	*T350A395M006AT*	*T356A395M006AT*
4.7	A	0.5	5	*T350A475M006AT*	*T356A475M006AT*
5.6	A	0.5	5	*T350A565M006AT*	*T356A565M006AT*
6.8	A	0.5	5	*T350A685M006AT*	*T356A685M006AT*
8.2	B	0.5	6	*T350B825M006AT*	*T356B825M006AT*
10	B	0.5	6	*T350B106M006AT*	*T356B106M006AT*
12	C	0.6	6	*T350C126M006AT*	*T356C126M006AT*
15	C	0.7	6	*T350C156M006AT*	*T356C156M006AT*
18	D	0.9	6	*T350D186M006AT*	*T356D186M006AT*
22	D	1.1	6	*T350D226M006AT*	*T356D226M006AT*
27	E	1.3	6	*T350E276M006AT*	*T356E276M006AT*
33	E	1.6	6	*T350E336M006AT*	*T356E336M006AT*
39	F	1.9	6	*T350F396M006AT*	*T356F396M006AT*
47	F	2.3	6	*T350F476M006AT*	*T356F476M006AT*
56	G	2.7	6	*T350G566M006AT*	*T356G566M006AT*
68	G	3.3	6	*T350G686M006AT*	*T356G686M006AT*
82	H	3.9	8	*T350H826M006AT*	*T356H826M006AT*
100	H	4.8	8	*T350H107M006AT*	*T356H107M006AT*
120	J	5.8	8	–	*T356J127M006AT*
150	J	7.2	8	–	*T356J157M006AT*
180	K	8.6	8	–	*T356K187M006AT*
220	K	10	8	–	*T356K227M006AT*
270	L	10	8	–	*T356L277M006AT*
330	L	10	8	–	*T356L337M006AT*
10 Volt					
2.2	A	0.5	5	*T350A225M010AT*	*T356A225M010AT*
2.7	A	0.5	5	*T350A275M010AT*	*T356A275M010AT*
3.3	A	0.5	5	*T350A335M010AT*	*T356A335M010AT*
3.9	A	0.5	5	*T350A395M010AT*	*T356A395M010AT*
4.7	A	0.5	5	*T350A475M010AT*	*T356A475M010AT*
5.6	B	0.5	5	*T350B565M010AT*	*T356B565M010AT*
6.8	B	0.5	5	*T350B685M010AT*	*T356B685M010AT*
8.2	C	0.7	6	*T350C825M010AT*	*T356C825M010AT*
10	C	0.8	6	*T350C106M010AT*	*T356C106M010AT*
12	E	1.0	6	*T350E126M010AT*	*T356E126M010AT*
15	E	1.2	6	*T350E156M010AT*	*T356E156M010AT*
18	E	1.4	6	*T350E186M010AT*	*T356E186M010AT*
22	E	1.8	6	*T350E226M010AT*	*T356E226M010AT*
27	F	2.2	6	*T350F276M010AT*	*T356F276M010AT*
33	F	2.6	6	*T350F336M010AT*	*T356F336M010AT*
39	G	3.1	6	*T350G396M010AT*	*T356G396M010AT*
47	H	3.8	6	*T350H476M010AT*	*T356H476M010AT*
56	H	4.5	6	*T350H566M010AT*	*T356H566M010AT*
68	H	5.4	6	*T350H686M010AT*	*T356H686M010AT*
82	J	6.6	8	–	*T356J826M010AT*
100	J	8.0	8	–	*T356J107M010AT*
120	K	9.6	8	–	*T356K127M010AT*
150	K	10	8	–	*T356K157M010AT*
180	L	10	8	–	*T356L187M010AT*
220	L	10	8	–	*T356L227M010AT*

continued > >

continuation

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	T350 2.5mm pitch	T356 5mm pitch
16 Volt					
1.5	A	0.5	5	*T350A155M016AT*	*T356A155M016AT*
1.8	A	0.5	5	*T350A185M016AT*	*T356A185M016AT*
2.2	A	0.5	5	*T350A225M016AT*	*T356A225M016AT*
2.7	A	0.5	5	*T350A275M016AT*	*T356A275M016AT*
3.3	A	0.5	5	*T350A335M016AT*	*T356A335M016AT*
3.9	B	0.5	5	*T350B395M016AT*	*T356B395M016AT*
4.7	B	0.6	5	*T350B475M016AT*	*T356B475M016AT*
5.6	C	0.7	5	*T350C565M016AT*	*T356C565M016AT*
6.8	C	0.9	5	*T350C685M016AT*	*T356C685M016AT*
8.2	E	1.0	6	*T350E825M016AT*	*T356E825M016AT*
10.0	E	1.3	6	*T350E106M016AT*	*T356E106M016AT*
12.0	E	1.5	6	*T350E126M016AT*	*T356E126M016AT*
15	E	1.8	6	*T350E156M016AT*	*T356E156M016AT*
18	F	2.2	6	*T350F186M016AT*	*T356F186M016AT*
22	F	2.6	6	*T350F226M016AT*	*T356F226M016AT*
27	H	3.2	6	*T350H276M016AT*	*T356H276M016AT*
33	H	4.0	6	*T350H336M016AT*	*T356H336M016AT*
39	J	4.7	6	–	*T356J396M016AT*
47	J	5.6	6	–	*T356J476M016AT*
56	K	6.8	6	–	*T356K566M016AT*
68	K	8.2	6	–	*T356K686M016AT*
82	L	9.8	8	–	*T356L826M016AT*
100	L	10	8	–	*T356L107M016AT*
120	M	10	8	–	*T356M127M016AT*
150	M	10	8	–	*T356M157M016AT*
20 Volt					
1.0	A	0.5	5	*T350A105M020AT*	*T356A105M020AT*
1.2	A	0.5	5	*T350A125M020AT*	*T356A125M020AT*
1.5	A	0.5	5	*T350A155M020AT*	*T356A155M020AT*
1.8	A	0.5	5	*T350A185M020AT*	*T356A185M020AT*
2.2	A	0.5	5	*T350A225M020AT*	*T356A225M020AT*
2.7	B	0.5	5	*T350B275M020AT*	*T356B275M020AT*
3.3	B	0.5	5	*T350B335M020AT*	*T356B335M020AT*
3.9	C	0.6	5	*T350C395M020AT*	*T356C395M020AT*
4.7	C	0.8	5	*T350C475M020AT*	*T356C475M020AT*
5.6	D	0.9	5	*T350D565M020AT*	*T356D565M020AT*
6.8	D	1.1	5	*T350D685M020AT*	*T356D685M020AT*
8.2	E	1.3	6	*T350E825M020AT*	*T356E825M020AT*
10	E	1.6	6	*T350E106M020AT*	*T356E106M020AT*
12	F	1.9	6	*T350F126M020AT*	*T356F126M020AT*
15	F	2.4	6	*T350F156M020AT*	*T356F156M020AT*
18	G	2.9	6	*T350G186M020AT*	*T356G186M020AT*
22	G	3.5	6	*T350G226M020AT*	*T356G226M020AT*
27	J	4.3	6	–	*T356J276M020AT*
33	J	5.3	6	–	*T356J336M020AT*
39	K	6.2	6	–	*T356K396M020AT*
47	K	7.5	6	–	*T356K476M020AT*
56	L	9.0	6	–	*T356L566M020AT*
68	L	10	6	–	*T356L686M020AT*
82	M	10	8	–	*T356M826M020AT*
100	M	10	8	–	*T356M107M020AT*
25 Volt					
1.0	A	0.5	5	*T350A105M025AT*	*T356A105M025AT*
1.2	A	0.5	5	*T350A125M025AT*	*T356A125M025AT*
1.5	A	0.5	5	*T350A155M025AT*	*T356A155M025AT*
1.8	A	0.5	5	*T350A185M025AT*	*T356A185M025AT*
2.2	B	0.5	5	*T350B225M025AT*	*T356B225M025AT*
2.7	B	0.5	5	*T350B275M025AT*	*T356B275M025AT*
3.3	B	0.7	5	*T350B335M025AT*	*T356B335M025AT*
3.9	C	0.8	5	*T350C395M025AT*	*T356C395M025AT*
4.7	C	0.9	5	*T350C475M025AT*	*T356C475M025AT*
5.6	E	1.1	5	*T350E565M025AT*	*T356E565M025AT*
6.8	E	1.4	5	*T350E685M025AT*	*T356E685M025AT*
8.2	E	1.6	6	*T350E825M025AT*	*T356E825M025AT*
10	E	2.0	6	*T350E106M025AT*	*T356E106M025AT*
12	G	2.4	6	*T350G126M025AT*	*T356G126M025AT*
15	G	3.0	6	*T350G156M025AT*	*T356G156M025AT*
18	H	3.6	6	*T350H186M025AT*	*T356H186M025AT*
22	H	4.4	6	*T350H226M025AT*	*T356H226M025AT*
27	J	5.4	6	–	*T356J276M025AT*
33	J	6.6	6	–	*T356J336M025AT*
39	K	7.8	6	–	*T356K396M025AT*
47	K	9.4	6	–	*T356K476M025AT*
56	L	10	6	–	*T356L566M025AT*
68	L	10	6	–	*T356L686M025AT*

continued overleaf > > > >

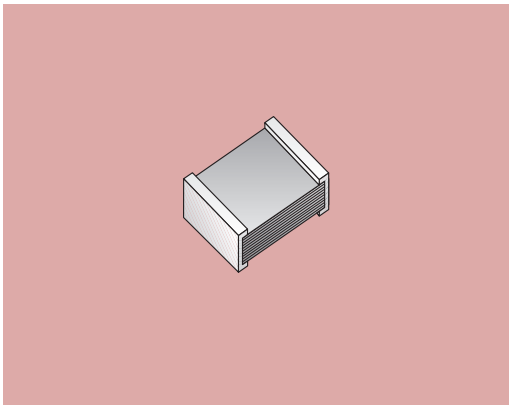
All order codes listed are for 20% tolerance.
5% and 10% tolerances are available to order.

continuation

ORDER CODES

Value (µF)	Case Size	DC Leakage Current (µA) max.	Dissipation Factor (%) max.	T350 2.5mm pitch	T356 5mm pitch
35 Volt					
0.1	A	0.5	3	*T350A104M035AT*	*T356A104M035AT*
0.12	A	0.5	3	*T350A124M035AT*	*T356A124M035AT*
0.15	A	0.5	3	*T350A154M035AT*	*T356A154M035AT*
0.18	A	0.5	3	*T350A184M035AT*	*T356A184M035AT*
0.22	A	0.5	3	*T350A224M035AT*	*T356A224M035AT*
0.27	A	0.5	3	*T350A274M035AT*	*T356A274M035AT*
0.33	A	0.5	3	*T350A334M035AT*	*T356A334M035AT*
0.39	A	0.5	3	*T350A394M035AT*	*T356A394M035AT*
0.47	A	0.5	3	*T350A474M035AT*	*T356A474M035AT*
0.56	A	0.5	3	*T350A564M035AT*	*T356A564M035AT*
0.68	A	0.5	3	*T350A684M035AT*	*T356A684M035AT*
0.82	A	0.5	3	*T350A824M035AT*	*T356A824M035AT*
1.0	A	0.5	3	*T350A105M035AT*	*T356A105M035AT*
1.2	B	0.5	5	*T350B125M035AT*	*T356B125M035AT*
1.5	B	0.5	5	*T350B155M035AT*	*T356B155M035AT*
1.8	C	0.5	5	*T350C185M035AT*	*T356C185M035AT*
2.2	C	0.6	5	*T350C225M035AT*	*T356C225M035AT*
2.7	D	0.7	5	*T350D275M035AT*	*T356D275M035AT*
3.3	D	0.9	5	*T350D335M035AT*	*T356D335M035AT*
3.9	E	1.0	5	*T350E395M035AT*	*T356E395M035AT*
4.7	E	1.3	5	*T350E475M035AT*	*T356E475M035AT*
5.6	F	1.6	5	*T350F565M035AT*	*T356F565M035AT*
6.8	F	1.9	5	*T350F685M035AT*	*T356F685M035AT*
8.2	G	2.3	6	*T350G825M035AT*	*T356G825M035AT*
10	G	2.8	6	*T350G106M035AT*	*T356G106M035AT*
12	J	3.4	6	–	*T356J126M035AT*
15	J	4.2	6	–	*T356J156M035AT*
18	K	5.0	6	–	*T356K186M035AT*
22	K	6.2	6	–	*T356K226M035AT*
27	L	7.6	6	–	*T356L276M035AT*
33	L	9.2	6	–	*T356L336M035AT*
39	M	10	6	–	*T356M396M035AT*
47	M	10	6	–	*T356M476M035AT*
50 Volt					
0.1	A	0.5	3	*T350A104M050AT*	*T356A104M050AT*
0.12	A	0.5	3	*T350A124M050AT*	*T356A124M050AT*
0.15	A	0.5	3	*T350A154M050AT*	*T356A154M050AT*
0.18	A	0.5	3	*T350A184M050AT*	*T356A184M050AT*
0.22	A	0.5	3	*T350A224M050AT*	*T356A224M050AT*
0.27	A	0.5	3	*T350A274M050AT*	*T356A274M050AT*
0.33	A	0.5	3	*T350A334M050AT*	*T356A334M050AT*
0.39	B	0.5	3	*T350B394M050AT*	*T356B394M050AT*
0.47	B	0.5	3	*T350B474M050AT*	*T356B474M050AT*
0.56	B	0.5	3	*T350B564M050AT*	*T356B564M050AT*
0.68	B	0.5	3	*T350B684M050AT*	*T356B684M050AT*
0.82	B	0.5	3	*T350B824M050AT*	*T356B824M050AT*
1.0	B	0.5	3	*T350B105M050AT*	*T356B105M050AT*
1.2	D	0.5	5	*T350D125M050AT*	*T356D125M050AT*
1.5	E	0.6	5	*T350E155M050AT*	*T356E155M050AT*
1.8	E	0.7	5	*T350E185M050AT*	*T356E185M050AT*
2.2	E	0.9	5	*T350E225M050AT*	*T356E225M050AT*
2.7	F	1.1	5	*T350F275M050AT*	*T356F275M050AT*
3.3	F	1.3	5	*T350F335M050AT*	*T356F335M050AT*
3.9	G	1.6	5	*T350G395M050AT*	*T356G395M050AT*
4.7	G	1.9	5	*T350G475M050AT*	*T356G475M050AT*
5.6	H	2.2	5	*T350H565M050AT*	*T356H565M050AT*
6.8	J	2.7	5	–	*T356J685M050AT*
8.2	J	3.3	6	–	*T356J825M050AT*
10	K	4.0	6	–	*T356K106M050AT*
12	K	4.8	6	–	*T356K126M050AT*
15	L	6.0	6	–	*T356L156M050AT*
18	L	7.2	6	–	*T356L186M050AT*
22	M	8.8	6	–	*T356M226M050AT*

All order codes listed are for 20% tolerance.
5% and 10% tolerances are available to order.

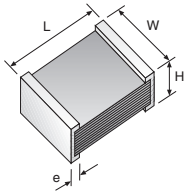


PANASONIC type ECPU

Surface mount capacitors manufactured with a stacked plastic film and offering excellent levels of capacitance within a small package. Useful as an alternative to tantalum devices. Covers a range of three industry standard chip sizes with capacitance values up to 1.0µF. The ECPU devices may be used in many applications such as noise suppression, coupling and areas where a low ESR capacitor is required. Suitable for both wave and reflow soldering, the components are supplied taped and reeled.

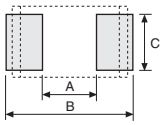
- **Stacked metallised plastic film**
- **Alternative to tantalum**
- Excellent package size/capacitance ratio
- Industry standard chip sizes
- Working voltage **16V**
- Capacitance tolerance **20%**
- Suitable for wave and reflow soldering
- Supplied taped & reeled

Dimensions (mm)



Chip Size	Values	L	W	H	e
0805	0.1µF	2.0	1.25	1.0	0.45
1206	0.15µF - 0.22µF 0.33µF 0.47µF - 0.68µF	3.2	1.6	0.8 1.0 1.4	0.65
1210	1.0µF	3.2	2.5	1.4	

Pad Pattern



Chip Size	A	B	C
0805	0.8	2.4	1.1
1206	1.8	3.6	1.4
1210	1.8	3.6	2.3

Specification	ECPU
Working voltage	16Vdc/12Vac
Capacitance tolerance	±20%
Insulation resistance (as listed)	≥1000MΩ (≤0.33µF) ≥300MΩ/µF (>0.33µF)
Operating temperature range	-40°C to +85°C
Dissipation factor	≤1.5% at 1kHz, 20°C

Packaging	
Tape	8mm width, 4mm pitch
Reel	178mm dia.

ORDER CODES

0805

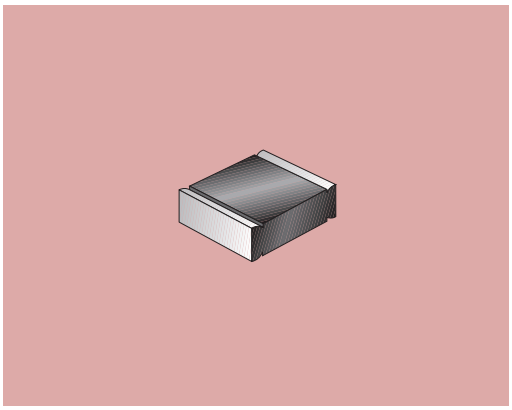
Value (µF)	Order Code
16 Volt	
0.1	***ECPU1C104MA5***

1206

Value (µF)	Order Code
16 Volt	
0.15	***ECPU1C154MA5***
0.22	***ECPU1C224MA5***
0.33	***ECPU1C334MA5***
0.47	***ECPU1C474MA5***
0.68	***ECPU1C684MA5***

1210

Value (µF)	Order Code
16 Volt	
1.0	***ECPU1C105MA5***

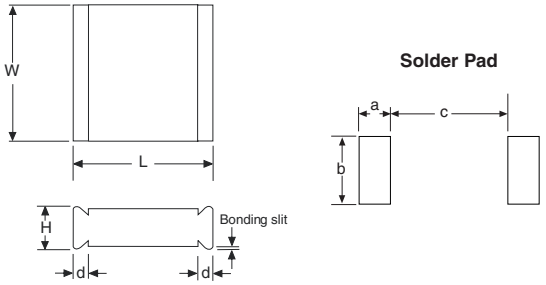


WIMA type SMD-PET

A specialised range of metallised polyester capacitors with self healing properties.
Ideal for general DC applications such as by-pass, blocking, coupling, decoupling and timing.
Offer a reliable operating life of 300,000 hours with an excellent temperature range.
Supplied taped and reeled in a 12mm blister pack.

- **Metallised polyester film**
- Self healing
- Long operational life
- Wide range of chip sizes
- Voltage ratings from **63V to 1000V**
- Capacitance tolerance **10%**
- Operating temperature up to 100°C
- Supplied taped & reeled

Dimensions (mm)



Chip Size	L	W	H	d	a min.	b min.	c max.
1812	4.8	3.3	3 - 4	0.5	1.2	3.5	3.5
2220	5.7	5.1	3.5 - 4.5	0.5	1.2	4	4.5
2824	7.2	6.1	3 - 5	0.5	1.2	4	6.5
4030	10.2	7.6	5	0.5	2.5	6	9
5040	12.7	10.2	6	0.7	2.5	6	11.5
6054	15.3	13.7	7	0.7	2.5	6	14

Specification

	SMD-PET
Working voltage (as listed)	63Vdc/40Vac 400Vdc/200Vac 100Vdc/63Vac 630Vdc/300Vac 250Vdc/160Vac 1000Vdc/400Vac N.B. The SMD-PET series is not suitable for across the line applications.
Operational life	300,000 hours
Capacitance tolerance	±10%
Operating temperature range	-55°C to +100°C

Marking and Packaging

Tape	
Chip Size	
1812	12mm width, 8mm pitch
2220	12mm width, 8mm pitch
2824	12mm width, 12mm pitch
4030	12mm width, 16mm pitch
5040	12mm width, 16mm pitch
6054	12mm width, 20mm pitch
Reel	330mm dia.

Voltage derating
A voltage derating factor of 1.25% per K must be applied from +85°C for DC voltages and from +75°C for AC voltages.

Insulation resistance at 20°C

Rated Voltage dc	Test Voltage	C ≤0.33µF	C >0.33µF
63V **100V**	50V 100V	≥3750MΩ (mean value: 10,000MΩ)	≥1250 sec (MΩ x µF) (mean value: 3000 sec)
≥250V	100V	≥10,000MΩ (mean value: 50,000MΩ)	≥3000 sec (MΩ x µF) (mean value: 10,000 sec)

Measuring time: 1 min.

Dissipation factor at 20°C

Freq.	C ≤0.1µF	C >0.1µF to ≤1.0µF	C >1.0µF
1kHz 10kHz 100kHz	≤0.8% ≤1.5% ≤3%	≤0.8% ≤1.5% –	≤1% – –

Maximum pulse rise time : for pulses equal to the rated voltage

Capacitance µF	Pulse rise time V/µsec max. operation/test					
	63V	**100V**	**250V**	**400V**	**630V**	**1000V**
0.01 - 0.022	30/300	35/350	40/400	35/350	40/400	50/500
0.033 - 0.068	20/200	20/200	40/400	21/210	25/250	32/320
0.1 - 0.22	10/100	10/100	12/120	14/140	17/170	–
0.33 - 0.68	8/80	6/60	9/90	10/100	–	–
1.0 - 2.2	3.5/35	4/40	7/70	–	–	–
3.3 - 6.8	3/30	3/30	–	–	–	–

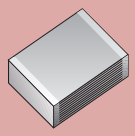
The range listed opposite are 10% tolerance.
20% tolerance is also available to order whilst 5% tolerance is available subject to enquiry.

All order codes shown apply to 330mm reels.
180mm reels are available to order on most values.

Please contact our Sales Desk to discuss your requirements.

ORDER CODES

Value (µF)	1812	2220	2824	4030	5040	6054
63 Volt						
0.01	*SMDPET103K1PS1T1*	*SMDPET103K1PS2T1*	*SMDPET103K1PS3T1*	–	–	–
0.015	*SMDPET153K1PS1T1*	*SMDPET153K1PS2T1*	*SMDPET153K1PS3T1*	–	–	–
0.022	*SMDPET223K1PS1T1*	*SMDPET223K1PS2T1*	*SMDPET223K1PS3T1*	–	–	–
0.033	*SMDPET333K1PS1T1*	*SMDPET333K1PS2T1*	*SMDPET333K1PS3T1*	–	–	–
0.047	*SMDPET473K1PS1T1*	*SMDPET473K1PS2T1*	*SMDPET473K1PS3T1*	–	–	–
0.068	*SMDPET683K1PS1T1*	*SMDPET683K1PS2T1*	*SMDPET683K1PS3T1*	–	–	–
0.1	*SMDPET104K1PS1T1*	*SMDPET104K1PS2T1*	*SMDPET104K1PS3T1*	–	–	–
0.15	*SMDPET154K1PS1T1*	*SMDPET154K1PS2T1*	*SMDPET154K1PS3T1*	–	–	–
0.22	*SMDPET224K1PS1T1*	*SMDPET224K1PS2T1*	*SMDPET224K1PS3T1*	–	–	–
0.33	*SMDPET334K1PS1T1*	*SMDPET334K1PS2T1*	*SMDPET334K1PS3T1*	–	–	–
0.47	*SMDPET474K1PS1T1*	*SMDPET474K1PS2T1*	*SMDPET474K1PS3T1*	–	–	–
0.68	–	*SMDPET684K1PS2T1*	*SMDPET684K1PS3T1*	*SMDPET684K1PS4T1*	–	–
1.0	–	*SMDPET105K1PS2T1*	*SMDPET105K1PS3T1*	*SMDPET105K1PS4T1*	–	–
1.5	–	–	*SMDPET155K1PS3T1*	*SMDPET155K1PS4T1*	–	–
2.2	–	–	*SMDPET225K1PS3T1*	*SMDPET225K1PS4T1*	–	–
3.3	–	–	–	*SMDPET335K1PS4T1*	–	–
4.7	–	–	–	–	*SMDPET475K1PS5T1*	–
6.8	–	–	–	–	–	*SMDPET685K1PS6T1*
100 Volt						
0.01	*SMDPET103K2AS1T1*	*SMDPET103K2AS2T1*	*SMDPET103K2AS3T1*	–	–	–
0.015	*SMDPET153K2AS1T1*	*SMDPET153K2AS2T1*	*SMDPET153K2AS3T1*	–	–	–
0.022	*SMDPET223K2AS1T1*	*SMDPET223K2AS2T1*	*SMDPET223K2AS3T1*	–	–	–
0.033	*SMDPET333K2AS1T1*	*SMDPET333K2AS2T1*	*SMDPET333K2AS3T1*	–	–	–
0.047	*SMDPET473K2AS1T1*	*SMDPET473K2AS2T1*	*SMDPET473K2AS3T1*	–	–	–
0.068	*SMDPET683K2AS1T1*	*SMDPET683K2AS2T1*	*SMDPET683K2AS3T1*	–	–	–
0.1	*SMDPET104K2AS1T1*	*SMDPET104K2AS2T1*	*SMDPET104K2AS3T1*	–	–	–
0.15	*SMDPET154K2AS1T1*	*SMDPET154K2AS2T1*	*SMDPET154K2AS3T1*	–	–	–
0.22	*SMDPET224K2AS1T1*	*SMDPET224K2AS2T1*	*SMDPET224K2AS3T1*	–	–	–
0.33	–	*SMDPET334K2AS2T1*	*SMDPET334K2AS3T1*	*SMDPET334K2AS4T1*	–	–
0.47	–	*SMDPET474K2AS2T1*	*SMDPET474K2AS3T1*	*SMDPET474K2AS4T1*	–	–
0.68	–	–	*SMDPET684K2AS3T1*	*SMDPET684K2AS4T1*	*SMDPET684K2AS5T1*	–
1.0	–	–	*SMDPET105K2AS3T1*	*SMDPET105K2AS4T1*	*SMDPET105K2AS5T1*	–
1.5	–	–	–	*SMDPET155K2AS4T1*	*SMDPET155K2AS5T1*	–
2.2	–	–	–	–	*SMDPET225K2AS5T1*	–
3.3	–	–	–	–	*SMDPET335K2AS5T1*	–
4.7	–	–	–	–	–	*SMDPET475K2AS6T1*
250 Volt						
0.01	*SMDPET103K2GS1T1*	*SMDPET103K2GS2T1*	*SMDPET103K2GS3T1*	–	–	–
0.015	*SMDPET153K2GS1T1*	*SMDPET153K2GS2T1*	*SMDPET153K2GS3T1*	–	–	–
0.022	*SMDPET223K2GS1T1*	*SMDPET223K2GS2T1*	*SMDPET223K2GS3T1*	–	–	–
0.033	–	*SMDPET333K2GS2T1*	*SMDPET333K2GS3T1*	*SMDPET333K2GS4T1*	–	–
0.047	–	*SMDPET473K2GS2T1*	*SMDPET473K2GS3T1*	*SMDPET473K2GS4T1*	–	–
0.068	–	*SMDPET683K2GS2T1*	*SMDPET683K2GS3T1*	*SMDPET683K2GS4T1*	–	–
0.1	–	*SMDPET104K2GS2T1*	*SMDPET104K2GS3T1*	*SMDPET104K2GS4T1*	–	–
0.15	–	*SMDPET154K2GS2T1*	*SMDPET154K2GS3T1*	*SMDPET154K2GS4T1*	–	–
0.22	–	*SMDPET224K2GS2T1*	*SMDPET224K2GS3T1*	*SMDPET224K2GS4T1*	–	–
0.33	–	–	*SMDPET334K2GS3T1*	*SMDPET334K2GS4T1*	*SMDPET334K2GS5T1*	–
0.47	–	–	–	*SMDPET474K2GS4T1*	*SMDPET474K2GS5T1*	–
0.68	–	–	–	–	*SMDPET684K2GS5T1*	–
1.0	–	–	–	–	–	*SMDPET105K2GS6T1*
400 Volt						
0.01	–	–	*SMDPET103K2KS3T1*	*SMDPET103K2KS4T1*	–	–
0.015	–	–	*SMDPET153K2KS3T1*	*SMDPET153K2KS4T1*	–	–
0.022	–	–	*SMDPET223K2KS3T1*	*SMDPET223K2KS4T1*	–	–
0.033	–	–	*SMDPET333K2KS3T1*	*SMDPET333K2KS4T1*	–	–
0.047	–	–	*SMDPET473K2KS3T1*	*SMDPET473K2KS4T1*	–	–
0.068	–	–	–	*SMDPET683K2KS4T1*	*SMDPET683K2KS5T1*	–
0.1	–	–	–	*SMDPET104K2KS4T1*	*SMDPET104K2KS5T1*	–
0.15	–	–	–	*SMDPET154K2KS4T1*	*SMDPET154K2KS5T1*	–
0.22	–	–	–	–	*SMDPET224K2KS5T1*	–
0.33	–	–	–	–	*SMDPET334K2KS5T1*	–
0.47	–	–	–	–	–	*SMDPET474K2KS6T1*
630 Volt						
0.01	–	–	–	*SMDPET103K2PS4T1*	–	–
0.015	–	–	–	*SMDPET153K2PS4T1*	–	–
0.022	–	–	–	–	*SMDPET223K2PS5T1*	–
0.033	–	–	–	–	*SMDPET333K2PS5T1*	–
0.047	–	–	–	–	*SMDPET473K2PS5T1*	–
0.068	–	–	–	–	*SMDPET683K2PS5T1*	–
0.1	–	–	–	–	–	*SMDPET104K2PS6T1*
0.15	–	–	–	–	–	*SMDPET154K2PS6T1*
0.22	–	–	–	–	–	*SMDPET224K2PS6T1*
1000 Volt						
0.01	–	–	–	–	*SMDPET103K3AS5T1*	–
0.015	–	–	–	–	*SMDPET153K3AS5T1*	–
0.022	–	–	–	–	*SMDPET223K3AS5T1*	–
0.033	–	–	–	–	*SMDPET333K3AS5T1*	–
0.047	–	–	–	–	–	*SMDPET473K3AS6T1*

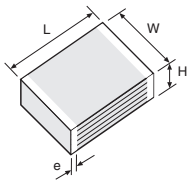


PANASONIC type ECHU

Surface mount capacitors in a wide range of industry standard chip sizes, which utilise a stacked metallised PPS film to give high performance. The capacitors feature an excellent operating temperature range of -55°C to +125°C and are available in values up to 0.22µF with a choice of voltage rating and capacitance tolerance. Suitable for reflow soldering, the devices are supplied taped and reeled.

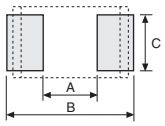
- **Stacked metallised PPS film**
- Excellent performance/size characteristics
- Industry standard chip sizes
- Working voltage **16V** & **50V**
- Choice of capacitance tolerance **2%** or **5%**
- Suitable for reflow soldering
- Supplied taped & reeled

Dimensions (mm)



Chip Size	Values	L	W	H	e
0603	100pF - 2700pF	1.6	0.8	0.7	0.35
0805	100pF - 6800pF 8200pF - 0.01µF	2.0	1.25	0.9 1.1	0.45
1206	3300pF - 6800pF 8200pF - 0.01µF 0.012µF - 0.022µF 0.027µF - 0.033µF 0.039µF - 0.047µF	3.2	1.6	0.9 1.1 0.9 1.1 1.5	0.65
1210	0.012µF - 0.015µF 0.018µF - 0.027µF 0.033µF - 0.039µF 0.056µF - 0.068µF 0.082µF - 0.1µF	3.2	2.5	1.1 1.5 2.1 1.5 2.1	0.65
1913	0.047µF 0.056µF - 0.068µF 0.082µF 0.1µF	4.8	3.3	1.4 2.0 2.4 2.8	0.35
2416	0.12µF 0.15µF 0.18µF 0.22µF	6.0	4.1	1.8 2.4 2.8 3.2	0.35

Pad Pattern



Chip Size	A	B	C
0603	0.6	2.0	0.7
0805	0.8	2.4	1.1
1206	1.8	3.6	1.4
1210	1.8	3.6	2.3
1913	2.6	6.6	3.0
2416	3.8	7.8	3.8

Specification

Specification	ECHU
Working voltage (as listed)	16Vdc/12Vac 50Vdc/40Vac
Capacitance tolerance	±2% or ±5%
Operating temperature range	-55°C to +125°C
Insulation resistance	≥3000MΩ
Dissipation factor	≤0.6% at 1kHz

Packaging

Tape		
	Chip Size	
	0603	8mm width, 4mm pitch
	0805	8mm width, 4mm pitch
	1206	8mm width, 4mm pitch
	1210	8mm width, 4mm pitch
	1913	12mm width, 8mm pitch
	2416	12mm width, 8mm pitch
Reel		
	0603-1210	178mm dia.
	1913-2416	330mm dia.

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

ORDER CODES

0603

Value (pF)	Order Code 2% tolerance	Order Code 5% tolerance
16 Volt		
100	ECHU1C101GX5	ECHU1C101JX5
120	ECHU1C121GX5	ECHU1C121JX5
150	ECHU1C151GX5	ECHU1C151JX5
180	ECHU1C181GX5	ECHU1C181JX5
220	ECHU1C221GX5	ECHU1C221JX5
270	ECHU1C271GX5	ECHU1C271JX5
330	ECHU1C331GX5	ECHU1C331JX5
390	ECHU1C391GX5	ECHU1C391JX5
470	ECHU1C471GX5	ECHU1C471JX5
560	ECHU1C561GX5	ECHU1C561JX5
680	ECHU1C681GX5	ECHU1C681JX5
820	ECHU1C821GX5	ECHU1C821JX5
1000	ECHU1C102GX5	ECHU1C102JX5
1200	ECHU1C122GX5	ECHU1C122JX5
1500	ECHU1C152GX5	ECHU1C152JX5
1800	ECHU1C182GX5	ECHU1C182JX5
2200	ECHU1C222GX5	ECHU1C222JX5
2700	ECHU1C272GX5	ECHU1C272JX5

0805

Value (pF)	Order Code 2% tolerance	Order Code 5% tolerance
50 Volt		
100	ECHU1H101GX5	ECHU1H101JX5
120	ECHU1H121GX5	ECHU1H121JX5
150	ECHU1H151GX5	ECHU1H151JX5
180	ECHU1H181GX5	ECHU1H181JX5
220	ECHU1H221GX5	ECHU1H221JX5
270	ECHU1H271GX5	ECHU1H271JX5
330	ECHU1H331GX5	ECHU1H331JX5
390	ECHU1H391GX5	ECHU1H391JX5
470	ECHU1H471GX5	ECHU1H471JX5
560	ECHU1H561GX5	ECHU1H561JX5
680	ECHU1H681GX5	ECHU1H681JX5
820	ECHU1H821GX5	ECHU1H821JX5
1000	ECHU1H102GX5	ECHU1H102JX5
1200	ECHU1H122GX5	ECHU1H122JX5
1500	ECHU1H152GX5	ECHU1H152JX5
1800	ECHU1H182GX5	ECHU1H182JX5
2200	ECHU1H222GX5	ECHU1H222JX5
2700	ECHU1H272GX5	ECHU1H272JX5
16 Volt		
3300	ECHU1C332GX5	ECHU1C332JX5
3900	ECHU1C392GX5	ECHU1C392JX5
4700	ECHU1C472GX5	ECHU1C472JX5
5600	ECHU1C562GX5	ECHU1C562JX5
6800	ECHU1C682GX5	ECHU1C682JX5
8200	ECHU1C822GX5	ECHU1C822JX5
(µF)		
0.01	ECHU1C103GX5	ECHU1C103JX5

1206

Value (pF)	Order Code 2% tolerance	Order Code 5% tolerance
50 Volt		
3300	ECHU1H332GX5	ECHU1H332JX5
3900	ECHU1H392GX5	ECHU1H392JX5
4700	ECHU1H472GX5	ECHU1H472JX5
5600	ECHU1H562GX5	ECHU1H562JX5
6800	ECHU1H682GX5	ECHU1H682JX5
8200	ECHU1H822GX5	ECHU1H822JX5
(µF)		
0.01	ECHU1H103GX5	ECHU1H103JX5
16 Volt		
0.012	ECHU1C123GX5	ECHU1C123JX5
0.015	ECHU1C153GX5	ECHU1C153JX5
0.018	ECHU1C183GX5	ECHU1C183JX5
0.022	ECHU1C223GB5	ECHU1C223JX5
0.027	ECHU1C273GX5	ECHU1C273JX5
0.033	ECHU1C333GB5	ECHU1C333JX5
0.039	ECHU1C393GX5	ECHU1C393JX5
0.047	ECHU1C473GX5	ECHU1C473JX5

1210

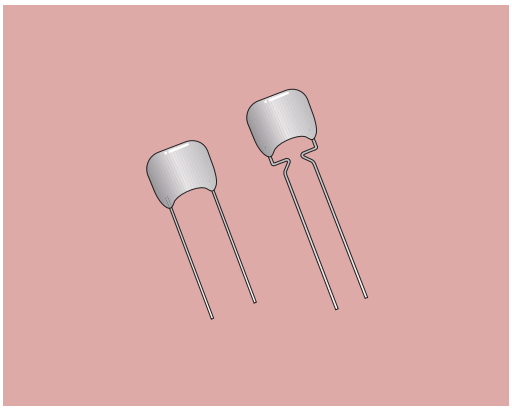
Value (µF)	Order Code 2% tolerance	Order Code 5% tolerance
50 Volt		
0.012	ECHU1H123GX5	ECHU1H123JX5
0.015	ECHU1H153GX5	ECHU1H153JX5
0.018	ECHU1H183GX5	ECHU1H183JX5
0.022	ECHU1H223GX5	ECHU1H223JX5
0.027	ECHU1H273GX5	ECHU1H273JX5
0.033	ECHU1H333GX5	ECHU1H333JX5
0.039	ECHU1H393GX5	ECHU1H393JX5
16 Volt		
0.056	ECHU1C563GX5	ECHU1C563JX5
0.068	ECHU1C683GX5	ECHU1C683JX5
0.082	ECHU1C823GX5	ECHU1C823JX5
0.1	ECHU1C104GX5	ECHU1C104JX5

1913

Value (µF)	Order Code 2% tolerance	Order Code 5% tolerance
50 Volt		
0.047	ECHU1H473GX9	ECHU1H473JX9
0.056	ECHU1H563GX9	ECHU1H563JX9
0.068	ECHU1H683GX9	ECHU1H683JX9
0.082	ECHU1H823GX9	ECHU1H823JX9
0.1	ECHU1H104GX9	ECHU1H104JX9

2416

Value (µF)	Order Code 2% tolerance	Order Code 5% tolerance
50 Volt		
0.12	ECHU1H124GX9	ECHU1H124JX9
0.15	ECHU1H154GX9	ECHU1H154JX9
0.18	ECHU1H184GX9	ECHU1H184JX9
0.22	ECHU1H224GX9	ECHU1H224JX9



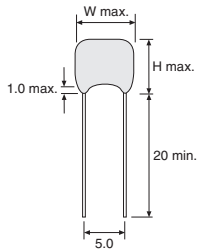
PANASONIC type ECQV

Designed for general purpose applications where high density component insertion is required, the ECQV radial lead capacitors are manufactured with an industry standard 5mm pitch. The range covers values from 0.01µF to 2.2µF and offers a choice of voltage ratings. Supplied loose or taped and boxed.

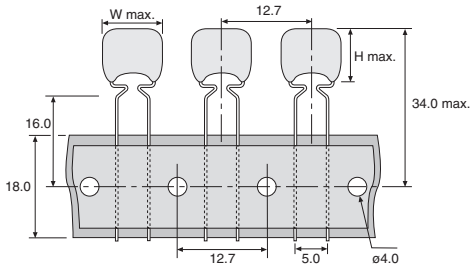
- **Metallised polyester film**
- Industry standard pitch of **5mm**
- Ideal for high density insertion
- High volumetric efficiency
- Voltage ratings from **50V** to **100V**
- Capacitance tolerance **5%**
- Body colour **Brown**
- Supplied loose or taped & boxed

Dimensions (mm)

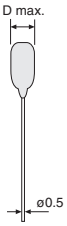
LOOSE



TAPED & BOXED



End View (both versions)



Specification

Specification	ECQV
Working voltage (as listed)	50Vdc/40Vac 63Vdc/40Vac 100Vdc/63Vac
Capacitance tolerance	±5%
Operating temperature range	-40°C to +85°C
Insulation resistance	≥3000MΩ
Dissipation factor	≤1% at 1kHz

ORDER CODES

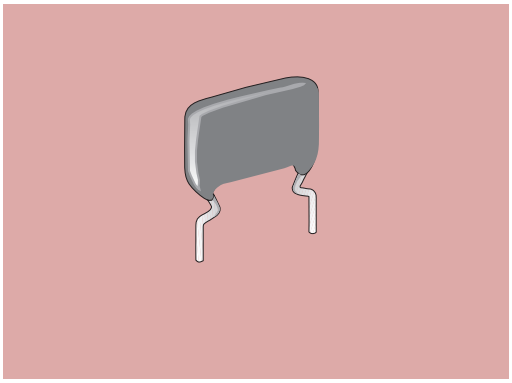
Value (µF)	Dimensions (mm) W	H	D	Loose (Straight Leads)	Taped & Boxed (Crimped leads)
50 Volt					
0.01	7.3	5.0	3.2	***ECQV1H103JL***	***ECQV1H103JL3***
0.012	7.3	5.0	3.2	***ECQV1H123JL***	***ECQV1H123JL3***
0.015	7.3	5.0	3.2	***ECQV1H153JL***	***ECQV1H153JL3***
0.018	7.3	5.0	3.2	***ECQV1H183JL***	***ECQV1H183JL3***
0.022	7.3	5.0	3.2	***ECQV1H223JL***	***ECQV1H223JL3***
0.027	7.3	5.0	3.2	***ECQV1H273JL***	***ECQV1H273JL3***
0.033	7.3	5.0	3.2	***ECQV1H333JL***	***ECQV1H333JL3***
0.039	7.3	5.0	3.2	***ECQV1H393JL***	***ECQV1H393JL3***
0.047	7.3	5.0	3.2	***ECQV1H473JL***	***ECQV1H473JL3***
0.056	7.3	5.0	3.2	***ECQV1H563JL***	***ECQV1H563JL3***
0.068	7.3	5.0	3.2	***ECQV1H683JL***	***ECQV1H683JL3***
0.082	7.3	5.0	3.6	***ECQV1H823JL***	***ECQV1H823JL3***
0.1	7.3	5.0	4.0	***ECQV1H104JL***	***ECQV1H104JL3***
0.12	7.3	5.0	4.0	***ECQV1H124JL***	***ECQV1H124JL3***
0.15	7.3	5.5	4.4	***ECQV1H154JL***	***ECQV1H154JL3***
0.18	7.3	5.5	4.5	***ECQV1H184JL***	***ECQV1H184JL3***
0.22	7.3	5.5	4.8	***ECQV1H224JL***	***ECQV1H224JL3***
0.27	7.3	7.0	4.6	***ECQV1H274JL***	***ECQV1H274JL3***
0.33	7.3	7.0	5.2	***ECQV1H334JL***	***ECQV1H334JL3***
0.39	7.3	7.3	5.7	***ECQV1H394JL***	***ECQV1H394JL3***
0.47	7.3	7.3	6.0	***ECQV1H474JL***	***ECQV1H474JL3***
0.56	7.3	10.0	5.8	***ECQV1H564JL***	***ECQV1H564JL3***
0.68	7.3	10.0	6.5	***ECQV1H684JL***	***ECQV1H684JL3***
0.82	7.3	10.0	6.8	***ECQV1H824JL***	***ECQV1H824JL3***
1.0	7.3	11.0	8.0	***ECQV1H105JL***	***ECQV1H105JL3***
1.2	10.2	10.0	6.5	***ECQV1H125JL***	***ECQV1H125JL3***
1.5	10.2	10.0	7.2	***ECQV1H155JL***	***ECQV1H155JL3***
1.8	10.2	12.0	7.2	***ECQV1H185JL***	***ECQV1H185JL3***
2.2	10.2	12.0	7.9	***ECQV1H225JL***	***ECQV1H225JL3***

continued > > > >

continuation

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Loose (Straight Leads)	Taped & Boxed (Crimped leads)
63 Volt					
0.01	7.5	6.8	3.2	*ECQV1J103JM*	*ECQV1J103JM3*
0.012	7.5	6.8	3.2	*ECQV1J123JM*	*ECQV1J123JM3*
0.015	7.5	6.8	3.2	*ECQV1J153JM*	*ECQV1J153JM3*
0.018	7.5	6.8	3.2	*ECQV1J183JM*	*ECQV1J183JM3*
0.022	7.5	6.8	3.2	*ECQV1J223JM*	*ECQV1J223JM3*
0.027	7.5	6.8	3.2	*ECQV1J273JM*	*ECQV1J273JM3*
0.033	7.5	6.8	3.2	*ECQV1J333JM*	*ECQV1J333JM3*
0.039	7.5	6.8	3.2	*ECQV1J393JM*	*ECQV1J393JM3*
0.047	7.5	6.8	3.2	*ECQV1J473JM*	*ECQV1J473JM3*
0.056	7.5	6.8	3.2	*ECQV1J563JM*	*ECQV1J563JM3*
0.068	7.5	6.8	3.2	*ECQV1J683JM*	*ECQV1J683JM3*
0.082	7.5	6.8	3.2	*ECQV1J823JM*	*ECQV1J823JM3*
0.1	7.5	7.0	3.2	*ECQV1J104JM*	*ECQV1J104JM3*
0.12	7.5	7.0	3.8	*ECQV1J124JM*	*ECQV1J124JM3*
0.15	7.5	7.0	4.1	*ECQV1J154JM*	*ECQV1J154JM3*
0.18	10.2	9.0	3.5	*ECQV1J184JM*	*ECQV1J184JM3*
0.22	10.2	9.0	3.5	*ECQV1J224JM*	*ECQV1J224JM3*
0.27	10.2	9.0	3.5	*ECQV1J274JM*	*ECQV1J274JM3*
0.33	10.2	9.0	3.8	*ECQV1J334JM*	*ECQV1J334JM3*
0.39	10.2	9.0	4.0	*ECQV1J394JM*	*ECQV1J394JM3*
0.47	10.2	9.0	4.5	*ECQV1J474JM*	*ECQV1J474JM3*
0.56	10.2	9.0	4.9	*ECQV1J564JM*	*ECQV1J564JM3*
0.68	10.2	10.0	5.5	*ECQV1J684JM*	*ECQV1J684JM3*
0.82	10.2	10.0	6.1	*ECQV1J824JM*	*ECQV1J824JM3*
1.0	10.2	10.0	6.9	*ECQV1J105JM*	*ECQV1J105JM3*
100 Volt					
0.01	7.5	7.0	3.2	*ECQV1103JM*	*ECQV1103JM3*
0.012	7.5	7.0	3.2	*ECQV1123JM*	*ECQV1123JM3*
0.015	7.5	7.0	3.2	*ECQV1153JM*	*ECQV1153JM3*
0.018	7.5	7.0	3.2	*ECQV1183JM*	*ECQV1183JM3*
0.022	7.5	7.0	3.2	*ECQV1223JM*	*ECQV1223JM3*
0.027	7.5	7.0	3.2	*ECQV1273JM*	*ECQV1273JM3*
0.033	7.5	7.0	3.2	*ECQV1333JM*	*ECQV1333JM3*
0.039	7.5	7.0	3.2	*ECQV1393JM*	*ECQV1393JM3*
0.047	7.5	7.0	3.2	*ECQV1473JM*	*ECQV1473JM3*
0.056	7.5	7.0	3.2	*ECQV1563JM*	*ECQV1563JM3*
0.068	7.5	7.0	4.0	*ECQV1683JM*	*ECQV1683JM3*
0.082	7.5	7.0	4.1	*ECQV1823JM*	*ECQV1823JM3*
0.1	7.5	7.0	4.5	*ECQV1104JM*	*ECQV1104JM3*
0.12	10.2	9.0	3.3	*ECQV1124JM*	*ECQV1124JM3*
0.15	10.2	9.0	3.3	*ECQV1154JM*	*ECQV1154JM3*
0.18	10.2	9.0	3.6	*ECQV1184JM*	*ECQV1184JM3*
0.22	10.2	9.0	4.0	*ECQV1224JM*	*ECQV1224JM3*
0.27	10.2	9.0	4.2	*ECQV1274JM*	*ECQV1274JM3*
0.33	10.2	10.0	4.8	*ECQV1334JM*	*ECQV1334JM3*
0.39	10.2	10.0	5.5	*ECQV1394JM*	*ECQV1394JM3*
0.47	10.2	10.5	6.8	*ECQV1474JM*	*ECQV1474JM3*

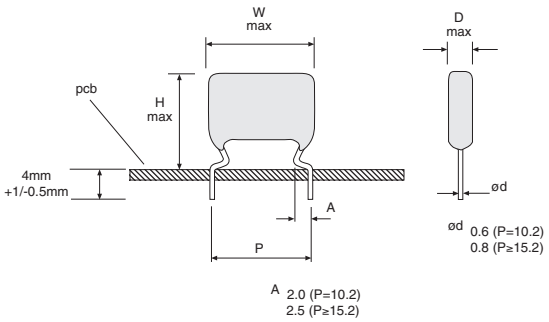


EPOC type E68

A range of dipped capacitors, industry compatible and suitable for general purpose use. Metallised polyester (PETP) film dielectric. Covered by a protective epoxy resin coating in a blue colour. Flame retardant, moisture repellent and solvent resistant. Leads are crimped and cropped with pitch on industry standard spacings. Voltage ratings from 100V to 400Vdc. May replace BC Comp. **368** series.

- **Metallised polyester film**
- Industry compatible
- Protective coating
- Pitches from **10.2 to 27.9mm**
- Very competitively priced
- Voltage ratings from **100V to 400V**
- Capacitance tolerance **10%**
- Body colour **Blue**

Dimensions (mm)



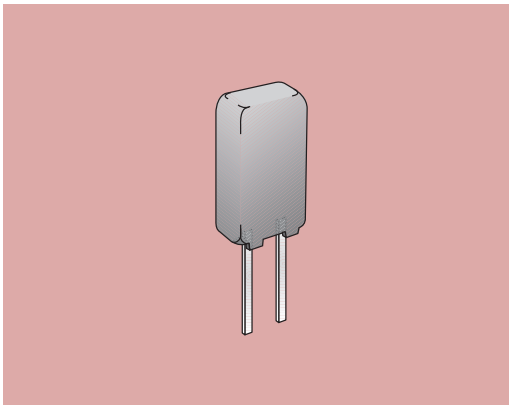
Specification

Specification	E68
Working voltage (as listed)	100Vdc/63Vac 250Vdc/160Vac 400Vdc/220Vac N.B. The E68 series is not suitable for across the line applications.
Capacitance tolerance	±10%
Operating temperature range	-40°C to +85°C
Insultion resistance/time constant	For V >100Vdc >7500MΩ (>2500 sec C>0.33µF) For V =100Vdc >3750MΩ (>1250 sec C>0.33µF)
Dissipation factor	1% at 1kHz

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	P	Order Code
100 Volt					
0.1	13.0	12.0	4.5	10.2	***080104***
0.15	13.0	12.0	5.0	10.2	***080106***
0.22	13.0	13.0	5.5	10.2	***080108***
0.33	18.0	14.0	5.5	15.2	***080110***
0.47	18.0	14.5	6.0	15.2	***080112***
0.68	18.0	15.0	6.0	15.2	***080114***
1.0	18.0	17.0	7.5	15.2	***080116***
1.5	26.0	18.0	7.0	22.9	***080118***
2.2	26.0	20.0	8.0	22.9	***080120***
3.3	26.0	21.0	10.5	22.9	***080122***
4.7	30.0	22.5	10.0	27.9	***080124***

Value (µF)	Dimensions (mm) W	H	D	P	Order Code
250 Volt					
0.033	13.0	12.0	4.5	10.2	***080302***
0.047	13.0	12.0	4.5	10.2	***080304***
0.068	13.0	12.5	5.0	10.2	***080306***
0.1	13.0	13.0	5.0	10.2	***080308***
0.15	18.0	14.0	5.0	15.2	***080310***
0.22	18.0	15.0	6.0	15.2	***080312***
0.33	18.0	16.0	7.0	15.2	***080314***
0.47	26.0	17.5	5.5	22.9	***080316***
0.68	26.0	18.5	6.5	22.9	***080318***
1.0	26.0	19.5	7.5	22.9	***080320***
1.5	30.0	20.5	8.5	27.9	***080322***
2.2	30.0	22.5	10.5	27.9	***080324***
400 Volt					
0.01	13.0	12.0	4.5	10.2	***080414***
0.015	13.0	12.0	4.5	10.2	***080416***
0.022	13.0	12.0	4.5	10.2	***080418***
0.033	13.0	12.5	5.0	10.2	***080420***
0.047	18.0	14.0	5.0	15.2	***080422***
0.068	18.0	14.0	5.0	15.2	***080424***
0.1	18.0	15.0	6.0	15.2	***080426***
0.15	18.0	16.0	7.0	15.2	***080428***
0.22	26.0	18.0	6.0	22.9	***080430***
0.33	26.0	19.0	6.5	22.9	***080432***
0.47	26.0	20.5	8.0	22.9	***080434***
0.68	30.0	22.0	9.0	27.9	***080436***
1.0	30.0	23.0	11.0	27.9	***080438***

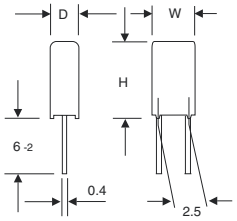


WIMA type MKS02

A specialised range of metallised polyester capacitors with self healing properties. Ideal for general DC applications such as by-pass, blocking, coupling, decoupling and timing. Offer a reliable operating life of 300,000 hours with an excellent temperature range. Supplied loose, or taped with the option of reel, roll or box.

- **Metallised polyester film**
- Self healing
- Long operational life
- Voltage ratings from **50V to 250V**
- Capacitance tolerance **10%**
- Operating temperature up to 100°C
- Supplied loose, or taped in various options

Dimensions (mm)



Dimensions listed on the following page against Order Codes

Specification	MKS02
Working voltage (as listed)	50Vdc/30Vac 100Vdc/63Vac 63Vdc/40Vac 250Vdc/160Vac N.B. The MKS02 series is not suitable for across the line applications.
Operational life	300,000 hours
Capacitance tolerance	±10%
Operating temperature range	-55°C to +100°C

Voltage derating :
A voltage derating factor of 1.25% per K must be applied from +85°C for DC voltages and from +75°C for AC voltages.

Insulation resistance at 20°C

Rating Voltage dc	Test Voltage	C ≤0.33µF	C >0.33µF
50V	10V	≥3750MΩ (mean value: 10,000MΩ)	≥1250 sec (MΩ x µF) (mean value: 3000 sec)
63V	50V		
≥100V	100V	≥10,000MΩ (mean value: 20,000MΩ)	–

Measuring time: 1 min.

Dissipation factor at 20°C

Freq.	C ≤0.1µF	C >0.1µF
1kHz	≤0.8%	≤0.8%
10kHz	≤1.5%	≤1.5%
100kHz	≤3%	–

Maximum pulse rise time : for pulses equal to the rated voltage

Capacitance pF/µF	Pulse rise time V/µsec max. operation/test
1000 - 6800	100/1000
0.01 - 0.022	50/500
0.033 - 0.068	30/300
0.1 - 0.33	20/200
0.47 - 1.0	15/150

The range of values listed overleaf are 10% tolerance. 5% & 20% tolerances are also available to order.

Please contact our Sales Desk to discuss your requirements.

WIMA type MKS02
continued overleaf > > > >

+44 (0)1945 47 47 47 www.anglia.com info@anglia.com

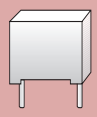
continuation

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Loose	Taped & Reeled	Taped & Rolled	Taped & Boxed
50 Volt							
1.0	4.6	10.0	5.5	*MKS02105K1MP1B*	*MKS02105K1MP1T*	*MKS02105K1MP1R*	*MKS02105K1MP1A*
63 Volt							
0.01	4.6	7.0	2.5	*MKS02103K1PP1B*	*MKS02103K1PP1T*	*MKS02103K1PP1R*	*MKS02103K1PP1A*
0.015	4.6	7.0	2.5	*MKS02153K1PP1B*	*MKS02153K1PP1T*	*MKS02153K1PP1R*	*MKS02153K1PP1A*
0.022	4.6	7.0	2.5	*MKS02223K1PP1B*	*MKS02223K1PP1T*	*MKS02223K1PP1R*	*MKS02223K1PP1A*
0.033	4.6	7.0	2.5	*MKS02333K1PP1B*	*MKS02333K1PP1T*	*MKS02333K1PP1R*	*MKS02333K1PP1A*
0.047	4.6	7.0	2.5	*MKS02473K1PP1B*	*MKS02473K1PP1T*	*MKS02473K1PP1R*	*MKS02473K1PP1A*
0.068	4.6	7.5	3.0	*MKS02683K1PP1B*	*MKS02683K1PP1T*	*MKS02683K1PP1R*	*MKS02683K1PP1A*
0.1	4.6	7.5	3.0	*MKS02104K1PP1B*	*MKS02104K1PP1T*	*MKS02104K1PP1R*	*MKS02104K1PP1A*
0.15	4.6	7.5	3.0	*MKS02154K1PP1B*	*MKS02154K1PP1T*	*MKS02154K1PP1R*	*MKS02154K1PP1A*
0.22	4.6	7.5	3.0	*MKS02224K1PP1B*	*MKS02224K1PP1T*	*MKS02224K1PP1R*	*MKS02224K1PP1A*
0.33	4.6	8.5	3.8	*MKS02334K1PP1B*	*MKS02334K1PP1T*	*MKS02334K1PP1R*	*MKS02334K1PP1A*
0.47	4.6	9.0	4.6	*MKS02474K1PP1B*	*MKS02474K1PP1T*	*MKS02474K1PP1R*	*MKS02474K1PP1A*
0.68	4.6	10.0	5.5	*MKS02684K1PP1B*	*MKS02684K1PP1T*	*MKS02684K1PP1R*	*MKS02684K1PP1A*
100 Volt							
0.01	4.6	7.0	2.5	*MKS02103K2AP1B*	*MKS02103K2AP1T*	*MKS02103K2AP1R*	*MKS02103K2AP1A*
0.015	4.6	7.0	2.5	*MKS02153K2AP1B*	*MKS02153K2AP1T*	*MKS02153K2AP1R*	*MKS02153K2AP1A*
0.022	4.6	7.0	2.5	*MKS02223K2AP1B*	*MKS02223K2AP1T*	*MKS02223K2AP1R*	*MKS02223K2AP1A*
0.033	4.6	7.0	2.5	*MKS02333K2AP1B*	*MKS02333K2AP1T*	*MKS02333K2AP1R*	*MKS02333K2AP1A*
0.047	4.6	7.0	2.5	*MKS02473K2AP1B*	*MKS02473K2AP1T*	*MKS02473K2AP1R*	*MKS02473K2AP1A*
0.068	4.6	7.5	3.0	*MKS02683K2AP1B*	*MKS02683K2AP1T*	*MKS02683K2AP1R*	*MKS02683K2AP1A*
0.1	4.6	7.5	3.0	*MKS02104K2AP1B*	*MKS02104K2AP1T*	*MKS02104K2AP1R*	*MKS02104K2AP1A*
0.15	4.6	8.5	3.8	*MKS02154K2AP1B*	*MKS02154K2AP1T*	*MKS02154K2AP1R*	*MKS02154K2AP1A*
0.22	4.6	9.0	4.6	*MKS02224K2AP1B*	*MKS02224K2AP1T*	*MKS02224K2AP1R*	*MKS02224K2AP1A*
0.33	4.6	10.0	5.5	*MKS02334K2AP1B*	*MKS02334K2AP1T*	*MKS02334K2AP1R*	*MKS02334K2AP1A*
250 Volt							
0.001	4.6	7.0	2.5	*MKS02102K2GP1B*	*MKS02102K2GP1T*	*MKS02102K2GP1R*	*MKS02102K2GP1A*
0.0015	4.6	7.0	2.5	*MKS02152K2GP1B*	*MKS02152K2GP1T*	*MKS02152K2GP1R*	*MKS02152K2GP1A*
0.0022	4.6	7.0	2.5	*MKS02222K2GP1B*	*MKS02222K2GP1T*	*MKS02222K2GP1R*	*MKS02222K2GP1A*
0.0033	4.6	7.0	2.5	*MKS02332K2GP1B*	*MKS02332K2GP1T*	*MKS02332K2GP1R*	*MKS02332K2GP1A*
0.0047	4.6	7.0	2.5	*MKS02472K2GP1B*	*MKS02472K2GP1T*	*MKS02472K2GP1R*	*MKS02472K2GP1A*
0.0068	4.6	7.0	2.5	*MKS02682K2GP1B*	*MKS02682K2GP1T*	*MKS02682K2GP1R*	*MKS02682K2GP1A*
0.01	4.6	7.0	2.5	*MKS02103K2GP1B*	*MKS02103K2GP1T*	*MKS02103K2GP1R*	*MKS02103K2GP1A*
0.015	4.6	7.0	2.5	*MKS02153K2GP1B*	*MKS02153K2GP1T*	*MKS02153K2GP1R*	*MKS02153K2GP1A*
0.022	4.6	7.0	2.5	*MKS02223K2GP1B*	*MKS02223K2GP1T*	*MKS02223K2GP1R*	*MKS02223K2GP1A*
0.033	4.6	7.5	3.0	*MKS02333K2GP1B*	*MKS02333K2GP1T*	*MKS02333K2GP1R*	*MKS02333K2GP1A*
0.047	4.6	8.5	3.8	*MKS02473K2GP1B*	*MKS02473K2GP1T*	*MKS02473K2GP1R*	*MKS02473K2GP1A*
0.068	4.6	9.0	4.6	*MKS02683K2GP1B*	*MKS02683K2GP1T*	*MKS02683K2GP1R*	*MKS02683K2GP1A*
0.1	4.6	10.0	5.5	*MKS02104K2GP1B*	*MKS02104K2GP1T*	*MKS02104K2GP1R*	*MKS02104K2GP1A*

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68



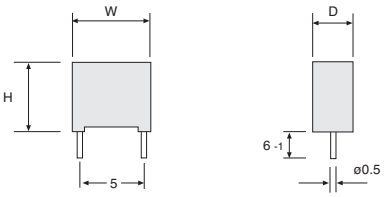
EPCOS type B32529

A range of industry standard 5mm pitch metallised polyester capacitors with a choice of packaging method (loose or taped and boxed) and capacitance tolerance (10% or 5%). Epoxy resin encapsulated in flame retardant plastic cases with stand-off feet.

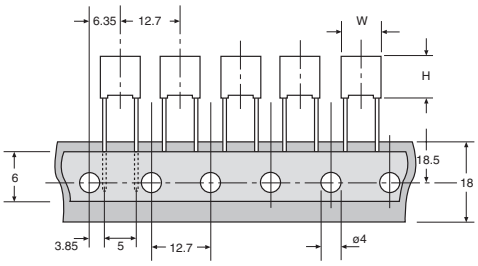
- **Metallised polyester film**
- Industry standard pitch of **5mm**
- Very competitively priced
- Flame retardant cases to UL94V-0
- Voltage ratings from **50V to 400V**
- Choice of capacitance tolerance **10%** or **5%**
- Body colour **Blue**
- Supplied loose or taped & boxed

Dimensions (mm)

LOOSE



TAPED & BOXED



Dimensions listed on the following page against Order Codes

Specification

Specification	B32529
Working voltage (as listed) at 85°C	50Vdc/30Vac 63Vdc/40Vac 100Vdc/63Vac 250Vdc/160Vac 400Vdc/200Vac N.B. The B32529 series is not suitable for across the line applications.
Capacitance tolerance	±10% or ±5%(J suffix)
Operating temperature range	-55°C to +85°C (+125°C with voltage derating)
Insulation resistance/time constant	C≤0.33µF : ≥3750MΩ (≤100V) ≥7500MΩ (≥250V) C>0.33µF : ≥1250sec (≤100V) ≥2500sec (≥250V)
Dissipation factor	≤1% at 1kHz

Also available to order :
MKS2 series of 5mm pitch
from WIMA

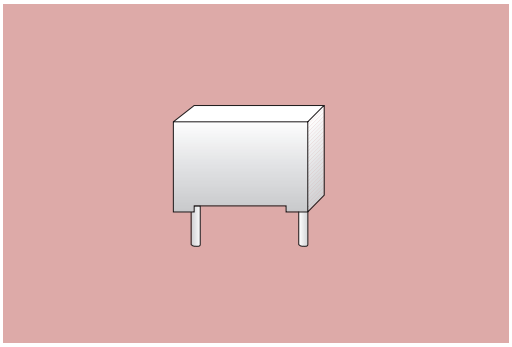
Please contact our Sales Desk for details.

EPCOS type B32529
continued overleaf > > > >

continuation

ORDER CODES

Value (µF)	Dimensions (mm) max. W	H	D	Loose 10%	Loose 5%	Taped & Boxed 10%	Taped & Boxed 5%
50 Volt							
2.2	7.8	13.0	7.8	*071521*	*071521J*	*071521T*	*071521JT*
3.3	7.8	13.0	7.8	*071522*	*071522J*	*071522T*	*071522JT*
63 Volt							
0.1	7.2	6.5	2.5	*071013*	*071013J*	*071013T*	*071013JT*
0.15	7.2	6.5	2.5	*071014*	*071014J*	*071014T*	*071014JT*
0.22	7.2	6.5	2.5	*071015*	*071015J*	*071015T*	*071015JT*
0.33	7.2	6.5	3.0	*071016*	*071016J*	*071016T*	*071016JT*
0.47	7.2	8.0	3.5	*071017*	*071017J*	*071017T*	*071017JT*
0.68	7.3	9.5	4.5	*071018*	*071018J*	*071018T*	*071018JT*
1.0	7.3	9.5	4.5	*071019*	*071019J*	*071019T*	*071019JT*
1.5	7.5	10.5	6.0	*071020*	*071020J*	*071020T*	*071020JT*
100 Volt							
0.001	7.2	6.5	2.5	*071101*	*071101J*	*071101T*	*071101JT*
0.0015	7.2	6.5	2.5	*071102*	*071102J*	*071102T*	*071102JT*
0.0022	7.2	6.5	2.5	*071103*	*071103J*	*071103T*	*071103JT*
0.0033	7.2	6.5	2.5	*071104*	*071104J*	*071104T*	*071104JT*
0.0047	7.2	6.5	2.5	*071105*	*071105J*	*071105T*	*071105JT*
0.0068	7.2	6.5	2.5	*071106*	*071106J*	*071106T*	*071106JT*
0.01	7.2	6.5	2.5	*071107*	*071107J*	*071107T*	*071107JT*
0.015	7.2	6.5	2.5	*071108*	*071108J*	*071108T*	*071108JT*
0.022	7.2	6.5	2.5	*071109*	*071109J*	*071109T*	*071109JT*
0.033	7.2	6.5	2.5	*071110*	*071110J*	*071110T*	*071110JT*
0.047	7.2	6.5	2.5	*071111*	*071111J*	*071111T*	*071111JT*
0.068	7.2	6.5	2.5	*071112*	*071112J*	*071112T*	*071112JT*
0.1	7.2	6.5	2.5	*071113*	*071113J*	*071113T*	*071113JT*
0.15	7.2	6.5	3.0	*071114*	*071114J*	*071114T*	*071114JT*
0.22	7.2	8.0	3.5	*071115*	*071115J*	*071115T*	*071115JT*
0.33	7.2	8.0	3.5	*071116*	*071116J*	*071116T*	*071116JT*
0.47	7.3	9.5	4.5	*071117*	*071117J*	*071117T*	*071117JT*
0.68	7.5	10.5	6.0	*071118*	*071118J*	*071118T*	*071118JT*
1.0	7.8	13.0	7.8	*071119*	*071119J*	*071119T*	*071119JT*
250 Volt							
0.0068	7.2	6.5	2.5	*071306*	*071306J*	*071306T*	*071306JT*
0.01	7.2	6.5	2.5	*071307*	*071307J*	*071307T*	*071307JT*
0.015	7.2	6.5	2.5	*071308*	*071308J*	*071308T*	*071308JT*
0.022	7.2	6.5	2.5	*071309*	*071309J*	*071309T*	*071309JT*
0.033	7.2	6.5	3.0	*071310*	*071310J*	*071310T*	*071310JT*
0.047	7.2	8.0	3.5	*071311*	*071311J*	*071311T*	*071311JT*
0.068	7.3	9.5	4.5	*071312*	*071312J*	*071312T*	*071312JT*
0.1	7.3	9.5	4.5	*071313*	*071313J*	*071313T*	*071313JT*
0.15	7.5	10.0	5.0	*071314*	*071314J*	*071314T*	*071314JT*
0.22	7.8	13.0	7.8	*071315*	*071315J*	*071315T*	*071315JT*
400 Volt							
0.001	7.2	6.5	2.5	*071401*	*071401J*	*071401T*	*071401JT*
0.0015	7.2	6.5	2.5	*071402*	*071402J*	*071402T*	*071402JT*
0.0022	7.2	6.5	2.5	*071403*	*071403J*	*071403T*	*071403JT*
0.0033	7.2	6.5	2.5	*071404*	*071404J*	*071404T*	*071404JT*
0.0047	7.2	6.5	2.5	*071405*	*071405J*	*071405T*	*071405JT*
0.0068	7.2	6.5	2.5	*071406*	*071406J*	*071406T*	*071406JT*
0.01	7.2	6.5	3.0	*071407*	*071407J*	*071407T*	*071407JT*
0.015	7.2	8.0	3.5	*071408*	*071408J*	*071408T*	*071408JT*
0.022	7.3	9.5	4.5	*071409*	*071409J*	*071409T*	*071409JT*
0.033	7.5	10.0	5.0	*071410*	*071410J*	*071410T*	*071410JT*
0.047	7.5	10.5	6.0	*071411*	*071411J*	*071411T*	*071411JT*

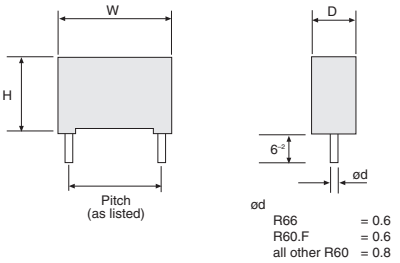


ARCOTRONICS type R66 & R60 series

A broad range of metallised polyester film capacitors epoxy resin encapsulated in flame retardant plastic cases with stand-off feet and offering an extensive pitch selection.

- **Metallised polyester film**
- Choice of pitch from **7.5mm to 27.5mm**
- Wide choice of values/voltages
- Flame retardant cases to UL94V-0
- Capacitance tolerance **10%**
- Body colour **Cream/Grey**

Dimensions (mm)



Dimensions listed against Order Codes

Specification	R66 / R60
Working voltage (as listed) at 85°C	63Vdc/40Vac 400Vdc/200Vac 100Vdc/63Vac 630Vdc/220Vac 160Vdc/90Vac 1000Vdc/250Vac 250Vdc/160Vac N.B. The R66 & R60 series are not suitable for across the line applications.
Capacitance tolerance	±10%
Operating temperature range	-55°C to +85°C (+100°C with voltage derating)
Insulation resistance/time constant	For V >100Vdc ≥30,000MΩ (≥10,000 sec C>0.33µF) For V ≥100Vdc ≤3750MΩ (≥1250 sec C>0.33µF)
Dissipation factor	≤1% at 1kHz

Also available to order :
MKS4 series of 7.5 to 27.5mm pitch from WIMA

Please contact our Sales Desk for details.

ARCOTRONICS type R66 7.5mm PITCH

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Order Code 10%
63 Volt				
0.1	10.0	7.0	2.5	***072013***
0.15	10.0	7.0	2.5	***072014***
0.22	10.5	8.5	3.5	***072015***
0.33	10.5	8.5	3.5	***072016***
0.47	10.5	9.0	4.0	***072017***
0.68	10.5	11.0	5.0	***072018***
1.0	10.5	12.0	6.0	***072019***
100 Volt				
0.047	10.0	7.0	2.5	***072111***
0.068	10.0	7.0	2.5	***072112***
0.1	10.5	8.5	3.5	***072113***
0.15	10.5	8.5	3.5	***072114***
0.22	10.5	8.5	3.5	***072115***
0.33	10.5	11.0	5.0	***072116***
0.47	10.5	12.0	6.0	***072117***
250 Volt				
0.015	10.0	7.0	2.5	***072308***
0.022	10.0	7.0	2.5	***072309***
0.033	10.0	7.0	2.5	***072310***
0.047	10.5	8.5	3.5	***072311***
0.068	10.5	8.5	3.5	***072312***
0.1	10.5	9.0	4.0	***072313***
0.15	10.5	11.0	5.0	***072314***
0.22	10.5	12.0	6.0	***072315***

Value (µF)	Dimensions (mm) W	H	D	Order Code 10%
400 Volt				
0.0033	10.0	7.0	2.5	***072404***
0.0047	10.0	7.0	2.5	***072405***
0.0068	10.0	7.0	2.5	***072406***
0.01	10.0	7.0	2.5	***072407***
0.015	10.5	8.5	3.5	***072408***
0.022	10.5	8.5	3.5	***072409***
0.033	10.5	9.0	4.0	***072410***
0.047	10.5	11.0	5.0	***072411***
0.068	10.5	11.0	5.0	***072412***
0.1	10.5	12.0	6.0	***072413***
630 Volt				
0.001	10.0	7.0	2.5	***072601***
0.0015	10.0	7.0	2.5	***072602***
0.0022	10.0	7.0	2.5	***072603***
0.0033	10.0	8.5	3.5	***072604***
0.0047	10.5	8.5	3.5	***072605***
0.0068	10.5	8.5	3.5	***072606***
0.01	10.5	9.0	4.0	***072607***
0.015	10.5	11.0	5.0	***072608***
0.022	10.5	12.0	6.0	***072609***

5% *capacitance tolerance available to order*

10mm to 27.5mm pitch overleaf > > > >

continuation

10mm PITCH

ARCOTRONICS type R60_F

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Order Code 10%
63 Volt				
0.47	13.0	9.0	4.0	*073017*
0.68	13.0	9.0	4.0	*073018*
1.0	13.0	11.0	5.0	*073019*
1.5	13.0	12.0	6.0	*073020*
100 Volt				
0.33	13.0	9.0	4.0	*073116*
0.47	13.0	11.0	5.0	*073117*
0.68	13.0	12.0	6.0	*073118*
160 Volt				
0.22	13.0	9.0	4.0	*073215*
0.33	13.0	11.0	5.0	*073216*
0.47	13.0	12.0	6.0	*073217*
250 Volt				
0.068	13.0	9.0	4.0	*073312*
0.1	13.0	9.0	4.0	*073313*
0.15	13.0	9.0	4.0	*073314*
0.22	13.0	11.0	5.0	*073315*
0.33	13.0	12.0	6.0	*073316*
400 Volt				
0.015	13.0	9.0	4.0	*073408*
0.022	13.0	9.0	4.0	*073409*
0.033	13.0	9.0	4.0	*073410*
0.047	13.0	9.0	4.0	*073411*
0.068	13.0	11.0	5.0	*073412*
0.1	13.0	12.0	6.0	*073413*
630 Volt				
0.0047	13.0	9.0	4.0	*073605*
0.0068	13.0	9.0	4.0	*073606*
0.01	13.0	9.0	4.0	*073607*
0.015	13.0	9.0	4.0	*073608*
0.022	13.0	11.0	5.0	*073609*
0.033	13.0	12.0	6.0	*073610*
1000 Volt				
0.001	13.0	9.0	4.0	*073801*
0.0015	13.0	9.0	4.0	*073802*
0.0022	13.0	9.0	4.0	*073803*
0.0033	13.0	9.0	4.0	*073804*
0.0047	13.0	11.0	5.0	*073805*
0.0068	13.0	12.0	6.0	*073806*

15mm PITCH

ARCOTRONICS type R60_I

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Order Code 10%
63 Volt				
0.68	18.0	11.0	5.0	*074018*
1.0	18.0	11.0	5.0	*074019*
1.5	18.0	11.0	5.0	*074020*
2.2	18.0	12.0	6.0	*074021*
3.3	18.0	13.5	7.5	*074022*
4.7	18.0	14.5	8.5	*074023*
6.8	18.0	16.0	10.0	*074024*
100 Volt				
0.33	18.0	11.0	5.0	*074116*
0.47	18.0	11.0	5.0	*074117*
0.68	18.0	11.0	5.0	*074118*
1.0	18.0	11.0	5.0	*074119*
1.5	18.0	13.5	7.5	*074120*
2.2	18.0	14.5	8.5	*074121*
3.3	18.0	16.0	10.0	*074122*
160 Volt				
0.33	18.0	11.0	5.0	*074216*
0.47	18.0	11.0	5.0	*074217*
0.68	18.0	11.0	5.0	*074218*
1.0	18.0	13.5	7.5	*074219*
1.5	18.0	14.5	8.5	*074220*
2.2	18.0	16.0	10.0	*074221*
250 Volt				
0.1	18.0	11.0	5.0	*074313*
0.15	18.0	11.0	5.0	*074314*
0.22	18.0	11.0	5.0	*074315*
0.33	18.0	11.0	5.0	*074316*
0.47	18.0	12.0	6.0	*074317*
0.68	18.0	13.5	7.5	*074318*
1.0	18.0	14.5	8.5	*074319*
1.5	18.0	16.0	10.0	*074320*
400 Volt				
0.047	18.0	11.0	5.0	*074411*
0.068	18.0	11.0	5.0	*074412*
0.1	18.0	11.0	5.0	*074413*
0.15	18.0	11.0	5.0	*074414*
0.22	18.0	12.0	6.0	*074415*
0.33	18.0	13.5	7.5	*074416*
0.47	18.0	14.5	8.5	*074417*
630 Volt				
0.033	18.0	11.0	5.0	*074610*
0.047	18.0	11.0	5.0	*074611*
0.068	18.0	12.0	6.0	*074612*
0.1	18.0	13.5	7.5	*074613*
0.15	18.0	14.5	8.5	*074614*
1000 Volt				
0.01	18.0	11.0	5.0	*074807*
0.015	18.0	12.0	6.0	*074808*
0.022	18.0	13.5	7.5	*074809*
0.033	18.0	14.5	8.5	*074810*
0.047	18.0	16.0	10.0	*074811*

5% *capacitance tolerance available to order*

continuation

22.5mm PITCH

ARCOTRONICS type R60_N

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Order Code 10%
63 Volt				
3.3	26.5	15.0	6.0	***075022***
4.7	26.5	16.0	7.0	***075023***
6.8	26.5	16.0	7.0	***075024***
10.0	26.5	17.0	8.5	***075025***
100 Volt				
1.5	26.5	15.0	6.0	***075120***
2.2	26.5	15.0	6.0	***075121***
3.3	26.5	16.0	7.0	***075122***
4.7	26.5	17.0	8.5	***075123***
6.8	26.5	18.5	10.0	***075124***
160 Volt				
1.5	26.5	15.0	6.0	***075220***
2.2	26.5	16.0	7.0	***075221***
3.3	26.5	17.0	8.5	***075222***
4.7	26.5	20.0	11.0	***075223***
250 Volt				
0.47	26.5	15.0	6.0	***075317***
0.68	26.5	15.0	6.0	***075318***
1.0	26.5	15.0	6.0	***075319***
1.5	26.5	16.0	7.0	***075320***
2.2	26.5	18.5	10.0	***075321***
3.3	26.5	20.0	11.0	***075322***
400 Volt				
0.22	26.5	15.0	6.0	***075415***
0.33	26.5	15.0	6.0	***075416***
0.47	26.5	15.0	6.0	***075417***
0.68	26.5	16.0	7.0	***075418***
1.0	26.5	18.5	10.0	***075419***
1.5	26.5	20.0	11.0	***075420***
630 Volt				
0.1	26.5	15.0	6.0	***075613***
0.15	26.5	15.0	6.0	***075614***
0.22	26.5	16.0	7.0	***075615***
0.33	26.5	18.5	10.0	***075616***
1000 Volt				
0.033	26.5	15.0	6.0	***075810***
0.047	26.5	15.0	6.0	***075811***
0.068	26.5	17.0	8.5	***075812***
0.1	26.5	18.5	10.0	***075813***

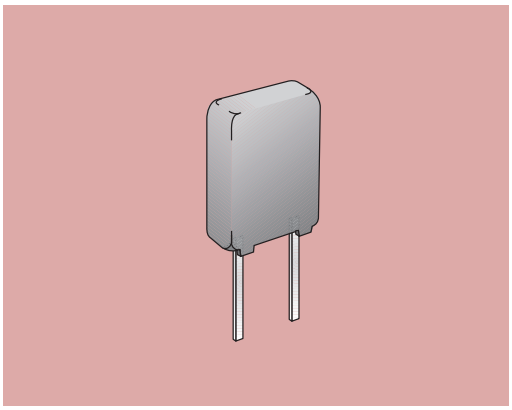
27.5mm PITCH

ARCOTRONICS NISSEI type R60_R

ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Order Code 10%
63 Volt				
10.0	32.0	17.0	9.0	***076025***
15.0	32.0	20.0	11.0	***076026***
22.0	32.0	22.0	13.0	***076027***
100 Volt				
4.7	32.0	17.0	9.0	***076123***
6.8	32.0	17.0	9.0	***076124***
10.0	32.0	20.0	11.0	***076125***
160 Volt				
3.3	32.0	17.0	9.0	***076222***
4.7	32.0	17.0	9.0	***076223***
6.8	32.0	20.0	11.0	***076224***
250 Volt				
1.5	32.0	17.0	9.0	***076320***
2.2	32.0	17.0	9.0	***076321***
3.3	32.0	20.0	11.0	***076322***
4.7	32.0	22.0	13.0	***076323***
400 Volt				
0.68	32.0	17.0	9.0	***076418***
1.0	32.0	17.0	9.0	***076419***
1.5	32.0	20.0	10.0	***076420***
2.2	32.0	22.0	13.0	***076421***
630 Volt				
0.33	32.0	17.0	9.0	***076616***
0.47	32.0	20.0	11.0	***076617***
0.68	32.0	22.0	13.0	***076618***
1000 Volt				
0.15	32.0	20.0	11.0	***076814***
0.22	32.0	22.0	13.0	***076815***

5% *capacitance tolerance available to order*

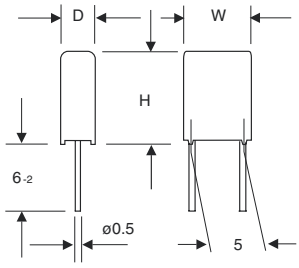


WIMA type MKP2

A specialised range of metallised polypropylene capacitors with self healing properties. Ideal for high frequency applications such as timing, oscillating circuits and high frequency coupling & decoupling. Offer very low dielectric absorption and a reliable operating life of 300,000 hours. Supplied loose, or taped with the option of reel, roll or box.

- **Metallised polypropylene film**
- Self healing
- Very low dielectric adsorption and dissipation
- Long operational life
- Increased pulse duty
- Capacitance tolerance **10%**
- Supplied loose, or taped in various options

Dimensions (mm)



Dimensions listed on the following page against Order Codes

Specification

Specification	MKP2
Working voltage (as listed)	63Vdc/40Vac 400Vdc/200Vac 100Vdc/63Vac 630Vdc/250Vac 250Vdc/160Vac 1000Vdc/250Vac N.B. The MKP2 series is not suitable for across the line application.
Operational life	300,000 hours
Capacitance tolerance	±10%
Operating temperature range	-55°C to +100°C

Voltage derating :
A voltage derating factor of 1.35% per K must be applied from +85°C for DC voltages and from +75°C for AC voltages.

Insulation resistance at 20°C

Rated Voltage dc	Test Voltage	C (all)
63V	50V	≥30,000MΩ (mean value: 100,000MΩ)
≥100V	100V	

Dissipation factor at 20°C

Freq.	C ≤0.1µF	C >0.1µF
1kHz	≤0.05%	≤0.05%
10kHz	≤0.08%	≤0.08%
100kHz	≤0.3%	–

Maximum pulse rise time : for pulses equal to the rated voltage

Capacitance pF/µF	Max. pulse rise time V/µsec					
	63V	**100V**	**250V**	**400V**	**630V**	**1000V**
1000 - 2200	–	–	–	300	400	500
3300 - 6800	–	–	–	300	400	500
0.01 - 0.022	100	100	250	300	400	500
0.033 - 0.068	100	100	250	300	400	–
0.1 - 0.22	100	100	250	–	–	–
0.33	100	100	250	–	–	–

The range of values listed opposite are 10% tolerance. 5% & 20% tolerances are also available to order.

In addition, the FKS2 & FKP2 series are available from WIMA for pulse applications.

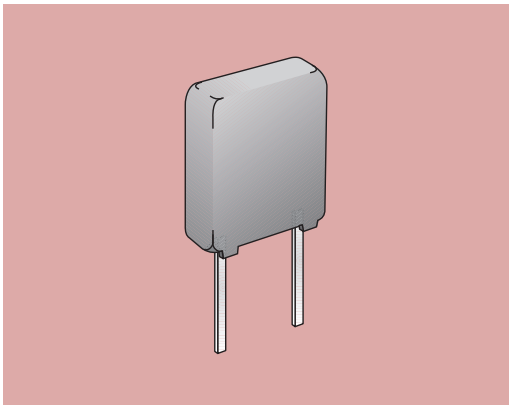
Please contact our Sales Desk to discuss your requirements.

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

MKP2 ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Loose	Taped & Reeled	Taped & Rolled	Taped & Boxed
63 Volt							
0.01	7.2	7.5	3.0	MKP2103K1PP2B	MKP2103K1PP2T	MKP2103K1PP2R	MKP2103K1PP2A
0.015	7.2	7.5	3.0	MKP2153K1PP2B	MKP2153K1PP2T	MKP2153K1PP2R	MKP2153K1PP2A
0.022	7.2	7.5	3.0	MKP2223K1PP2B	MKP2223K1PP2T	MKP2223K1PP2R	MKP2223K1PP2A
0.033	7.2	7.5	3.0	MKP2333K1PP2B	MKP2333K1PP2T	MKP2333K1PP2R	MKP2333K1PP2A
0.047	7.2	8.5	3.5	MKP2473K1PP2B	MKP2473K1PP2T	MKP2473K1PP2R	MKP2473K1PP2A
0.068	7.2	9.5	4.5	MKP2683K1PP2B	MKP2683K1PP2T	MKP2683K1PP2R	MKP2683K1PP2A
0.1	7.2	10.0	5.0	MKP2104K1PP2B	MKP2104K1PP2T	MKP2104K1PP2R	MKP2104K1PP2A
0.15	7.2	11.5	5.5	MKP2154K1PP2B	MKP2154K1PP2T	MKP2154K1PP2R	MKP2154K1PP2A
0.22	7.2	13.0	7.2	MKP2224K1PP2B	MKP2224K1PP2T	MKP2224K1PP2R	MKP2224K1PP2A
0.33	7.2	14.0	8.5	MKP2334K1PP2B	MKP2334K1PP2T	MKP2334K1PP2R	MKP2334K1PP2A
100 Volt							
0.01	7.2	7.5	3.0	MKP2103K2AP2B	MKP2103K2AP2T	MKP2103K2AP2R	MKP2103K2AP2A
0.015	7.2	7.5	3.0	MKP2153K2AP2B	MKP2153K2AP2T	MKP2153K2AP2R	MKP2153K2AP2A
0.022	7.2	7.5	3.0	MKP2223K2AP2B	MKP2223K2AP2T	MKP2223K2AP2R	MKP2223K2AP2A
0.033	7.2	7.5	3.0	MKP2333K2AP2B	MKP2333K2AP2T	MKP2333K2AP2R	MKP2333K2AP2A
0.047	7.2	8.5	3.5	MKP2473K2AP2B	MKP2473K2AP2T	MKP2473K2AP2R	MKP2473K2AP2A
0.068	7.2	9.5	4.5	MKP2683K2AP2B	MKP2683K2AP2T	MKP2683K2AP2R	MKP2683K2AP2A
0.1	7.2	10.0	5.0	MKP2104K2AP2B	MKP2104K2AP2T	MKP2104K2AP2R	MKP2104K2AP2A
0.15	7.2	11.5	5.5	MKP2154K2AP2B	MKP2154K2AP2T	MKP2154K2AP2R	MKP2154K2AP2A
0.22	7.2	13.0	7.2	MKP2224K2AP2B	MKP2224K2AP2T	MKP2224K2AP2R	MKP2224K2AP2A
0.33	7.2	14.0	8.5	MKP2334K2AP2B	MKP2334K2AP2T	MKP2334K2AP2R	MKP2334K2AP2A
250 Volt							
0.01	7.2	7.5	3.0	MKP2103K2GP2B	MKP2103K2GP2T	MKP2103K2GP2R	MKP2103K2GP2A
0.015	7.2	7.5	3.0	MKP2153K2GP2B	MKP2153K2GP2T	MKP2153K2GP2R	MKP2153K2GP2A
0.022	7.2	7.5	3.0	MKP2223K2GP2B	MKP2223K2GP2T	MKP2223K2GP2R	MKP2223K2GP2A
0.033	7.2	7.5	3.0	MKP2333K2GP2B	MKP2333K2GP2T	MKP2333K2GP2R	MKP2333K2GP2A
0.047	7.2	8.5	3.5	MKP2473K2GP2B	MKP2473K2GP2T	MKP2473K2GP2R	MKP2473K2GP2A
0.068	7.2	9.5	4.5	MKP2683K2GP2B	MKP2683K2GP2T	MKP2683K2GP2R	MKP2683K2GP2A
0.1	7.2	10.0	5.0	MKP2104K2GP2B	MKP2104K2GP2T	MKP2104K2GP2R	MKP2104K2GP2A
0.15	7.2	13.0	7.2	MKP2154K2GP2B	MKP2154K2GP2T	MKP2154K2GP2R	MKP2154K2GP2A
0.22	7.2	13.0	7.2	MKP2224K2GP2B	MKP2224K2GP2T	MKP2224K2GP2R	MKP2224K2GP2A
0.33	7.2	14.0	8.5	MKP2334K2GP2B	MKP2334K2GP2T	MKP2334K2GP2R	MKP2334K2GP2A
400 Volt							
0.001	7.2	7.5	3.0	MKP2102K2KP2B	MKP2102K2KP2T	MKP2102K2KP2R	MKP2102K2KP2A
0.0015	7.2	7.5	3.0	MKP2152K2KP2B	MKP2152K2KP2T	MKP2152K2KP2R	MKP2152K2KP2A
0.0022	7.2	7.5	3.0	MKP2222K2KP2B	MKP2222K2KP2T	MKP2222K2KP2R	MKP2222K2KP2A
0.0033	7.2	7.5	3.0	MKP2332K2KP2B	MKP2332K2KP2T	MKP2332K2KP2R	MKP2332K2KP2A
0.0047	7.2	7.5	3.0	MKP2472K2KP2B	MKP2472K2KP2T	MKP2472K2KP2R	MKP2472K2KP2A
0.0068	7.2	7.5	3.0	MKP2682K2KP2B	MKP2682K2KP2T	MKP2682K2KP2R	MKP2682K2KP2A
0.01	7.2	8.5	3.5	MKP2103K2KP2B	MKP2103K2KP2T	MKP2103K2KP2R	MKP2103K2KP2A
0.015	7.2	8.5	3.5	MKP2153K2KP2B	MKP2153K2KP2T	MKP2153K2KP2R	MKP2153K2KP2A
0.022	7.2	9.5	4.5	MKP2223K2KP2B	MKP2223K2KP2T	MKP2223K2KP2R	MKP2223K2KP2A
0.033	7.2	11.5	5.5	MKP2333K2KP2B	MKP2333K2KP2T	MKP2333K2KP2R	MKP2333K2KP2A
0.047	7.2	13.0	7.2	MKP2473K2KP2B	MKP2473K2KP2T	MKP2473K2KP2R	MKP2473K2KP2A
0.068	7.2	13.0	7.2	MKP2683K2KP2B	MKP2683K2KP2T	MKP2683K2KP2R	MKP2683K2KP2A
630 Volt							
0.001	7.2	7.5	3.0	MKP2102K2PP2B	MKP2102K2PP2T	MKP2102K2PP2R	MKP2102K2PP2A
0.0015	7.2	7.5	3.0	MKP2152K2PP2B	MKP2152K2PP2T	MKP2152K2PP2R	MKP2152K2PP2A
0.0022	7.2	7.5	3.0	MKP2222K2PP2B	MKP2222K2PP2T	MKP2222K2PP2R	MKP2222K2PP2A
0.0033	7.2	7.5	3.0	MKP2332K2PP2B	MKP2332K2PP2T	MKP2332K2PP2R	MKP2332K2PP2A
0.0047	7.2	7.5	3.0	MKP2472K2PP2B	MKP2472K2PP2T	MKP2472K2PP2R	MKP2472K2PP2A
0.0068	7.2	8.5	3.5	MKP2682K2PP2B	MKP2682K2PP2T	MKP2682K2PP2R	MKP2682K2PP2A
0.01	7.2	9.5	4.5	MKP2103K2PP2B	MKP2103K2PP2T	MKP2103K2PP2R	MKP2103K2PP2A
0.015	7.2	10.0	5.0	MKP2153K2PP2B	MKP2153K2PP2T	MKP2153K2PP2R	MKP2153K2PP2A
0.022	7.2	11.5	5.5	MKP2223K2PP2B	MKP2223K2PP2T	MKP2223K2PP2R	MKP2223K2PP2A
0.033	7.2	13.0	7.2	MKP2333K2PP2B	MKP2333K2PP2T	MKP2333K2PP2R	MKP2333K2PP2A
0.047	7.2	14.0	8.5	MKP2473K2PP2B	MKP2473K2PP2T	MKP2473K2PP2R	MKP2473K2PP2A
1000 Volt							
0.001	7.2	7.5	3.0	MKP2102K3AP2B	MKP2102K3AP2T	MKP2102K3AP2R	MKP2102K3AP2A
0.0015	7.2	7.5	3.0	MKP2152K3AP2B	MKP2152K3AP2T	MKP2152K3AP2R	MKP2152K3AP2A
0.0022	7.2	7.5	3.0	MKP2222K3AP2B	MKP2222K3AP2T	MKP2222K3AP2R	MKP2222K3AP2A
0.0033	7.2	8.5	3.5	MKP2332K3AP2B	MKP2332K3AP2T	MKP2332K3AP2R	MKP2332K3AP2A
0.0047	7.2	9.5	4.5	MKP2472K3AP2B	MKP2472K3AP2T	MKP2472K3AP2R	MKP2472K3AP2A
0.0068	7.2	10.0	5.0	MKP2682K3AP2B	MKP2682K3AP2T	MKP2682K3AP2R	MKP2682K3AP2A
0.01	7.2	13.0	7.2	MKP2103K3AP2B	MKP2103K3AP2T	MKP2103K3AP2R	MKP2103K3AP2A

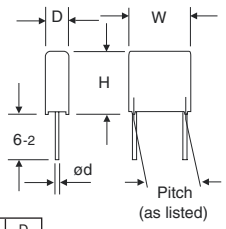


WIMA type MKP4

A specialised range of metallised polypropylene capacitors with self healing properties. Ideal for high frequency applications such as timing, oscillating circuits and high frequency coupling & decoupling. Offer very low dielectric absorption and a reliable operating life of 300,000 hours. Supplied loose, or taped with the option of reel, roll and box.

- **Metallised polypropylene film**
- Self healing
- Very low dissipation factor
- Long operational life
- Negative capacitance change versus temperature
- Very low dielectric adsorption
- High volume/capacitance ratio
- Capacitance tolerance **10%**
- Supplied loose, or taped in various options

Dimensions (mm)



ød	Pitch	D
0.5	7.5	≤3
0.6	7.5	≥4
0.6	10	
0.8	15 - 27.5	
1.0	37.5	

Dimensions listed on the following pages against Order Codes

Specification

	MKP4
Working voltage (as listed)	100Vdc/63Vac 630Vdc/280Vac 250Vdc/160Vac 1000Vdc/400Vac 400Vdc/220Vac N.B The MKP4 series is not suitable for across the line applications.
Operational life	300,000 hours
Capacitance tolerance	±10%
Operating temperature range	-55°C to +100°C

Voltage derating :
A voltage derating factor of 1.35% per K must be applied from +85°C for DC voltages and from +75°C for AC voltages.

Insulation resistance at 20°C

Measuring voltage 100Vdc for 1 minute	
C ≤0.33µF	C >0.33µF
≥100,000MΩ Mean value 500,000MΩ	30,000 sec. (MΩ x µF) Mean value 100,000 sec

Dissipation factor at 20°C

≤0.1% at 1kHz

Maximum pulse rise time : for pulses equal to the rated voltage

Capacitance µF	Max. pulse rise time V/µsec at T_A <40°C				
	100V	**250V**	**400V**	**630V**	**1000V**
0.01 - 0.022	450	450	450	500	550
0.033 - 0.068	250	250	300	350	400
0.1 - 0.22	150	150	200	250	300
0.33 - 0.68	100	100	150	200	200
1.0 - 2.2	75	100	100	150	150
3.3 - 4.7	60	100	100	120	–
6.8 - 10	40	50	60	85	–
15 - 33	35	50	–	–	–

The range of values listed on the following pages are 10% tolerance. 5% & 20% tolerances are also available to order.

Please contact our Sales Desk to discuss your requirements.

MKP4 ORDER CODES

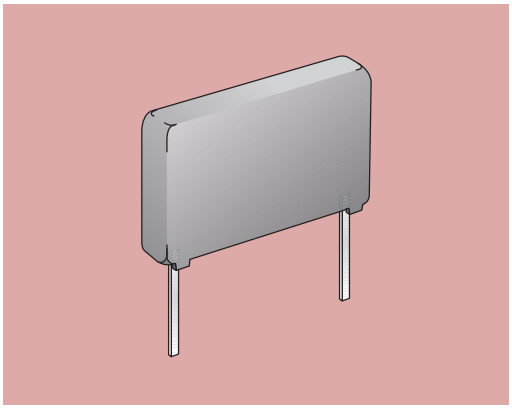
Value (µF)	Dimensions (mm) W	H	D	Pitch	Loose	Taped & Reeled ø14.5"	Taped & Rolled ø20"	Taped & Boxed 340 x 340mm	Taped & Boxed 490 x 370mm
100 Volt									
0.01	10.0	8.5	3.0	7.5	MKP4103K2AP3B	MKP4103K2AP3T	MKP4103K2AP3T1	MKP4103K2AP3A	MKP4103K2AP3A1
0.015	10.0	8.5	3.0	7.5	MKP4153K2AP3B	MKP4153K2AP3T	MKP4153K2AP3T1	MKP4153K2AP3A	MKP4153K2AP3A1
0.022	10.0	8.5	3.0	7.5	MKP4223K2AP3B	MKP4223K2AP3T	MKP4223K2AP3T1	MKP4223K2AP3A	MKP4223K2AP3A1
0.033	10.0	8.5	3.0	7.5	MKP4333K2AP3B	MKP4333K2AP3T	MKP4333K2AP3T1	MKP4333K2AP3A	MKP4333K2AP3A1
0.033	13.0	9.0	4.0	10	MKP4333K2AP4B	MKP4333K2AP4T	MKP4333K2AP4T1	–	MKP4333K2AP4A1
0.047	10.0	9.0	4.0	7.5	MKP4473K2AP3B	MKP4473K2AP3T	MKP4473K2AP3T1	MKP4473K2AP3A	MKP4473K2AP3A1
0.047	13.0	9.0	4.0	10	MKP4473K2AP4B	MKP4473K2AP4T	MKP4473K2AP4T1	–	MKP4473K2AP4A1
0.068	10.0	9.0	4.0	7.5	MKP4683K2AP3B	MKP4683K2AP3T	MKP4683K2AP3T1	MKP4683K2AP3A	MKP4683K2AP3A1
0.068	13.0	9.0	4.0	10	MKP4683K2AP4B	MKP4683K2AP4T	MKP4683K2AP4T1	–	MKP4683K2AP4A1
0.1	10.3	9.5	4.5	7.5	MKP4104K2AP3B	MKP4104K2AP3T	MKP4104K2AP3T1	MKP4104K2AP3A	MKP4104K2AP3A1
0.1	13.0	9.0	4.0	10	MKP4104K2AP4B	MKP4104K2AP4T	MKP4104K2AP4T1	–	MKP4104K2AP4A1
0.15	10.3	10.5	5.0	7.5	MKP4154K2AP3B	MKP4154K2AP3T	MKP4154K2AP3T1	MKP4154K2AP3A	–
0.15	13.0	11.0	5.0	10	MKP4154K2AP4B	MKP4154K2AP4T	MKP4154K2AP4T1	–	MKP4154K2AP4A1
0.22	13.0	12.0	6.0	10	MKP4224K2AP4B	MKP4224K2AP4T	MKP4224K2AP4T1	–	MKP4224K2AP4A1
0.22	18.0	11.0	5.0	15	MKP4224K2AP5B	MKP4224K2AP5T	MKP4224K2AP5T1	–	MKP4224K2AP5A1
0.33	18.0	12.5	6.0	15	MKP4334K2AP5B	MKP4334K2AP5T	MKP4334K2AP5T1	–	MKP4334K2AP5A1
0.47	18.0	14.0	7.0	15	MKP4474K2AP5B	MKP4474K2AP5T	MKP4474K2AP5T1	–	MKP4474K2AP5A1
0.68	18.0	15.0	8.0	15	MKP4684K2AP5B	MKP4684K2AP5T	MKP4684K2AP5T1	–	MKP4684K2AP5A1
0.68	26.5	15.0	6.0	22.5	MKP4684K2AP6B	–	MKP4684K2AP6T1	–	MKP4684K2AP6A1
1.0	26.5	16.5	7.0	22.5	MKP4105K2AP6B	–	MKP4105K2AP6T1	–	MKP4105K2AP6A1
1.5	26.5	19.0	10.5	22.5	MKP4155K2AP6B	–	MKP4155K2AP6T1	–	MKP4155K2AP6A1
2.2	26.5	21.0	11.0	22.5	MKP4225K2AP6B	–	MKP4225K2AP6T1	–	MKP4225K2AP6A1
2.2	31.5	21.0	11.0	27.5	MKP4225K2AP7B	–	MKP4225K2AP7T1	–	MKP4225K2AP7A1
3.3	31.5	24.0	13.0	27.5	MKP4335K2AP7B	–	MKP4335K2AP7T1	–	MKP4335K2AP7A1
4.7	31.5	24.0	13.0	27.5	MKP4475K2AP7B	–	MKP4475K2AP7T1	–	MKP4475K2AP7A1
6.8	31.5	26.0	15.0	27.5	MKP4685K2AP7B	–	MKP4685K2AP7T1	–	MKP4685K2AP7A1
6.8	41.5	24.0	13.0	37.5	MKP4685K2AP8B	–	–	–	–
10	41.5	29.0	17.0	37.5	MKP4106K2AP8B	–	–	–	–
15	41.5	32.0	19.0	37.5	MKP4156K2AP8B	–	–	–	–
22	41.5	39.5	20.0	37.5	MKP4226K2AP8B	–	–	–	–
33	41.5	45.5	24.0	37.5	MKP4336K2AP8B	–	–	–	–
250 Volt									
0.01	10.0	8.5	3.0	7.5	MKP4103K2GP3B	MKP4103K2GP3T	MKP4103K2GP3T1	MKP4103K2GP3A	MKP4103K2GP3A1
0.015	10.0	8.5	3.0	7.5	MKP4153K2GP3B	MKP4153K2GP3T	MKP4153K2GP3T1	MKP4153K2GP3A	MKP4153K2GP3A1
0.022	10.0	8.5	3.0	7.5	MKP4223K2GP3B	MKP4223K2GP3T	MKP4223K2GP3T1	MKP4223K2GP3A	MKP4223K2GP3A1
0.033	10.0	8.5	3.0	7.5	MKP4333K2GP3B	MKP4333K2GP3T	MKP4333K2GP3T1	MKP4333K2GP3A	MKP4333K2GP3A1
0.033	13.0	9.0	4.0	10	MKP4333K2GP4B	MKP4333K2GP4T	MKP4333K2GP4T1	–	MKP4333K2GP4A1
0.047	10.0	9.0	4.0	7.5	MKP4473K2GP3B	MKP4473K2GP3T	MKP4473K2GP3T1	MKP4473K2GP3A	MKP4473K2GP3A1
0.047	13.0	9.0	4.0	10	MKP4473K2GP4B	MKP4473K2GP4T	MKP4473K2GP4T1	–	MKP4473K2GP4A1
0.068	10.0	9.0	4.0	7.5	MKP4683K2GP3B	MKP4683K2GP3T	MKP4683K2GP3T1	MKP4683K2GP3A	MKP4683K2GP3A1
0.068	13.0	9.0	4.0	10	MKP4683K2GP4B	MKP4683K2GP4T	MKP4683K2GP4T1	–	MKP4683K2GP4A1
0.1	10.3	9.5	4.5	7.5	MKP4104K2GP3B	MKP4104K2GP3T	MKP4104K2GP3T1	MKP4104K2GP3A	MKP4104K2GP3A1
0.1	13.0	9.0	4.0	10	MKP4104K2GP4B	MKP4104K2GP4T	MKP4104K2GP4T1	–	MKP4104K2GP4A1
0.15	10.3	10.5	5.0	7.5	MKP4154K2GP3B	MKP4154K2GP3T	MKP4154K2GP3T1	MKP4154K2GP3A	–
0.15	13.0	11.0	5.0	10	MKP4154K2GP4B	MKP4154K2GP4T	MKP4154K2GP4T1	–	MKP4154K2GP4A1
0.22	13.0	12.0	6.0	10	MKP4224K2GP4B	MKP4224K2GP4T	MKP4224K2GP4T1	–	MKP4224K2GP4A1
0.22	18.0	11.0	5.0	15	MKP4224K2GP5B	MKP4224K2GP5T	MKP4224K2GP5T1	–	MKP4224K2GP5A1
0.33	18.0	12.5	6.0	15	MKP4334K2GP5B	MKP4334K2GP5T	MKP4334K2GP5T1	–	MKP4334K2GP5A1
0.47	18.0	14.0	7.0	15	MKP4474K2GP5B	MKP4474K2GP5T	MKP4474K2GP5T1	–	MKP4474K2GP5A1
0.68	18.0	15.0	8.0	15	MKP4684K2GP5B	MKP4684K2GP5T	MKP4684K2GP5T1	–	MKP4684K2GP5A1
0.68	26.5	15.0	6.0	22.5	MKP4684K2GP6B	–	MKP4684K2GP6T1	–	MKP4684K2GP6A1
1.0	26.5	16.5	7.0	22.5	MKP4105K2GP6B	–	MKP4105K2GP6T1	–	MKP4105K2GP6A1
1.5	26.5	19.0	10.5	22.5	MKP4155K2GP6B	–	MKP4155K2GP6T1	–	MKP4155K2GP6A1
2.2	26.5	21.0	11.0	22.5	MKP4225K2GP6B	–	MKP4225K2GP6T1	–	MKP4225K2GP6A1
2.2	31.5	21.0	11.0	27.5	MKP4225K2GP7B	–	MKP4225K2GP7T1	–	MKP4225K2GP7A1
3.3	31.5	24.0	13.0	27.5	MKP4335K2GP7B	–	MKP4335K2GP7T1	–	MKP4335K2GP7A1
4.7	31.5	26.0	15.0	27.5	MKP4475K2GP7B	–	MKP4475K2GP7T1	–	MKP4475K2GP7A1
6.8	31.5	29.0	17.0	27.5	MKP4685K2GP7B	–	–	–	–
6.8	41.5	26.0	15.0	37.5	MKP4685K2GP8B	–	–	–	–
10	41.5	32.0	19.0	37.5	MKP4106K2GP8B	–	–	–	–
15	41.5	39.5	20.0	37.5	MKP4156K2GP8B	–	–	–	–
22	41.5	45.5	24.0	37.5	MKP4226K2GP8B	–	–	–	–

continued overleaf > > > >

continuation

MKP4 ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Pitch	Loose	Taped & Reeled ø14.5"	Taped & Rolled ø20"	Taped & Boxed 340 x 340mm	Taped & Boxed 490 x 370mm
400 Volt									
0.01	10.0	8.5	3.0	7.5	MKP4103K2KP3B	MKP4103K2KP3T	MKP4103K2KP3T1	MKP4103K2KP3A	MKP4103K2KP3A1
0.015	10.0	8.5	3.0	7.5	MKP4153K2KP3B	MKP4153K2KP3T	MKP4153K2KP3T1	MKP4153K2KP3A	MKP4153K2KP3A1
0.015	13.0	9.0	4.0	10	MKP4153K2KP4B	MKP4153K2KP4T	MKP4153K2KP4T1	–	MKP4153K2KP4A1
0.022	10.0	9.0	4.0	7.5	MKP4223K2KP3B	MKP4223K2KP3T	MKP4223K2KP3T1	MKP4223K2KP3A	MKP4223K2KP3A1
0.022	13.0	9.0	4.0	10	MKP4223K2KP4B	MKP4223K2KP4T	MKP4223K2KP4T1	–	MKP4223K2KP4A1
0.033	10.3	9.5	4.5	7.5	MKP4333K2KP3B	MKP4333K2KP3T	MKP4333K2KP3T1	MKP4333K2KP3A	MKP4333K2KP3A1
0.033	13.0	9.0	4.0	10	MKP4333K2KP4B	MKP4333K2KP4T	MKP4333K2KP4T1	–	MKP4333K2KP4A1
0.047	10.3	10.5	5.0	7.5	MKP4473K2KP3B	MKP4473K2KP3T	MKP4473K2KP3T1	MKP4473K2KP3A	–
0.047	13.0	9.0	4.0	10	MKP4473K2KP4B	MKP4473K2KP4T	MKP4473K2KP4T1	–	MKP4473K2KP4A1
0.068	10.3	12.5	5.7	7.5	MKP4683K2KP3B	MKP4683K2KP3T	MKP4683K2KP3T1	MKP4683K2KP3A	–
0.068	13.0	11.0	5.0	10	MKP4683K2KP4B	MKP4683K2KP4T	MKP4683K2KP4T1	–	MKP4683K2KP4A1
1.0	13.0	12.0	6.0	10	MKP4104K2KP4B	MKP4104K2KP4T	MKP4104K2KP4T1	–	MKP4104K2KP4A1
1.0	18.0	11.0	5.0	15	MKP4104K2KP5B	MKP4104K2KP5T	MKP4104K2KP5T1	–	MKP4104K2KP5A1
0.15	18.0	12.5	6.0	15	MKP4154K2KP5B	MKP4154K2KP5T	MKP4154K2KP5T1	–	MKP4154K2KP5A1
0.22	18.0	14.0	7.0	15	MKP4224K2KP5B	MKP4224K2KP5T	MKP4224K2KP5T1	–	MKP4224K2KP5A1
0.33	18.0	15.0	8.0	15	MKP4334K2KP5B	MKP4334K2KP5T	MKP4334K2KP5T1	–	MKP4334K2KP5A1
0.33	26.5	15.0	6.0	22.5	MKP4334K2KP6B	–	MKP4334K2KP6T1	–	MKP4334K2KP6A1
0.47	26.5	16.5	7.0	22.5	MKP4474K2KP6B	–	MKP4474K2KP6T1	–	MKP4474K2KP6A1
0.68	26.5	18.5	8.5	22.5	MKP4684K2KP6B	–	MKP4684K2KP6T1	–	MKP4684K2KP6A1
1.0	26.5	21.0	11.0	22.5	MKP4105K2KP6B	–	MKP4105K2KP6T1	–	MKP4105K2KP6A1
1.0	31.5	21.5	11.0	27.5	MKP4105K2KP7B	–	MKP4105K2KP7T1	–	MKP4105K2KP7A1
1.5	31.5	21.0	11.0	27.5	MKP4155K2KP7B	–	MKP4155K2KP7T1	–	MKP4155K2KP7A1
2.2	31.5	26.0	15.0	27.5	MKP4225K2KP7B	–	MKP4225K2KP7T1	–	MKP4225K2KP7A1
3.3	31.5	29.0	17.0	27.5	MKP4335K2KP7B	–	–	–	–
3.3	41.5	29.0	17.0	37.5	MKP4335K2KP8B	–	–	–	–
4.7	41.5	32.0	19.0	37.5	MKP4475K2KP8B	–	–	–	–
6.8	41.5	39.5	20.0	37.5	MKP4685K2KP8B	–	–	–	–
10.0	41.5	45.5	24.0	37.5	MKP4106K2KP8B	–	–	–	–
630 Volt									
0.01	10.0	8.5	3.0	7.5	MKP4103K2PP3B	MKP4103K2PP3T	MKP4103K2PP3T1	MKP4103K2PP3A	MKP4103K2PP3A1
0.01	13.0	9.0	4.0	10	MKP4103K2PP4B	MKP4103K2PP4T	MKP4103K2PP4T1	–	MKP4103K2PP4A1
0.015	10.0	9.0	4.0	7.5	MKP4153K2PP3B	MKP4153K2PP3T	MKP4153K2PP3T1	MKP4153K2PP3A	MKP4153K2PP3A1
0.015	13.0	9.0	4.0	10	MKP4153K2PP4B	MKP4153K2PP4T	MKP4153K2PP4T1	–	MKP4153K2PP4A1
0.022	10.3	9.5	4.5	7.5	MKP4223K2PP3B	MKP4223K2PP3T	MKP4223K2PP3T1	MKP4223K2PP3A	MKP4223K2PP3A1
0.022	13.0	9.0	4.0	10	MKP4223K2PP4B	MKP4223K2PP4T	MKP4223K2PP4T1	–	MKP4223K2PP4A1
0.033	10.3	10.5	5.0	7.5	MKP4333K2PP3B	MKP4333K2PP3T	MKP4333K2PP3T1	MKP4333K2PP3A	–
0.033	13.0	9.0	4.0	10	MKP4333K2PP4B	MKP4333K2PP4T	MKP4333K2PP4T1	–	MKP4333K2PP4A1
0.047	10.3	12.5	5.7	7.5	MKP4473K2PP3B	MKP4473K2PP3T	MKP4473K2PP3T1	MKP4473K2PP3A	–
0.047	13.0	11.0	5.0	10	MKP4473K2PP4B	MKP4473K2PP4T	MKP4473K2PP4T1	–	MKP4473K2PP4A1
0.068	13.0	12.0	6.0	10	MKP4683K2PP4B	MKP4683K2PP4T	MKP4683K2PP4T1	–	MKP4683K2PP4A1
0.068	18.0	12.5	6.0	15	MKP4683K2PP5B	MKP4683K2PP5T	MKP4683K2PP5T1	–	MKP4683K2PP5A1
0.1	18.0	14.0	7.0	15	MKP4104K2PP5B	MKP4104K2PP5T	MKP4104K2PP5T1	–	MKP4104K2PP5A1
0.15	18.0	15.0	8.0	15	MKP4154K2PP5B	MKP4154K2PP5T	MKP4154K2PP5T1	–	MKP4154K2PP5A1
0.15	26.5	15.0	6.0	22.5	MKP4154K2PP6B	–	MKP4154K2PP6T1	–	MKP4154K2PP6A1
0.22	18.0	16.0	9.0	15	MKP4224K2PP5B	MKP4224K2PP5T	MKP4224K2PP5T1	–	MKP4224K2PP5A1
0.22	26.5	16.5	7.0	22.5	MKP4224K2PP6B	–	MKP4224K2PP6T1	–	MKP4224K2PP6A1
0.33	26.5	18.5	8.5	22.5	MKP4334K2PP6B	–	MKP4334K2PP6T1	–	MKP4334K2PP6A1
0.47	26.5	19.0	10.5	22.5	MKP4474K2PP6B	–	MKP4474K2PP6T1	–	MKP4474K2PP6A1
0.47	31.5	21.0	11.0	27.5	MKP4474K2PP7B	–	MKP4474K2PP7T1	–	MKP4474K2PP7A1
0.68	31.5	21.0	11.0	27.5	MKP4684K2PP7B	–	MKP4684K2PP7T1	–	MKP4684K2PP7A1
1.0	31.5	24.0	13.0	27.5	MKP4105K2PP7B	–	MKP4105K2PP7T1	–	MKP4105K2PP7A1
1.5	31.5	26.0	15.0	27.5	MKP4155K2PP7B	–	MKP4155K2PP7T1	–	MKP4155K2PP7A1
2.2	41.5	29.0	17.0	37.5	MKP4225K2PP8B	–	–	–	–
3.3	41.5	32.0	19.0	37.5	MKP4335K2PP8B	–	–	–	–
4.7	41.5	39.5	20.0	37.5	MKP4475K2PP8B	–	–	–	–
6.8	41.5	45.5	24.0	37.5	MKP4685K2PP8B	–	–	–	–
1000 Volt									
0.01	10.3	12.5	5.7	7.5	MKP4103K3AP3B	MKP4103K3AP3T	MKP4103K3AP3T1	MKP4103K3AP3A	–
0.01	13.0	11.0	5.0	10	MKP4103K3AP4B	MKP4103K3AP4T	MKP4103K3AP4T1	–	MKP4103K3AP4A1
0.015	13.0	11.0	5.0	10	MKP4153K3AP4B	MKP4153K3AP4T	MKP4153K3AP4T1	–	MKP4153K3AP4A1
0.015	18.0	11.0	5.0	15	MKP4153K3AP5B	MKP4153K3AP5T	MKP4153K3AP5T1	–	MKP4153K3AP5A1
0.022	18.0	11.0	5.0	15	MKP4223K3AP5B	MKP4223K3AP5T	MKP4223K3AP5T1	–	MKP4223K3AP5A1
0.033	18.0	12.5	6.0	15	MKP4333K3AP5B	MKP4333K3AP5T	MKP4333K3AP5T1	–	MKP4333K3AP5A1
0.047	18.0	14.0	7.0	15	MKP4473K3AP5B	MKP4473K3AP5T	MKP4473K3AP5T1	–	MKP4473K3AP5A1
0.068	18.0	15.0	8.0	15	MKP4683K3AP5B	MKP4683K3AP5T	MKP4683K3AP5T1	–	MKP4683K3AP5A1
0.068	26.5	15.0	6.0	22.5	MKP4683K3AP6B	–	MKP4683K3AP6T1	–	MKP4683K3AP6A1
0.1	18.0	16.0	9.0	15	MKP4104K3AP5B	MKP4104K3AP5T	MKP4104K3AP5T1	–	MKP4104K3AP5A1
0.1	26.5	16.5	7.0	22.5	MKP4104K3AP6B	–	MKP4104K3AP6T1	–	MKP4104K3AP6A1
0.15	26.5	18.5	8.5	22.5	MKP4154K3AP6B	–	MKP4154K3AP6T1	–	MKP4154K3AP6A1
0.22	26.5	21.0	11.0	22.5	MKP4224K3AP6B	–	MKP4224K3AP6T1	–	MKP4224K3AP6A1
0.22	31.5	21.0	11.0	27.5	MKP4224K3AP7B	–	MKP4224K3AP7T1	–	MKP4224K3AP7A1
0.33	31.5	21.0	11.0	27.5	MKP4334K3AP7B	–	MKP4334K3AP7T1	–	MKP4334K3AP7A1
0.47	31.5	24.0	13.0	27.5	MKP4474K3AP7B	–	MKP4474K3AP7T1	–	MKP4474K3AP7A1
0.68	31.5	29.0	17.0	27.5	MKP4684K3AP7B	–	–	–	–
1.0	41.5	29.0	17.0	37.5	MKP4105K3AP8B	–	–	–	–
1.5	41.5	39.5	20.0	37.5	MKP4155K3AP8B	–	–	–	–
2.2	41.5	45.5	24.0	37.5	MKP4225K3AP8B	–	–	–	–

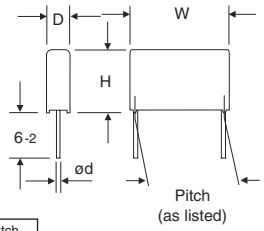


WIMA type MKP10

A specialised range of metallised polypropylene capacitors with self healing properties. Ideal for pulse applications with double-sided metallised electrodes and zinc sprayed contacts. Applications include SMPS, TV and monitors, lighting and audio/video equipment. Supplied loose, or taped with the option of reel, roll or box.

- **Metallised polypropylene film**
- Self healing
- Very low dissipation factor
- Long operational life
- Negative capacitance change versus temperature
- **Pulse duty construction**
- High current capability
- Capacitance tolerance **10%**
- Supplied loose, or taped in various options

Dimensions (mm)



ød	Pitch
0.6	7.5 – 10
0.8	15 – 27.5
1.0	37.5

Dimensions listed on the following pages against Order Codes

Specification

Specification	MKP10
Working voltage (as listed)	100Vdc/63Vac 1000Vdc/600Vac 250Vdc/180Vac 1600Vdc/650Vac 400Vdc/250Vac 2000Vdc/700Vac 630Vdc/400Vac† 2500Vdc/900Vac N.B. The MKP10 series is not suitable for across the line applications. † Limited to 280Vac on 7.5mm pitch
Operational life	300,000 hours
Capacitance tolerance	±10%
Operating temperature range	-55°C to +100°C

Voltage derating :
A voltage derating factor of 1.35% per K must be applied from +85°C for DC voltages and from +75°C for AC voltages.

Insulation resistance at 20°C

Measuring voltage 100Vdc for 1 minute	
C ≤0.33µF	C >0.33µF
≥100,000MΩ Mean value 500,000MΩ	30,000 sec. (MΩ x µF) Mean value 100,000 sec

Dissipation factor at 20°C

Freq.	C ≤0.1µF	C >0.1µF to ≤1.0µF	C >1.0µF
1kHz	≤0.03%	≤0.03%	≤0.03%
10kHz	≤0.04%	≤0.06%	–
100kHz	≤0.15%	–	–

Maximum pulse rise time : for pulses equal to the rated voltage

Capacitance pF/µF	Max. pulse rise time V/µsec at T_A < 40°C							
	100V	**250V**	**400V**	**630V**	**1000V**	**1600V**	**2000V**	**2500V**
1000 - 2200	1000	1800	1800	1800	2800	5400	9000	11000
3300 - 6800	900	1200	1200	1200	2800	5400	9000	11000
0.01 - 0.022	700	1100	1200	1800	2100	3000	3400	11000
0.033 - 0.068	400	800	900	1800	2100	2100	2100	–
0.1 - 0.22	200	500	500	900	1400	1400	1400	–
0.33 - 0.68	100	300	400	700	900	900	900	–
1.0 - 2.2	70	200	200	400	400	500	–	–
3.3 - 4.7	50	80	100	150	–	–	–	–
6.8 - 15	35	50	70	–	–	–	–	–

The range of values listed on the following pages are 10% tolerance. 5% & 20% tolerances are also available to order.

In addition, the FKP1 series is available from WIMA for pulse applications.

Please contact our Sales Desk to discuss your requirements.

WIMA type MKP10
continued overleaf > > > >

continuation

MKP10 ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Pitch	Loose	Taped & Reeled ø14.5"	Taped & Rolled ø20.0"	Taped & Boxed 340 x 340mm	Taped & Boxed 490 x 370mm
100 Volt									
0.001	10.0	9.0	4.0	7.5	MKP10102K2AP3B	MKP10102K2AP3T	MKP10102K2AP3T1	MKP10102K2AP3A	MKP10102K2AP3A1
0.0015	10.0	9.0	4.0	7.5	MKP10152K2AP3B	MKP10152K2AP3T	MKP10152K2AP3T1	MKP10152K2AP3A	MKP10152K2AP3A1
0.0022	10.0	9.0	4.0	7.5	MKP10222K2AP3B	MKP10222K2AP3T	MKP10222K2AP3T1	MKP10222K2AP3A	MKP10222K2AP3A1
0.0033	10.0	9.0	4.0	7.5	MKP10332K2AP3B	MKP10332K2AP3T	MKP10332K2AP3T1	MKP10332K2AP3A	MKP10332K2AP3A1
0.0047	10.0	9.0	4.0	7.5	MKP10472K2AP3B	MKP10472K2AP3T	MKP10472K2AP3T1	MKP10472K2AP3A	MKP10472K2AP3A1
0.0068	10.0	9.0	4.0	7.5	MKP10682K2AP3B	MKP10682K2AP3T	MKP10682K2AP3T1	MKP10682K2AP3A	MKP10682K2AP3A1
0.01	10.0	9.0	4.0	7.5	MKP10103K2AP3B	MKP10103K2AP3T	MKP10103K2AP3T1	MKP10103K2AP3A	MKP10103K2AP3A1
0.015	10.0	9.0	4.0	7.5	MKP10153K2AP3B	MKP10153K2AP3T	MKP10153K2AP3T1	MKP10153K2AP3A	MKP10153K2AP3A1
0.022	10.0	9.0	4.0	7.5	MKP10223K2AP3B	MKP10223K2AP3T	MKP10223K2AP3T1	MKP10223K2AP3A	MKP10223K2AP3A1
0.033	13.0	9.0	4.0	10	MKP10333K2AP4B	MKP10333K2AP4T	MKP10333K2AP4T1	–	MKP10333K2AP4A1
0.047	13.0	9.0	4.0	10	MKP10473K2AP4B	MKP10473K2AP4T	MKP10473K2AP4T1	–	MKP10473K2AP4A1
0.068	13.0	11.0	5.0	10	MKP10683K2AP4B	MKP10683K2AP4T	MKP10683K2AP4T1	–	MKP10683K2AP4A1
0.1	13.0	12.0	6.0	10	MKP10104K2AP4B	MKP10104K2AP4T	MKP10104K2AP4T1	–	MKP10104K2AP4A1
0.15	18.0	12.5	6.0	15	MKP10154K2AP5B	MKP10154K2AP5T	MKP10154K2AP5T1	–	MKP10154K2AP5A1
0.22	18.0	14.0	7.0	15	MKP10224K2AP5B	MKP10224K2AP5T	MKP10224K2AP5T1	–	MKP10224K2AP5A1
0.33	18.0	15.0	8.0	15	MKP10334K2AP5B	MKP10334K2AP5T	MKP10334K2AP5T1	–	MKP10334K2AP5A1
0.47	26.5	16.5	7.0	22.5	MKP10474K2AP6B	–	MKP10474K2AP6T1	–	MKP10474K2AP6A1
0.68	26.5	18.5	8.5	22.5	MKP10684K2AP6B	–	MKP10684K2AP6T1	–	MKP10684K2AP6A1
1.0	26.5	19.0	10.5	22.5	MKP10105K2AP6B	–	MKP10105K2AP6T1	–	MKP10105K2AP6A1
1.5	31.5	21.0	11.0	27.5	MKP10155K2AP7B	–	MKP10155K2AP7T1	–	MKP10155K2AP7A1
2.2	31.5	24.0	13.0	27.5	MKP10225K2AP7B	–	MKP10225K2AP7T1	–	MKP10225K2AP7A1
3.3	31.5	29.0	17.0	27.5	MKP10335K2AP7B	–	–	–	–
4.7	41.5	29.0	17.0	37.5	MKP10475K2AP8B	–	–	–	–
6.8	41.5	32.0	19.0	37.5	MKP10685K2AP8B	–	–	–	–
10	41.5	39.5	20.0	37.5	MKP10106K2AP8B	–	–	–	–
15	41.5	45.5	24.0	37.5	MKP10156K2AP8B	–	–	–	–
250 Volt									
0.001	10.0	9.0	4.0	7.5	MKP10102K2GP3B	MKP10102K2GP3T	MKP10102K2GP3T1	MKP10102K2GP3A	MKP10102K2GP3A1
0.0015	10.0	9.0	4.0	7.5	MKP10152K2GP3B	MKP10152K2GP3T	MKP10152K2GP3T1	MKP10152K2GP3A	MKP10152K2GP3A1
0.0022	10.0	9.0	4.0	7.5	MKP10222K2GP3B	MKP10222K2GP3T	MKP10222K2GP3T1	MKP10222K2GP3A	MKP10222K2GP3A1
0.0033	10.0	9.0	4.0	7.5	MKP10332K2GP3B	MKP10332K2GP3T	MKP10332K2GP3T1	MKP10332K2GP3A	MKP10332K2GP3A1
0.0047	10.0	9.0	4.0	7.5	MKP10472K2GP3B	MKP10472K2GP3T	MKP10472K2GP3T1	MKP10472K2GP3A	MKP10472K2GP3A1
0.0068	10.0	9.0	4.0	7.5	MKP10682K2GP3B	MKP10682K2GP3T	MKP10682K2GP3T1	MKP10682K2GP3A	MKP10682K2GP3A1
0.01	10.0	9.0	4.0	7.5	MKP10103K2GP3B	MKP10103K2GP3T	MKP10103K2GP3T1	MKP10103K2GP3A	MKP10103K2GP3A1
0.01	13.0	9.0	4.0	10	MKP10103K2GP4B	MKP10103K2GP4T	MKP10103K2GP4T1	–	MKP10103K2GP4A1
0.015	10.0	9.0	4.0	7.5	MKP10153K2GP3B	MKP10153K2GP3T	MKP10153K2GP3T1	MKP10153K2GP3A	MKP10153K2GP3A1
0.015	13.0	9.0	4.0	10	MKP10153K2GP4B	MKP10153K2GP4T	MKP10153K2GP4T1	–	MKP10153K2GP4A1
0.022	10.0	9.0	4.0	7.5	MKP10223K2GP3B	MKP10223K2GP3T	MKP10223K2GP3T1	MKP10223K2GP3A	MKP10223K2GP3A1
0.022	13.0	9.0	4.0	10	MKP10223K2GP4B	MKP10223K2GP4T	MKP10223K2GP4T1	–	MKP10223K2GP4A1
0.033	10.3	10.5	5.0	7.5	MKP10333K2GP3B	MKP10333K2GP3T	MKP10333K2GP3T1	MKP10333K2GP3A	–
0.033	13.0	9.0	4.0	10	MKP10333K2GP4B	MKP10333K2GP4T	MKP10333K2GP4T1	–	MKP10333K2GP4A1
0.047	10.3	10.5	5.0	7.5	MKP10473K2GP3B	MKP10473K2GP3T	MKP10473K2GP3T1	MKP10473K2GP3A	–
0.047	13.0	9.0	4.0	10	MKP10473K2GP4B	MKP10473K2GP4T	MKP10473K2GP4T1	–	MKP10473K2GP4A1
0.068	13.0	11.0	5.0	10	MKP10683K2GP4B	MKP10683K2GP4T	MKP10683K2GP4T1	–	MKP10683K2GP4A1
0.068	18.0	11.0	5.0	15	MKP10683K2GP5B	MKP10683K2GP5T	MKP10683K2GP5T1	–	MKP10683K2GP5A1
0.1	13.0	12.0	6.0	10	MKP10104K2GP4B	MKP10104K2GP4T	MKP10104K2GP4T1	–	MKP10104K2GP4A1
0.1	18.0	11.0	5.0	15	MKP10104K2GP5B	MKP10104K2GP5T	MKP10104K2GP5T1	–	MKP10104K2GP5A1
0.15	18.0	12.5	6.0	15	MKP10154K2GP5B	MKP10154K2GP5T	MKP10154K2GP5T1	–	MKP10154K2GP5A1
0.15	26.5	15.0	6.0	22.5	MKP10154K2GP6B	–	MKP10154K2GP6T1	–	MKP10154K2GP6A1
0.22	18.0	14.0	7.0	15	MKP10224K2GP5B	MKP10224K2GP5T	MKP10224K2GP5T1	–	MKP10224K2GP5A1
0.22	26.5	15.0	6.0	22.5	MKP10224K2GP6B	–	MKP10224K2GP6T1	–	MKP10224K2GP6A1
0.33	18.0	15.0	8.0	15	MKP10334K2GP5B	MKP10334K2GP5T	MKP10334K2GP5T1	–	MKP10334K2GP5A1
0.33	26.5	15.0	6.0	22.5	MKP10334K2GP6B	–	MKP10334K2GP6T1	–	MKP10334K2GP6A1
0.47	18.0	16.0	9.0	15	MKP10474K2GP5B	MKP10474K2GP5T	MKP10474K2GP5T1	–	MKP10474K2GP5A1
0.47	26.5	16.5	7.0	22.5	MKP10474K2GP6B	–	MKP10474K2GP6T1	–	MKP10474K2GP6A1
0.68	26.5	18.5	8.5	22.5	MKP10684K2GP6B	–	MKP10684K2GP6T1	–	MKP10684K2GP6A1
0.68	31.5	19.0	9.0	27.5	MKP10684K2GP7B	–	MKP10684K2GP7T1	–	MKP10684K2GP7A1
1.0	26.5	21.0	11.0	22.5	MKP10105K2GP6B	–	MKP10105K2GP6T1	–	MKP10105K2GP6A1
1.0	31.5	21.0	11.0	27.5	MKP10105K2GP7B	–	MKP10105K2GP7T1	–	MKP10105K2GP7A1
1.5	31.5	24.0	13.0	27.5	MKP10155K2GP7B	–	MKP10155K2GP7T1	–	MKP10155K2GP7A1
1.5	41.5	24.0	13.0	37.5	MKP10155K2GP8B	–	–	–	–
2.2	31.5	26.0	15.0	27.5	MKP10225K2GP7B	–	MKP10225K2GP7T1	–	MKP10225K2GP7A1
2.2	41.5	24.0	13.0	37.5	MKP10225K2GP8B	–	–	–	–
3.3	31.5	34.5	17.0	27.5	MKP10335K2GP7B	–	–	–	–
3.3	41.5	29.0	17.0	37.5	MKP10335K2GP8B	–	–	–	–
4.7	31.5	39.5	20.0	27.5	MKP10475K2GP7B	–	–	–	–
4.7	41.5	32.0	19.0	37.5	MKP10475K2GP8B	–	–	–	–
6.8	41.5	39.5	20.0	37.5	MKP10685K2GP8B	–	–	–	–
10	41.5	45.5	24.0	37.5	MKP10106K2GP8B	–	–	–	–
400 Volt									
0.001	10.0	9.0	4.0	7.5	MKP10102K2KP3B	MKP10102K2KP3T	MKP10102K2KP3T1	MKP10102K2KP3A	MKP10102K2KP3A1
0.0015	10.0	9.0	4.0	7.5	MKP10152K2KP3B	MKP10152K2KP3T	MKP10152K2KP3T1	MKP10152K2KP3A	MKP10152K2KP3A1
0.0022	10.0	9.0	4.0	7.5	MKP10222K2KP3B	MKP10222K2KP3T	MKP10222K2KP3T1	MKP10222K2KP3A	MKP10222K2KP3A1
0.0033	10.0	9.0	4.0	7.5	MKP10332K2KP3B	MKP10332K2KP3T	MKP10332K2KP3T1	MKP10332K2KP3A	MKP10332K2KP3A1
0.0047	10.0	9.0	4.0	7.5	MKP10472K2KP3B	MKP10472K2KP3T	MKP10472K2KP3T1	MKP10472K2KP3A	MKP10472K2KP3A1
0.0068	10.0	9.0	4.0	7.5	MKP10682K2KP3B	MKP10682K2KP3T	MKP10682K2KP3T1	MKP10682K2KP3A	MKP10682K2KP3A1

continued > > > >

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continuation

MKP10 ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Pitch	Loose	Taped & Reeled ø14.5"	Taped & Rolled ø20.0"	Taped & Boxed 340 x 340mm	Taped & Boxed 490 x 370mm
400 Volt *(continued)*									
0.01	10.0	9.0	4.0	7.5	MKP10103K2KP3B	MKP10103K2KP3T	MKP10103K2KP3T1	MKP10103K2KP3A	MKP10103K2KP3A1
0.01	13.0	9.0	4.0	10	MKP10103K2KP4B	MKP10103K2KP4T	MKP10103K2KP4T1	–	MKP10103K2KP4A1
0.015	10.3	10.5	5.0	7.5	MKP10153K2KP3B	MKP10153K2KP3T	MKP10153K2KP3T1	MKP10153K2KP3A	–
0.015	13.0	9.0	4.0	10	MKP10153K2KP4B	MKP10153K2KP4T	MKP10153K2KP4T1	–	MKP10153K2KP4A1
0.022	10.3	10.5	5.0	7.5	MKP10223K2KP3B	MKP10223K2KP3T	MKP10223K2KP3T1	MKP10223K2KP3A	–
0.022	13.0	9.0	4.0	10	MKP10223K2KP4B	MKP10223K2KP4T	MKP10223K2KP4T1	–	MKP10223K2KP4A1
0.033	10.3	12.5	5.7	7.5	MKP10333K2KP3B	MKP10333K2KP3T	MKP10333K2KP3T1	MKP10333K2KP3A	–
0.033	13.0	11.0	5.0	10	MKP10333K2KP4B	MKP10333K2KP4T	MKP10333K2KP4T1	–	MKP10333K2KP4A1
0.047	13.0	12.0	6.0	10	MKP10473K2KP4B	MKP10473K2KP4T	MKP10473K2KP4T1	–	MKP10473K2KP4A1
0.047	18.0	11.0	5.0	15	MKP10473K2KP5B	MKP10473K2KP5T	MKP10473K2KP5T1	–	MKP10473K2KP5A1
0.068	18.0	12.5	6.0	15	MKP10683K2KP5B	MKP10683K2KP5T	MKP10683K2KP5T1	–	MKP10683K2KP5A1
0.068	26.5	15.0	6.0	22.5	MKP10683K2KP6B	–	MKP10683K2KP6T1	–	MKP10683K2KP6A1
0.1	18.0	14.0	7.0	15	MKP10104K2KP5B	MKP10104K2KP5T	MKP10104K2KP5T1	–	MKP10104K2KP5A1
0.1	26.5	15.0	6.0	22.5	MKP10104K2KP6B	–	MKP10104K2KP6T1	–	MKP10104K2KP6A1
0.15	18.0	15.0	8.0	15	MKP10154K2KP5B	MKP10154K2KP5T	MKP10154K2KP5T1	–	MKP10154K2KP5A1
0.15	26.5	15.0	6.0	22.5	MKP10154K2KP6B	–	MKP10154K2KP6T1	–	MKP10154K2KP6A1
0.22	18.0	16.0	9.0	15	MKP10224K2KP5B	MKP10224K2KP5T	MKP10224K2KP5T1	–	MKP10224K2KP5A1
0.22	26.5	16.5	7.0	22.5	MKP10224K2KP6B	–	MKP10224K2KP6T1	–	MKP10224K2KP6A1
0.33	26.5	18.5	8.5	22.5	MKP10334K2KP6B	–	MKP10334K2KP6T1	–	MKP10334K2KP6A1
0.33	31.5	19.0	9.0	27.5	MKP10334K2KP7B	–	MKP10334K2KP7T1	–	MKP10334K2KP7A1
0.47	26.5	19.0	10.5	22.5	MKP10474K2KP6B	–	MKP10474K2KP6T1	–	MKP10474K2KP6A1
0.47	31.5	19.0	9.0	27.5	MKP10474K2KP7B	–	MKP10474K2KP7T1	–	MKP10474K2KP7A1
0.68	26.5	21.0	11.0	22.5	MKP10684K2KP6B	–	MKP10684K2KP6T1	–	MKP10684K2KP6A1
0.68	31.5	21.0	11.0	27.5	MKP10684K2KP7B	–	MKP10684K2KP7T1	–	MKP10684K2KP7A1
1.0	31.5	24.0	13.0	27.5	MKP10105K2KP7B	–	MKP10105K2KP7T1	–	MKP10105K2KP7A1
1.0	41.5	24.0	13.0	37.5	MKP10105K2KP8B	–	–	–	–
1.5	31.5	29.0	17.0	27.5	MKP10155K2KP7B	–	–	–	–
1.5	41.5	24.0	13.0	37.5	MKP10155K2KP8B	–	–	–	–
2.2	31.5	39.5	20.0	27.5	MKP10225K2KP7B	–	–	–	–
2.2	41.5	29.0	17.0	37.5	MKP10225K2KP8B	–	–	–	–
3.3	41.5	39.5	20.0	37.5	MKP10335K2KP8B	–	–	–	–
4.7	41.5	39.5	20.0	37.5	MKP10475K2KP8B	–	–	–	–
6.8	41.5	45.5	24.0	37.5	MKP10685K2KP8B	–	–	–	–
630 Volt									
0.001	10.0	9.0	4.0	7.5	MKP10102K2PP3B	MKP10102K2PP3T	MKP10102K2PP3T1	MKP10102K2PP3A	MKP10102K2PP3A1
0.0015	10.0	9.0	4.0	7.5	MKP10152K2PP3B	MKP10152K2PP3T	MKP10152K2PP3T1	MKP10152K2PP3A	MKP10152K2PP3A1
0.0022	10.0	9.0	4.0	7.5	MKP10222K2PP3B	MKP10222K2PP3T	MKP10222K2PP3T1	MKP10222K2PP3A	MKP10222K2PP3A1
0.0033	10.0	9.0	4.0	7.5	MKP10332K2PP3B	MKP10332K2PP3T	MKP10332K2PP3T1	MKP10332K2PP3A	MKP10332K2PP3A1
0.0047	10.0	9.0	4.0	7.5	MKP10472K2PP3B	MKP10472K2PP3T	MKP10472K2PP3T1	MKP10472K2PP3A	MKP10472K2PP3A1
0.0068	10.0	9.0	4.0	7.5	MKP10682K2PP3B	MKP10682K2PP3T	MKP10682K2PP3T1	MKP10682K2PP3A	MKP10682K2PP3A1
0.0068	13.0	9.0	4.0	10	MKP10682K2PP4B	MKP10682K2PP4T	MKP10682K2PP4T1	–	MKP10682K2PP4A1
0.01	10.3	10.5	5.0	7.5	MKP10103K2PP3B	MKP10103K2PP3T	MKP10103K2PP3T1	MKP10103K2PP3A	–
0.01	13.0	9.0	4.0	10	MKP10103K2PP4B	MKP10103K2PP4T	MKP10103K2PP4T1	–	MKP10103K2PP4A1
0.015	13.0	11.0	5.0	10	MKP10153K2PP4B	MKP10153K2PP4T	MKP10153K2PP4T1	–	MKP10153K2PP4A1
0.015	18.0	11.0	5.0	15	MKP10153K2PP5B	MKP10153K2PP5T	MKP10153K2PP5T1	–	MKP10153K2PP5A1
0.022	13.0	11.0	5.0	10	MKP10223K2PP4B	MKP10223K2PP4T	MKP10223K2PP4T1	–	MKP10223K2PP4A1
0.022	18.0	11.0	5.0	15	MKP10223K2PP5B	MKP10223K2PP5T	MKP10223K2PP5T1	–	MKP10223K2PP5A1
0.033	13.0	12.0	6.0	10	MKP10333K2PP4B	MKP10333K2PP4T	MKP10333K2PP4T1	–	MKP10333K2PP4A1
0.033	18.0	11.0	5.0	15	MKP10333K2PP5B	MKP10333K2PP5T	MKP10333K2PP5T1	–	MKP10333K2PP5A1
0.047	18.0	12.5	6.0	15	MKP10473K2PP5B	MKP10473K2PP5T	MKP10473K2PP5T1	–	MKP10473K2PP5A1
0.047	26.5	15.0	6.0	22.5	MKP10473K2PP6B	–	MKP10473K2PP6T1	–	MKP10473K2PP6A1
0.068	18.0	14.0	7.0	15	MKP10683K2PP5B	MKP10683K2PP5T	MKP10683K2PP5T1	–	MKP10683K2PP5A1
0.068	26.5	15.0	6.0	22.5	MKP10683K2PP6B	–	MKP10683K2PP6T1	–	MKP10683K2PP6A1
0.1	18.0	16.0	9.0	15	MKP10104K2PP5B	MKP10104K2PP5T	MKP10104K2PP5T1	–	MKP10104K2PP5A1
0.1	26.5	16.5	7.0	22.5	MKP10104K2PP6B	–	MKP10104K2PP6T1	–	MKP10104K2PP6A1
0.15	26.5	18.5	8.5	22.5	MKP10154K2PP6B	–	MKP10154K2PP6T1	–	MKP10154K2PP6A1
0.15	31.5	19.0	9.0	27.5	MKP10154K2PP7B	–	MKP10154K2PP7T1	–	MKP10154K2PP7A1
0.22	26.5	18.5	8.5	22.5	MKP10224K2PP6B	–	MKP10224K2PP6T1	–	MKP10224K2PP6A1
0.22	31.5	19.0	9.0	27.5	MKP10224K2PP7B	–	MKP10224K2PP7T1	–	MKP10224K2PP7A1
0.33	26.5	21.0	11.0	22.5	MKP10334K2PP6B	–	MKP10334K2PP6T1	–	MKP10334K2PP6A1
0.33	31.5	21.0	11.0	27.5	MKP10334K2PP7B	–	MKP10334K2PP7T1	–	MKP10334K2PP7A1
0.47	31.5	21.0	11.0	27.5	MKP10474K2PP7B	–	MKP10474K2PP7T1	–	MKP10474K2PP7A1
0.68	31.5	26.0	15.0	27.5	MKP10684K2PP7B	–	MKP10684K2PP7T1	–	MKP10684K2PP7A1
0.68	41.5	24.0	13.0	37.5	MKP10684K2PP8B	–	–	–	–
1.0	31.5	29.0	17.0	27.5	MKP10105K2PP7B	–	–	–	–
1.0	41.5	26.0	15.0	37.5	MKP10105K2PP8B	–	–	–	–
1.5	31.5	39.5	20.0	27.5	MKP10155K2PP7B	–	–	–	–
1.5	41.5	32.0	19.0	37.5	MKP10155K2PP8B	–	–	–	–
2.2	41.5	39.5	20.0	37.5	MKP10225K2PP8B	–	–	–	–
3.3	41.5	45.5	24.0	37.5	MKP10335K2PP8B	–	–	–	–

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continuation

MKP10 ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Pitch	Loose	Taped & Reeled ø14.5"	Taped & Rolled ø20.0"	Taped & Boxed 340 x 340mm	Taped & Boxed 490 x 370mm
1000 Volt									
0.001	10.0	9.0	4.0	7.5	*MKP10102K3AP3B*	*MKP10102K3AP3T*	*MKP10102K3AP3T1*	*MKP10102K3AP3A*	*MKP10102K3AP3A1*
0.001	13.0	9.0	4.0	10	*MKP10102K3AP4B*	*MKP10102K3AP4T*	*MKP10102K3AP4T1*	–	*MKP10102K3AP4A1*
0.0015	10.0	9.0	4.0	7.5	*MKP10152K3AP3B*	*MKP10152K3AP3T*	*MKP10152K3AP3T1*	*MKP10152K3AP3A*	*MKP10152K3AP3A1*
0.0015	13.0	9.0	4.0	10	*MKP10152K3AP4B*	*MKP10152K3AP4T*	*MKP10152K3AP4T1*	–	*MKP10152K3AP4A1*
0.0022	10.0	9.0	4.0	7.5	*MKP10222K3AP3B*	*MKP10222K3AP3T*	*MKP10222K3AP3T1*	*MKP10222K3AP3A*	*MKP10222K3AP3A1*
0.0022	13.0	9.0	4.0	10	*MKP10222K3AP4B*	*MKP10222K3AP4T*	*MKP10222K3AP4T1*	–	*MKP10222K3AP4A1*
0.0033	10.0	9.0	4.0	7.5	*MKP10332K3AP3B*	*MKP10332K3AP3T*	*MKP10332K3AP3T1*	*MKP10332K3AP3A*	*MKP10332K3AP3A1*
0.0033	13.0	9.0	4.0	10	*MKP10332K3AP4B*	*MKP10332K3AP4T*	*MKP10332K3AP4T1*	–	*MKP10332K3AP4A1*
0.0047	10.3	9.5	4.5	7.5	*MKP10472K3AP3B*	*MKP10472K3AP3T*	*MKP10472K3AP3T1*	*MKP10472K3AP3A*	*MKP10472K3AP3A1*
0.0047	13.0	9.0	4.0	10	*MKP10472K3AP4B*	*MKP10472K3AP4T*	*MKP10472K3AP4T1*	–	*MKP10472K3AP4A1*
0.0068	10.3	12.5	5.7	7.5	*MKP10682K3AP3B*	*MKP10682K3AP3T*	*MKP10682K3AP3T1*	*MKP10682K3AP3A*	–
0.0068	13.0	11.0	5.0	10	*MKP10682K3AP4B*	*MKP10682K3AP4T*	*MKP10682K3AP4T1*	–	*MKP10682K3AP4A1*
0.01	13.0	11.0	5.0	10	*MKP10103K3AP4B*	*MKP10103K3AP4T*	*MKP10103K3AP4T1*	–	*MKP10103K3AP4A1*
0.01	18.0	11.0	5.0	15	*MKP10103K3AP5B*	*MKP10103K3AP5T*	*MKP10103K3AP5T1*	–	*MKP10103K3AP5A1*
0.015	13.0	12.0	6.0	10	*MKP10153K3AP4B*	*MKP10153K3AP4T*	*MKP10153K3AP4T1*	–	*MKP10153K3AP4A1*
0.015	18.0	11.0	5.0	15	*MKP10153K3AP5B*	*MKP10153K3AP5T*	*MKP10153K3AP5T1*	–	*MKP10153K3AP5A1*
0.022	18.0	12.5	6.0	15	*MKP10223K3AP5B*	*MKP10223K3AP5T*	*MKP10223K3AP5T1*	–	*MKP10223K3AP5A1*
0.022	26.5	15.0	6.0	22.5	*MKP10223K3AP6B*	–	*MKP10223K3AP6T1*	–	*MKP10223K3AP6A1*
0.033	18.0	14.0	7.0	15	*MKP10333K3AP5B*	*MKP10333K3AP5T*	*MKP10333K3AP5T1*	–	*MKP10333K3AP5A1*
0.033	26.5	15.0	6.0	22.5	*MKP10333K3AP6B*	–	*MKP10333K3AP6T1*	–	*MKP10333K3AP6A1*
0.047	18.0	15.0	8.0	15	*MKP10473K3AP5B*	*MKP10473K3AP5T*	*MKP10473K3AP5T1*	–	*MKP10473K3AP5A1*
0.047	26.5	15.0	6.0	22.5	*MKP10473K3AP6B*	–	*MKP10473K3AP6T1*	–	*MKP10473K3AP6A1*
0.068	26.5	16.5	7.0	22.5	*MKP10683K3AP6B*	–	*MKP10683K3AP6T1*	–	*MKP10683K3AP6A1*
0.1	26.5	18.5	8.5	22.5	*MKP10104K3AP6B*	–	*MKP10104K3AP6T1*	–	*MKP10104K3AP6A1*
0.1	31.5	21.0	11.0	27.5	*MKP10104K3AP7B*	–	*MKP10104K3AP7T1*	–	*MKP10104K3AP7A1*
0.15	26.5	21.0	11.0	22.5	*MKP10154K3AP6B*	–	*MKP10154K3AP6T1*	–	*MKP10154K3AP6A1*
0.15	31.5	21.0	11.0	27.5	*MKP10154K3AP7B*	–	*MKP10154K3AP7T1*	–	*MKP10154K3AP7A1*
0.22	31.5	21.0	11.0	27.5	*MKP10224K3AP7B*	–	*MKP10224K3AP7T1*	–	*MKP10224K3AP7A1*
0.33	31.5	26.0	15.0	27.5	*MKP10334K3AP7B*	–	*MKP10334K3AP7T1*	–	*MKP10334K3AP7A1*
0.33	41.5	24.0	13.0	37.5	*MKP10334K3AP8B*	–	–	–	–
0.47	31.5	29.0	17.0	27.5	*MKP10474K3AP7B*	–	–	–	–
0.47	41.5	24.0	13.0	37.5	*MKP10474K3AP8B*	–	–	–	–
0.68	31.5	39.5	20.0	27.5	*MKP10684K3AP7B*	–	–	–	–
0.68	41.5	29.0	17.0	37.5	*MKP10684K3AP8B*	–	–	–	–
1.0	41.5	39.5	20.0	37.5	*MKP10105K3AP8B*	–	–	–	–
1.5	41.5	45.5	24.0	37.5	*MKP10155K3AP8B*	–	–	–	–
1600 Volt									
0.001	13.0	9.0	4.0	10	*MKP10102K3EP4B*	*MKP10102K3EP4T*	*MKP10102K3EP4T1*	–	*MKP10102K3EP4A1*
0.0015	13.0	9.0	4.0	10	*MKP10152K3EP4B*	*MKP10152K3EP4T*	*MKP10152K3EP4T1*	–	*MKP10152K3EP4A1*
0.0022	13.0	9.0	4.0	10	*MKP10222K3EP4B*	*MKP10222K3EP4T*	*MKP10222K3EP4T1*	–	*MKP10222K3EP4A1*
0.0033	13.0	9.0	4.0	10	*MKP10332K3EP4B*	*MKP10332K3EP4T*	*MKP10332K3EP4T1*	–	*MKP10332K3EP4A1*
0.0047	13.0	11.0	5.0	10	*MKP10472K3EP4B*	*MKP10472K3EP4T*	*MKP10472K3EP4T1*	–	*MKP10472K3EP4A1*
0.0068	13.0	12.0	6.0	10	*MKP10682K3EP4B*	*MKP10682K3EP4T*	*MKP10682K3EP4T1*	–	*MKP10682K3EP4A1*
0.0068	18.0	11.0	5.0	15	*MKP10682K3EP5B*	*MKP10682K3EP5T*	*MKP10682K3EP5T1*	–	*MKP10682K3EP5A1*
0.01	18.0	11.0	5.0	15	*MKP10103K3EP5B*	*MKP10103K3EP5T*	*MKP10103K3EP5T1*	–	*MKP10103K3EP5A1*
0.015	18.0	12.5	6.0	15	*MKP10153K3EP5B*	*MKP10153K3EP5T*	*MKP10153K3EP5T1*	–	*MKP10153K3EP5A1*
0.015	26.5	15.0	6.0	22.5	*MKP10153K3EP6B*	–	*MKP10153K3EP6T1*	–	*MKP10153K3EP6A1*
0.022	18.0	14.0	7.0	15	*MKP10223K3EP5B*	*MKP10223K3EP5T*	*MKP10223K3EP5T1*	–	*MKP10223K3EP5A1*
0.022	26.5	15.0	6.0	22.5	*MKP10223K3EP6B*	–	*MKP10223K3EP6T1*	–	*MKP10223K3EP6A1*
0.033	18.0	15.0	8.0	15	*MKP10333K3EP5B*	*MKP10333K3EP5T*	*MKP10333K3EP5T1*	–	*MKP10333K3EP5A1*
0.033	26.5	15.0	6.0	22.5	*MKP10333K3EP6B*	–	*MKP10333K3EP6T1*	–	*MKP10333K3EP6A1*
0.047	26.5	16.5	7.0	22.5	*MKP10473K3EP6B*	–	*MKP10473K3EP6T1*	–	*MKP10473K3EP6A1*
0.047	31.5	19.0	9.0	27.5	*MKP10473K3EP7B*	–	*MKP10473K3EP7T1*	–	*MKP10473K3EP7A1*
0.068	26.5	19.0	10.5	22.5	*MKP10683K3EP6B*	–	*MKP10683K3EP6T1*	–	*MKP10683K3EP6A1*
0.068	31.5	19.0	9.0	27.5	*MKP10683K3EP7B*	–	*MKP10683K3EP7T1*	–	*MKP10683K3EP7A1*
0.1	26.5	21.0	11.0	22.5	*MKP10104K3EP6B*	–	*MKP10104K3EP6T1*	–	*MKP10104K3EP6A1*
0.1	31.5	21.0	11.0	27.5	*MKP10104K3EP7B*	–	*MKP10104K3EP7T1*	–	*MKP10104K3EP7A1*
0.15	31.5	24.0	13.0	27.5	*MKP10154K3EP7B*	–	*MKP10154K3EP7T1*	–	*MKP10154K3EP7A1*
0.22	31.5	26.0	15.0	27.5	*MKP10224K3EP7B*	–	*MKP10224K3EP7T1*	–	*MKP10224K3EP7A1*
0.22	41.5	24.0	13.0	37.5	*MKP10224K3EP8B*	–	–	–	–
0.33	31.5	34.5	17.0	27.5	*MKP10334K3EP7B*	–	–	–	–
0.33	41.5	29.0	17.0	37.5	*MKP10334K3EP8B*	–	–	–	–
0.47	31.5	39.5	20.0	27.5	*MKP10474K3EP7B*	–	–	–	–
0.47	41.5	32.0	19.0	37.5	*MKP10474K3EP8B*	–	–	–	–
0.68	41.5	39.5	20.0	37.5	*MKP10684K3EP8B*	–	–	–	–
1.0	41.5	45.5	24.0	37.5	*MKP10105K3EP8B*	–	–	–	–

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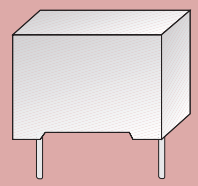
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MKP10 ORDER CODES

Value (µF)	Dimensions (mm) W	H	D	Pitch	Loose	Taped & Reeled ø14.5"	Taped & Rolled ø20.0"	Taped & Boxed 340 x 340mm	Taped & Boxed 490 x 370mm
2000 Volt									
0.001	13.0	9.0	4.0	10	*MKP10102K3FP4B*	*MKP10102K3FP4T*	*MKP10102K3FP4T1*	–	*MKP10102K3FP4A1*
0.0015	13.0	9.0	4.0	10	*MKP10152K3FP4B*	*MKP10152K3FP4T*	*MKP10152K3FP4T1*	–	*MKP10152K3FP4A1*
0.0022	13.0	11.0	5.0	10	*MKP10222K3FP4B*	*MKP10222K3FP4T*	*MKP10222K3FP4T1*	–	*MKP10222K3FP4A1*
0.0022	18.0	11.0	5.0	15	*MKP10222K3FP5B*	*MKP10222K3FP5T*	*MKP10222K3FP5T1*	–	*MKP10222K3FP5A1*
0.0033	18.0	11.0	5.0	15	*MKP10332K3FP5B*	*MKP10332K3FP5T*	*MKP10332K3FP5T1*	–	*MKP10332K3FP5A1*
0.0047	18.0	11.0	5.0	15	*MKP10472K3FP5B*	*MKP10472K3FP5T*	*MKP10472K3FP5T1*	–	*MKP10472K3FP5A1*
0.0047	26.5	15.0	6.0	22.5	*MKP10472K3FP6B*	–	*MKP10472K3FP6T1*	–	*MKP10472K3FP6A1*
0.0068	18.0	12.5	6.0	15	*MKP10682K3FP5B*	*MKP10682K3FP5T*	*MKP10682K3FP5T1*	–	*MKP10682K3FP5A1*
0.0068	26.5	15.0	6.0	22.5	*MKP10682K3FP6B*	–	*MKP10682K3FP6T1*	–	*MKP10682K3FP6A1*
0.01	18.0	14.0	7.0	15	*MKP10103K3FP5B*	*MKP10103K3FP5T*	*MKP10103K3FP5T1*	–	*MKP10103K3FP5A1*
0.01	26.5	15.0	6.0	22.5	*MKP10103K3FP6B*	–	*MKP10103K3FP6T1*	–	*MKP10103K3FP6A1*
0.015	18.0	15.0	8.0	15	*MKP10153K3FP5B*	*MKP10153K3FP5T*	*MKP10153K3FP5T1*	–	*MKP10153K3FP5A1*
0.015	26.5	15.0	6.0	22.5	*MKP10153K3FP6B*	–	*MKP10153K3FP6T1*	–	*MKP10153K3FP6A1*
0.022	18.0	16.0	9.0	15	*MKP10223K3FP5B*	*MKP10223K3FP5T*	*MKP10223K3FP5T1*	–	*MKP10223K3FP5A1*
0.022	26.5	16.5	7.0	22.5	*MKP10223K3FP6B*	–	*MKP10223K3FP6T1*	–	*MKP10223K3FP6A1*
0.033	26.5	18.5	8.5	22.5	*MKP10333K3FP6B*	–	*MKP10333K3FP6T1*	–	*MKP10333K3FP6A1*
0.033	31.5	19.0	9.0	27.5	*MKP10333K3FP7B*	–	*MKP10333K3FP7T1*	–	*MKP10333K3FP7A1*
0.047	26.5	19.0	10.5	22.5	*MKP10473K3FP6B*	–	*MKP10473K3FP6T1*	–	*MKP10473K3FP6A1*
0.047	31.5	21.0	11.0	27.5	*MKP10473K3FP7B*	–	*MKP10473K3FP7T1*	–	*MKP10473K3FP7A1*
0.068	26.5	21.0	11.0	22.5	*MKP10683K3FP6B*	–	*MKP10683K3FP6T1*	–	*MKP10683K3FP6A1*
0.068	31.5	21.0	11.0	27.5	*MKP10683K3FP7B*	–	*MKP10683K3FP7T1*	–	*MKP10683K3FP7A1*
0.1	31.5	24.0	13.0	27.5	*MKP10104K3FP7B*	–	*MKP10104K3FP7T1*	–	*MKP10104K3FP7A1*
0.15	31.5	26.0	15.0	27.5	*MKP10154K3FP7B*	–	*MKP10154K3FP7T1*	–	*MKP10154K3FP7A1*
0.15	41.5	24.0	13.0	37.5	*MKP10154K3FP8B*	–	–	–	–
0.22	31.5	34.5	17.0	27.5	*MKP10224K3FP7B*	–	–	–	–
0.22	41.5	29.0	17.0	37.5	*MKP10224K3FP8B*	–	–	–	–
0.33	41.5	32.0	19.0	37.5	*MKP10334K3FP8B*	–	–	–	–
0.47	41.5	39.5	20.0	37.5	*MKP10474K3FP8B*	–	–	–	–
0.68	41.5	45.5	24.0	37.5	*MKP10684K3FP8B*	–	–	–	–
2500 Volt									
0.001	18.0	11.0	5.0	15	*MKP10102K3GP5B*	*MKP10102K3GP5T*	*MKP10102K3GP5T1*	–	*MKP10102K3GP5A1*
0.001	26.5	15.0	6.0	22.5	*MKP10102K3GP6B*	–	*MKP10102K3GP6T1*	–	*MKP10102K3GP6A1*
0.0015	18.0	11.0	5.0	15	*MKP10152K3GP5B*	*MKP10152K3GP5T*	*MKP10152K3GP5T1*	–	*MKP10152K3GP5A1*
0.0015	26.5	15.0	6.0	22.5	*MKP10152K3GP6B*	–	*MKP10152K3GP6T1*	–	*MKP10152K3GP6A1*
0.0022	18.0	11.0	5.0	15	*MKP10222K3GP5B*	*MKP10222K3GP5T*	*MKP10222K3GP5T1*	–	*MKP10222K3GP5A1*
0.0022	26.5	15.0	6.0	22.5	*MKP10222K3GP6B*	–	*MKP10222K3GP6T1*	–	*MKP10222K3GP6A1*
0.0033	18.0	11.0	5.0	15	*MKP10332K3GP5B*	*MKP10332K3GP5T*	*MKP10332K3GP5T1*	–	*MKP10332K3GP5A1*
0.0033	26.5	15.0	6.0	22.5	*MKP10332K3GP6B*	–	*MKP10332K3GP6T1*	–	*MKP10332K3GP6A1*
0.0047	18.0	12.5	6.0	15	*MKP10472K3GP5B*	*MKP10472K3GP5T*	*MKP10472K3GP5T1*	–	*MKP10472K3GP5A1*
0.0047	26.5	15.0	6.0	22.5	*MKP10472K3GP6B*	–	*MKP10472K3GP6T1*	–	*MKP10472K3GP6A1*
0.0068	18.0	14.0	7.0	15	*MKP10682K3GP5B*	*MKP10682K3GP5T*	*MKP10682K3GP5T1*	–	*MKP10682K3GP5A1*
0.0068	26.5	16.5	7.0	22.5	*MKP10682K3GP6B*	–	*MKP10682K3GP6T1*	–	*MKP10682K3GP6A1*
0.01	26.5	18.5	8.5	22.5	*MKP10103K3GP6B*	–	*MKP10103K3GP6T1*	–	*MKP10103K3GP6A1*
0.15	26.5	19.0	10.5	22.5	*MKP10153K3GP6B*	–	*MKP10153K3GP6T1*	–	*MKP10153K3GP6A1*
0.022	26.5	21.0	11.0	22.5	*MKP10223K3GP6B*	–	*MKP10223K3GP6T1*	–	*MKP10223K3GP6A1*

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

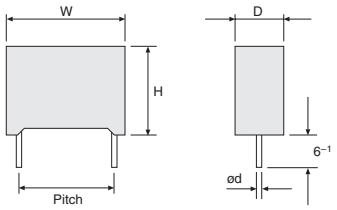


EPCOS type B3292 & B3202 series

A range of radial lead X2 and Y2 capacitors, with extensive approvals, designed for mains interference suppression. Meet EN132400 (IEC60384-14), the unified European safety standard. Epoxy resin encapsulated in flame retardant plastic cases.

- **Metallised polypropylene film** dielectric
- Self healing
- Mains rated **X2** & **Y2** class
- Meet the unified European safety standard EN132400
- Encapsulated in plastic cases
- Cases flame retardant to UL94V-0

Dimensions (mm)



Dimensions listed on the following pages against Order Codes

Meet EN132400 (IEC60384-14)

Specification	B3292 (X2)	B3202 (Y2)
Voltage rating	305Vac	300Vac
Capacitance tolerance	±20%	±20%
Test voltage	2121Vdc	4000Vdc/(C ≤0.33µF), 3700Vdc (C >0.33µF)
Operating temperature range	-40°C to +105°C (B3292xC/D) -40°C to +110°C (B3292xE/F)	-40°C to +110°C
Climatic category	40/105/56/B (B3292xC/D) 40/110/56/B (B3292xE/F) IEC60068-1	40/110/56/B IEC60068-1
Insulation resistance/time constant	≥100,000MΩ(C ≤0.33µF), ≥30,000 sec (C >0.33µF) (B3292xC/D) ≥30,000 sec (B3292xE/F)	≥100,000MΩ (C ≤0.33µF), ≥30,000 sec (C ≥0.33µF)
Dissipation factor	≤0.1% at 1kHz (C ≤2.2µF), ≤0.2% at 1kHz (C ≥2.2µF)	≤0.1% at 1kHz

Also available to order :

MKP-X2 rated 275Vac
MKP-X2R rated 400Vac
MKP-Y2 rated 300Vac

from WIMA

Please contact our Sales Desk for details.

X2 Class EPCOS type B3292 series

Metallised polypropylene (MKP) capacitors with self healing dielectric, supplied with short leads as standard. Long leads available to order. B3292 offers a rated voltage of 305Vac.

ORDER CODES

Pitch	Value (µF)	Dimensions (mm) W	H	D	Order Code
10mm	0.01	13.0	9.0	4.0	**B32921C3103M**
	0.022	13.0	9.0	4.0	**B32921C3223M**
	0.033	13.0	9.0	4.0	**B32921C3333M**
	0.047	13.0	11.0	5.0	**B32921C3473M**
	0.068	13.0	12.0	6.0	B32921C3683M
	0.1	13.0	12.0	6.0	B32921C3104M
15mm	0.033	18.0	10.5	5.0	B32922C3333K
	0.047	18.0	10.5	5.0	B32922C3473K
	0.068	18.0	10.5	5.0	**B32922C3683K**
	0.1	18.0	10.5	5.0	**B32922C3104M**
	0.15	18.0	12.0	6.0	**B32922C3154M**
	0.22	18.0	12.5	7.0	**B32922C3224M**
	0.33	18.0	14.0	8.0	**B32922C3334M**
	0.33	18.0	14.5	8.5	B32922D3334K
	0.47	18.0	17.5	9.0	**B32922C3474M**
	0.68	18.0	18.5	11.0	**B32922C3684M**
22.5mm	0.22	26.5	15.0	6.0	B32923C3224M
	0.33	26.5	15.0	6.0	B32923C3334M
	0.33	26.5	16.0	7.0	B32923D3334K
	0.47	26.5	16.5	8.5	B32923C3474M
	0.68	26.5	16.5	10.5	B32923C3684M
	1.0	26.5	20.5	11.0	**B32923C3105M**
	1.5	26.5	22.0	12.0	B32923C3155M
	2.2	26.5	22.0	12.0	**B32923E3225M**
	3.3	26.5	29.5	14.5	B32923E3335M
27.5mm	0.68	31.5	19.0	11.0	B32924C3684M
	1.0	31.5	19.0	11.0	B32924C3105M
	1.5	31.5	21.5	12.5	**B32924C3155M**
	2.2	31.5	21.0	11.0	B32924E3225M
	3.3	31.5	24.5	14.0	**B32924E3335M**
	4.7	31.5	27.5	18.0	**B32924E3475M**
	5.6	31.5	33.0	18.0	B32924F3565M
	6.8	31.5	31.0	21.0	**B32924E3685M**
	8.2	31.5	36.5	22.0	**B32924E3825M**
37.5mm	2.2	42.0	22.0	12.0	B32926E3225M
	3.3	42.0	22.0	12.0	B32926E3335M
	4.7	42.0	25.0	14.0	B32926E3475M
	6.8	42.0	32.5	18.0	B32926E3685M
	10.0	42.0	39.5	20.0	**B32926E3106M**
	15.0	42.0	37.0	28.0	B32926E3156M
	20.0	42.0	42.5	28.0	B32926E3206M
52.5mm	25.0	57.5	45.0	30.0	**B32928E3256M**
	30.0	57.5	45.0	30.0	**B32928E3306M**
	40.0	57.5	50.0	35.0	**B32928E3406M**
	45.0	57.5	50.0	35.0	**B32928E3456M**

Bold order codes indicate preferred types

Y2 Class
shown overleaf > > > >

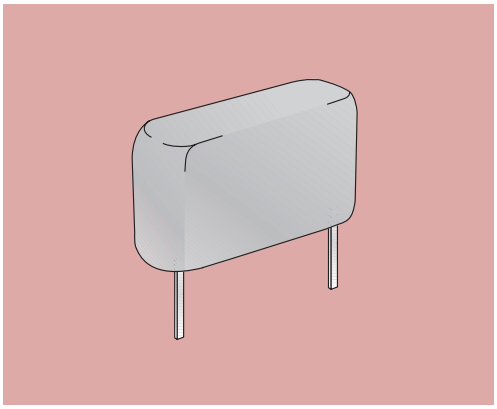
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Y2 Class EPCOS type B3202 series

Metallised polypropylene (MKP) capacitors with self healing dielectric. Supplied with short leads as standard. Long leads available to order.
Rated voltage 300Vac.

ORDER CODES

Pitch	Value (µF)	Dimensions (mm) W	H	D	Order Code
10mm	0.001 (1000pF)	13.0	9.0	4.0	B32021A3102M
	0.0015 (1500pF)	13.0	9.0	4.0	B32021A3152M
	0.0022 (2200pF)	13.0	9.0	4.0	B32021A3222M
	0.0033 (3300pF)	13.0	9.0	4.0	B32021A3332M
	0.0047 (4700pF)	13.0	11.0	5.0	B32021A3472M
	0.0056 (5600pF)	13.0	11.0	5.0	B32021A3562M
	0.0068 (6800pF)	13.0	11.0	5.0	B32021A3682M
	0.0082 (8200pF)	13.0	12.0	6.0	B32021A3822M
	0.01	13.0	12.0	6.0	B32021A3103M
15mm	0.01	18.0	10.5	5.0	B32022A3103M
	0.015	18.0	11.0	6.0	B32022A3153M
	0.022	18.0	12.0	6.0	B32022A3223M
	0.022	18.0	12.5	7.0	B32022B3223M
	0.033	18.0	14.0	8.0	B32022A3333M
	0.047	18.0	14.5	8.5	B32022A3473M
	0.047	18.0	17.5	9.0	B32022B3473M
	0.056	18.0	17.5	9.0	B32022A3563M
	0.068	18.0	17.5	9.0	B32022A3683M
	0.082	18.0	18.5	11.0	B32022A3823M
22.5mm	0.047	26.5	15.0	6.0	B32023A3473M
	0.056	26.5	15.0	6.0	B32023A3563M
	0.068	26.5	16.0	7.0	B32023A3683M
	0.068	26.5	14.5	7.5	B32023B3683M
	0.082	26.5	16.5	8.5	B32023A3823M
	0.1	26.5	16.5	8.5	B32023A3104M
	0.1	26.5	16.5	10.5	B32023B3104M
	0.15	26.5	18.5	10.5	B32023A3154M
	0.15	26.5	20.5	10.5	B32023B3154M
	0.22	26.5	22.0	12.0	B32023A3224M
	0.22	26.5	29.5	14.5	B32023B3224M
	0.33	26.5	29.5	14.5	B32023A3334M
	0.39	26.5	29.5	14.5	B32023A3394M
27.5mm	0.15	31.5	19.0	11.0	B32024A3154M
	0.22	31.5	19.0	11.0	B32024A3224M
	0.22	31.5	21.0	11.0	B32024B3224M
	0.33	31.5	23.0	13.5	B32024A3334M
	0.33	31.5	24.5	14.0	B32024B3334M
	0.47	31.5	24.5	15.0	B32024A3474M
	0.47	31.5	27.5	18.0	B32024B3474M
	0.47	31.5	32.0	16.0	B32024C3474M
	0.56	31.5	32.0	16.0	B32024A3564M
	0.68	31.5	30.0	19.0	B32024A3684M
	0.68	31.5	33.0	18.0	B32024B3684M
	0.68	31.5	31.0	21.0	B32024C3684M
	0.82	31.5	36.5	22.0	B32024A3824M
	1.0	31.5	36.5	22.0	B32024A3105M
37.5mm	0.33	41.5	22.0	12.0	B32026A3334M
	0.47	41.5	25.0	14.0	B32026A3474M
	0.56	41.5	25.0	14.0	B32026A3564M
	0.56	41.5	28.5	16.0	B32026B3564M
	0.68	41.5	28.5	16.0	B32026A3684M
	0.82	41.5	28.5	16.0	B32026A3824M
	0.82	41.5	32.5	18.0	B32026B3824M
	1.0	41.5	32.5	18.0	B32026A3105M
	1.0	41.5	39.5	20.0	B32026B3105M

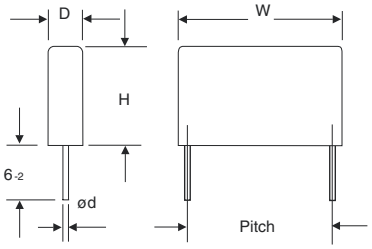


WIMA type MP3-X2 & MP3-Y2

A range of radial lead X2 and Y2 capacitors, with a high degree of interference suppression due to good attenuation and low ESR. Encapsulated in self-extinguishing epoxy resin with a high reliability against active and passive flammability.

- **Metallised paper** dielectric
- Excellent self-healing properties & high voltage strength
- Mains rated **X2** & **Y2** class
- Meet the unified European safety standard EN132400
- Choice of voltage rating on X2
- Encapsulated in plastic cases
- Cases flame retardant to UL94V-0
- Body colour **Silver**

Dimensions (mm)



Dimensions listed on the following page against Order Codes

Meet EN132400 (IEC60384-14)

Specification	MP3-X2	MP3-Y2
Voltage rating	250Vac or 275Vac	250Vac
Capacitance tolerance	±20%	±20%
Test voltage	2700Vdc for 2 sec.	2700Vdc for 2 sec.
Operating temperature range	-40°C to +110°C	-40°C to +110°C
Climatic category	40/110/56/C IEC	40/110/56/C IEC
Insulation resistance/time constant	≥12,000MΩ (C ≤0.33µF), ≥4,000 sec (C >0.33µF)	≥12,000MΩ
Dissipation factor	≤1.3% at 1kHz	≤1.3% at 1kHz

Maximum pulse rise time :

Capacitance pF/µF	Pulse rise time V/µsec max. operation
1000	1000
1500	600
2200 - 4700	450
6800 - 0.022	300
0.033 - 0.047	200
0.068 - 1.0	100

WIMA type MP3-X2 & MP3-Y2
continued overleaf > > > >

continuation

X2 Class WIMA type MP3-X2

Metallised paper capacitors with self healing dielectric, supplied with short leads as standard. Choice of 250Vac or 275Vac rated voltage.
Order codes listed are for loose product. Various taping options and long leads are available to order.

ORDER CODES

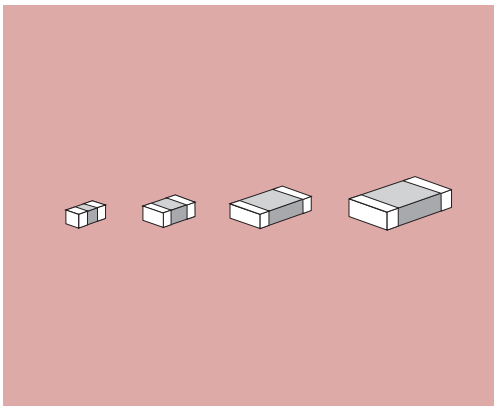
Pitch	Value (µF)	Dimensions (mm) W	H	D	ød	Order Code 250V	275V
10mm	0.001 (1000pF)	13.5	8.5	4.0	0.6	MP3-X2102M2GP4B	MP3-X2102M2HP4B
	0.0015 (1500pF)	13.5	8.5	4.0	0.6	MP3-X2152M2GP4B	MP3-X2152M2HP4B
	0.0022 (2200pF)	13.5	8.5	4.0	0.6	MP3-X2222M2GP4B	MP3-X2222M2HP4B
	0.0033 (3300pF)	13.5	8.5	4.0	0.6	MP3-X2332M2GP4B	MP3-X2332M2HP4B
	0.0047 (4700pF)	13.5	10.0	5.0	0.6	MP3-X2472M2GP4B	MP3-X2472M2HP4B
15mm	0.0068 (6800pF)	19.0	13.0	5.0	0.6	MP3-X2682M2GP5B	MP3-X2682M2HP5B
	0.01	19.0	13.0	5.0	0.8	MP3-X2103M2GP5B	MP3-X2103M2HP5B
	0.015	19.0	13.0	5.0	0.8	MP3-X2153M2GP5B	MP3-X2153M2HP5B
	0.022	19.0	13.0	5.0	0.8	MP3-X2223M2GP5B	MP3-X2223M2HP5B
	0.033	19.0	14.0	6.0	0.8	MP3-X2333M2GP5B	MP3-X2333M2HP5B
	0.047	19.0	15.0	7.0	0.8	MP3-X2473M2GP5B	MP3-X2473M2HP5B
	0.068	19.0	17.0	8.0	0.8	MP3-X2683M2GP5B	MP3-X2683M2HP5B
	0.1	19.0	18.0	10.0	0.8	MP3-X2104M2GP5B	MP3-X2104M2HP5B
22.5mm	0.1	28.0	20.0	8.0	0.8	MP3-X2104M2GP6B	MP3-X2104M2HP6B
	0.15	28.0	20.0	8.0	0.8	MP3-X2154M2GP6B	MP3-X2154M2HP6B
	0.22	28.0	22.0	10.0	0.8	MP3-X2224M2GP6B	MP3-X2224M2HP6B
	0.33	28.0	24.0	12.0	0.8	MP3-X2334M2GP6B	MP3-X2334M2HP6B
27.5mm	0.47	33.0	25.0	13.0	0.8	MP3-X2474M2GP7B	MP3-X2474M2HP7B
	0.68	33.0	26.0	15.0	0.8	MP3-X2684M2GP7B	MP3-X2684M2HP7B
	1.0	33.0	32.0	20.0	0.8	MP3-X2105M2GP7B	MP3-X2105M2HP7B

Y2 Class WIMA type MP3-Y2 series

Metallised paper capacitors with self healing dielectric, supplied with short leads as standard. Rated voltage 250Vac.
Order codes listed are for loose product. Various taping options and long leads are available to order.

ORDER CODES

Pitch	Value (µF)	Dimensions (mm) W	H	D	ød	Order Code 250V
10mm	0.001 (1000pF)	13.5	8.5	4.0	0.6	MP3-Y2102M2GP4B
	0.0015 (1500pF)	13.5	8.5	4.0	0.6	MP3-Y2152M2GP4B
	0.0022 (2200pF)	13.5	8.5	4.0	0.6	MP3-Y2222M2GP4B
	0.0033 (3300pF)	13.5	8.5	4.0	0.6	MP3-Y2332M2GP4B
	0.0047 (4700pF)	13.5	10.0	5.0	0.6	MP3-Y2472M2GP4B
15mm	0.0068 (6800pF)	19.0	13.0	5.0	0.8	MP3-Y2682M2GP5B
	0.01	19.0	13.0	5.0	0.8	MP3-Y2103M2GP5B
	0.015	19.0	14.0	6.0	0.8	MP3-Y2153M2GP5B
	0.022	19.0	15.0	7.0	0.8	MP3-Y2223M2GP5B

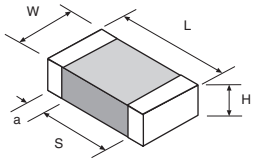


MURATA type GRM

An extensive range of surface mount, multilayer ceramic capacitors from Murata offering a choice of chip size, dielectric and in numerous cases voltage. Terminations have a nickel barrier for improved solderability. Supplied taped and reeled.

- High performance & reliability
- Choice of dielectric : **NP0 (C0G), X7R, X5R** or **Y5V**
- Choice of voltage in numerous cases
- Suitable for wave & reflow soldering
- Values from **0.1pF to 1µF**
- Nickel barrier terminations
- Industry standard chip sizes : **0201, 0402, 0603 & 0805**
- Supplied taped & reeled

Dimensions (mm)



Chip Size	L	W	H max.	a	S
0201	0.6	0.3	0.33	0.1 min.	0.2 min.
0402	1.0	0.5	0.55	0.15 min.	0.4 min.
0603	1.6	0.8	0.9	0.2 min.	0.5 min.
0805	2.0	1.25	0.6 – 1.35	0.2 min.	0.7 min.

Specification	GRM
Working rating	As listed
Capacitance tolerance	NP0 ±5% (except B: ±0.1pF, C: ±0.25pF, D: ±0.5pF) X7R ±10% X5R ±10% (4V: ±20%) Y5V -20, +80%
Temperature coefficient	NP0 ±30ppm/°C X7R ±15% over -55°C to +125°C X5R ±15% over -55°C to +85°C Y5V +22%, +82% over -30°C to +85°C
Operating temperature range	NP0/X7R -55°C to +125°C X5R -55°C to +85°C Y5V -30°C to +85°C
Insulation resistance (whichever is less)	≥10,000MΩ or 500MΩ/µF (all dielectrics)

Marking and Packaging

Marking	No marking appears on the product
Tape	8mm wide, 4mm pitch (2mm pitch: 0201 & 0402 chip sizes) Order codes ending in 'D' denotes paper tape, 'L' denotes embossed tape
Reel	178mm dia.

N.B. Some popular Murata parts are also available to order in larger quantities on 330mm dia. reels, indicated by an asterisk (*) next to the value.

DIELECTRIC PERFORMANCE & APPLICATION

NP0 (C0G): Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. Used for precision timing, active and passive filtering, frequency setting and tuning circuits.

X5R/X7R: Medium K semi-stable types offering greater volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

Y5V: High K general purpose type for by-pass and decoupling applications where temperature stability is not of major importance. Offer highest volumetric efficiency.

Order Codes for Murata type GRM are listed on the following four pages > > > >

+44 (0)1945 47 47 47 www.anglia.com info@anglia.com 107

MURATA type GRM (0201)

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
50 Volt		
0.1	0.1pF	GRM0335C1HR10BD01D
0.2	0.1pF	GRM0335C1HR20BD01D
0.3	0.1pF	GRM0335C1HR30BD01D
0.4	0.1pF	GRM0335C1HR40BD01D
0.5	0.1pF	GRM0335C1HR50BD01D
0.6	0.1pF	GRM0335C1HR60BD01D
0.7	0.1pF	GRM0335C1HR70BD01D
0.8	0.1pF	GRM0335C1HR80BD01D
0.9	0.1pF	GRM0335C1HR90BD01D
1.0	0.25pF	GRM0335C1H1R0CD01D
1.2	0.25pF	GRM0335C1H1R2CD01D
1.5	0.25pF	GRM0335C1H1R5CD01D
1.8	0.25pF	GRM0335C1H1R8CD01D
2.0	0.25pF	GRM0335C1H2R0CD01D
2.2	0.25pF	GRM0335C1H2R2CD01D
2.7	0.25pF	GRM0335C1H2R7CD01D
3.0	0.25pF	GRM0335C1H3R0CD01D
3.3	0.25pF	GRM0335C1H3R3CD01D
3.9	0.25pF	GRM0335C1H3R9CD01D
4.0	0.25pF	GRM0335C1H4R0CD01D
4.7	0.25pF	GRM0335C1H4R7CD01D
5.0	0.25pF	GRM0335C1H5R0CD01D
5.6	0.5pF	GRM0335C1H5R6DD01D
6.0	0.5pF	GRM0335C1H6R0DD01D
6.8	0.5pF	GRM0335C1H6R8DD01D
7.0	0.5pF	GRM0335C1H7R0DD01D
8.0	0.5pF	GRM0335C1H8R0DD01D
8.2	0.5pF	GRM0335C1H8R2DD01D
9.0	0.5pF	GRM0335C1H9R0DD01D
10	5%	GRM0335C1H100JD01D
12	5%	GRM0335C1H120JD01D
15	5%	GRM0335C1H150JD01D
18	5%	GRM0335C1H180JD01D
22	5%	GRM0335C1H220JD01D
27	5%	GRM0335C1H270JD01D
33	5%	GRM0335C1H330JD01D
39	5%	GRM0335C1H390JD01D
47	5%	GRM0335C1H470JD01D
56	5%	GRM0335C1H560JD01D
68	5%	GRM0335C1H680JD01D
82	5%	GRM0335C1H820JD01D
100	5%	GRM0335C1H101JD01D

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
25 Volt		
0.1	0.1pF	GRM0335C1ER10BZ01D
0.2	0.1pF	GRM0335C1ER20BZ01D
0.3	0.1pF	GRM0335C1ER30BZ01D
0.4	0.1pF	GRM0335C1ER40BZ01D
0.5	0.1pF	GRM0335C1ER50BZ01D
0.6	0.1pF	GRM0335C1ER60BZ01D
0.7	0.1pF	GRM0335C1ER70BZ01D
0.8	0.1pF	GRM0335C1ER80BZ01D
0.9	0.1pF	GRM0335C1ER90BZ01D
1.0	0.25pF	GRM0335C1E1R0CD01D
1.2	0.25pF	GRM0335C1E1R2CD01D
1.5	0.25pF	GRM0335C1E1R5CD01D
1.8	0.25pF	GRM0335C1E1R8CD01D
2.0	0.25pF	GRM0335C1E2R0CD01D
2.2	0.25pF	GRM0335C1E2R2CD01D
2.7	0.25pF	GRM0335C1E2R7CD01D
3.0	0.25pF	GRM0335C1E3R0CD01D
3.3	0.25pF	GRM0335C1E3R3CD01D
3.9	0.25pF	GRM0335C1E3R9CD01D
4.0	0.25pF	GRM0335C1E4R0CD01D
4.7	0.25pF	GRM0335C1E4R7CD01D
5.0	0.25pF	GRM0335C1E5R0CD01D
5.6	0.5pF	GRM0335C1E5R6DD01D
6.0	0.5pF	GRM0335C1E6R0DD01D
6.8	0.5pF	GRM0335C1E6R8DD01D
7.0	0.5pF	GRM0335C1E7R0DD01D
8.0	0.5pF	GRM0335C1E8R0DD01D
8.2	0.5pF	GRM0335C1E8R2DD01D
9.0	0.5pF	GRM0335C1E9R0DD01D
10	5%	GRM0335C1E100JD01D
12	5%	GRM0335C1E120JD01D
15	5%	GRM0335C1E150JD01D
18	5%	GRM0335C1E180JD01D
22	5%	GRM0335C1E220JD01D
27	5%	GRM0335C1E270JD01D
33	5%	GRM0335C1E330JD01D
39	5%	GRM0335C1E390JD01D
47	5%	GRM0335C1E470JD01D
56	5%	GRM0335C1E560JD01D
68	5%	GRM0335C1E680JD01D
82	5%	GRM0335C1E820JD01D
100	5%	GRM0335C1E101JD01D

X7R dielectric : 10% tol.

Value (pF)	Order Code
25 Volt	
100	GRM033R71E101KA01D
150	GRM033R71E151KA01D
220	GRM033R71E221KA01D
330	GRM033R71E331KA01D
470	GRM033R71E471KA01D
680	GRM033R71E681KA01D
1000	GRM033R71E102KA01D
1500	GRM033R71E152KA01D
16 Volt	
2200	GRM033R71C222KA88D
3300	GRM033R71C332KA88D
10 Volt	
4700	GRM033R71A472KA01D
6800	GRM033R71A682KA01D
(µF)	
0.01	GRM033R71A103KA01D

X5R dielectric : 10% tol.

Value (µF)	Order Code
6.3 Volt	
0.015	GRM033R60J153KE01D
0.022	GRM033R60J223KE01D
0.033	GRM033R60J333KE01D
0.047	GRM033R60J473KE19D
0.068	GRM033R60J683KE19D
0.1	GRM033R60J104KE19D

X5R dielectric : 20% tol.

Value (µF)	Order Code
4 Volt	
0.22	GRM033R60G224ME15D

MURATA type GRM (0402)

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
50 Volt		
0.5	0.25pF	GRM1555C1HR50CZ01D
1.0	0.25pF	GRM1555C1H1R0CZ01D
1.1	0.25pF	GRM1555C1H1R1CZ01D
1.2	0.25pF	GRM1555C1H1R2CZ01D
1.3	0.25pF	GRM1555C1H1R3CZ01D
1.5	0.25pF	GRM1555C1H1R5CZ01D
1.6	0.25pF	GRM1555C1H1R6CZ01D
1.8	0.25pF	GRM1555C1H1R8CZ01D
2.0	0.25pF	GRM1555C1H2R0CZ01D
2.2	0.25pF	GRM1555C1H2R2CZ01D
2.4	0.25pF	GRM1555C1H2R4CZ01D
2.7	0.25pF	GRM1555C1H2R7CZ01D
3.0	0.25pF	GRM1555C1H3R0CZ01D
3.3	0.25pF	GRM1555C1H3R3CZ01D
3.6	0.25pF	GRM1555C1H3R6CZ01D
3.9	0.25pF	GRM1555C1H3R9CZ01D
4.3	0.25pF	GRM1555C1H4R3CZ01D
4.7	0.25pF	GRM1555C1H4R7CZ01D
5.1	0.5pF	GRM1555C1H5R1DZ01D
5.6	0.5pF	GRM1555C1H5R6DZ01D
6.8	0.5pF	GRM1555C1H6R8DZ01D
7.5	0.5pF	GRM1555C1H7R5DZ01D
8.2	0.5pF	GRM1555C1H8R2DZ01D
9.1	0.5pF	GRM1555C1H9R1DZ01D
10	5%	GRM1555C1H100JZ01D
11	5%	GRM1555C1H110JZ01D
12	5%	GRM1555C1H120JZ01D
13	5%	GRM1555C1H130JZ01D
15	5%	GRM1555C1H150JZ01D
16	5%	GRM1555C1H160JZ01D
18	5%	GRM1555C1H180JZ01D
20	5%	GRM1555C1H200JZ01D
22	5%	GRM1555C1H220JZ01D
24	5%	GRM1555C1H240JZ01D
27	5%	GRM1555C1H270JZ01D
30	5%	GRM1555C1H300JZ01D
33	5%	GRM1555C1H330JZ01D
36	5%	GRM1555C1H360JZ01D
39	5%	GRM1555C1H390JZ01D
43	5%	GRM1555C1H430JZ01D
47	5%	GRM1555C1H470JZ01D
51	5%	GRM1555C1H510JZ01D
56	5%	GRM1555C1H560JD01D
62	5%	GRM1555C1H620JD01D
68	5%	GRM1555C1H680JD01D
75	5%	GRM1555C1H750JD01D
82	5%	GRM1555C1H820JD01D
91	5%	GRM1555C1H910JD01D
100	5%	GRM1555C1H101JD01D
110	5%	GRM1555C1H111JA01D
120	5%	GRM1555C1H121JA01D
130	5%	GRM1555C1H131JA01D
150	5%	GRM1555C1H151JA01D
160	5%	GRM1555C1H161JA01D
180	5%	GRM1555C1H181JA01D
220	5%	GRM1555C1H221JA01D
270	5%	GRM1555C1H271JA01D
330	5%	GRM1555C1H331JA01D
390	5%	GRM1555C1H391JA01D
470	5%	GRM1555C1H471JA01D
560	5%	GRM1555C1H561JA01D
680	5%	GRM1555C1H681JA01D
820	5%	GRM1555C1H821JA01D
1000	5%	GRM1555C1H102JA01D

X7R dielectric : 10% tol.

Value (pF)	Order Code
100 Volt	
220	GRM155R72A221KA01D
330	GRM155R72A331KA01D
470	GRM155R72A471KA01D
680	GRM155R72A681KA01D
1000	GRM155R72A102KA01D
1500	GRM155R72A152KA01D
2200	GRM155R72A222KA01D
3300	GRM155R72A332KA01D
4700	GRM155R72A472KA01D
50 Volt	
220	GRM155R71H221KA01D
270	GRM155R71H271KA01D
330	GRM155R71H331KA01D
390	GRM155R71H391KA01D
470	GRM155R71H471KA01D
560	GRM155R71H561KA01D
680	GRM155R71H681KA01D
820	GRM155R71H821KA01D
1000	GRM155R71H102KA01D
1200	GRM155R71H122KA01D
1500	GRM155R71H152KA01D
1800	GRM155R71H182KA01D
2200	GRM155R71H222KA01D
2700	GRM155R71H272KA01D
3300	GRM155R71H332KA01D
3900	GRM155R71H392KA01D
4700	GRM155R71H472KA01D
6800	GRM155R71H682KA88D
(µF)	
0.01	GRM155R71H103KA88D
0.015	GRM155R71H153KA12D
(pF)	
25 Volt	
4700	GRM155R71E472KA01D
5600	GRM155R71E562KA01D
6800	GRM155R71E682KA01D
(µF)	
25 Volt	
0.022	GRM155R71H223KA12D
0.01	GRM155R71E103KA01D
0.015	GRM155R71E153KA61D
0.022	GRM155R71E223KA61D
0.033	GRM155R71E333KA88D
0.047	GRM155R71E473KA88D
(pF)	
16 Volt	
8200	GRM155R71C822KA01D
(µF)	
0.01	GRM155R71C103KA01D
0.015	GRM155R71C153KA01D
0.022	GRM155R71C223KA01D
0.068	GRM155R71C683KA88D
0.1	GRM155R71C104KA88D
10 Volt	
0.047	GRM155R71A473KA01D
0.068	GRM155R71A683KA01D

Y5V dielectric : -20, +80% tol.

Value (pF)	Order Code
50 Volt	
2200	GRM155F51H222ZA01D
3300	GRM155F51H332ZA01D
3900	GRM155F51H392ZA01D
4700	GRM155F51H472ZA01D
5600	GRM155F51H562ZA01D
6800	GRM155F51H682ZA01D
8200	GRM155F51H822ZA01D
(µF)	
0.01	GRM155F51H103ZA01D
0.012	GRM155F51H123ZA01D
0.015	GRM155F51H153ZA01D
25 Volt	
0.022	GRM155F51E223ZA01D
16 Volt	
0.033	GRM155F51C333ZA01D
0.039	GRM155F51C393ZA01D
0.047	GRM155F51C473ZA01D
0.056	GRM155F51C563ZA01D
0.068	GRM155F51C683ZA01D
0.082	GRM155F51C823ZA01D
0.1	GRM155F51C104ZA01D
10 Volt	
0.22	GRM155F51A224ZA01D
0.33	GRM155F51A334ZE01D
0.47	GRM155F51A474ZE01D
6.3 Volt	
1.0	GRM155F50J105ZE01D

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

MURATA type GRM (0603)

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
200 Volt		
1.0	0.25pF	GRM1885C2D1R0CV01D
1.1	0.25pF	GRM1885C2D1R1CZ01D
1.2	0.25pF	GRM1885C2D1R2CV01D
1.3	0.25pF	GRM1885C2D1R3CZ01D
1.5	0.25pF	GRM1885C2D1R5CV01D
1.6	0.25pF	GRM1885C2D1R6CZ01D
1.8	0.25pF	GRM1885C2D1R8CV01D
2.0	0.25pF	GRM1885C2D2R0CZ01D
2.2	0.25pF	GRM1885C2D2R2CV01D
2.4	0.25pF	GRM1885C2D2R4CZ01D
2.7	0.25pF	GRM1885C2D2R7CV01D
3.0	0.25pF	GRM1885C2D3R0CZ01D
3.3	0.25pF	GRM1885C2D3R3CV01D
3.6	0.25pF	GRM1885C2D3R6CZ01D
3.9	0.25pF	GRM1885C2D3R9CV01D
4.3	0.25pF	GRM1885C2D4R3CV01D
4.7	0.25pF	GRM1885C2D4R7CV01D
5.1	0.5pF	GRM1885C2D5R1DZ01D
5.6	0.5pF	GRM1885C2D5R6DV01D
6.2	0.5pF	GRM1885C2D6R2DZ01D
6.8	0.5pF	GRM1885C2D6R8DV01D
7.5	0.5pF	GRM1885C2D7R5DZ01D
8.2	0.5pF	GRM1885C2D8R2DV01D
9.1	0.5pF	GRM1885C2D9R1DZ01D
10	0.5pF	GRM1885C2D100DZ01D
100 Volt		
11	5%	GRM1885C2A110JZ01D
12	5%	GRM1885C2A120JA01D
13	5%	GRM1885C2A130JZ01D
15	5%	GRM1885C2A150JZ01D
16	5%	GRM1885C2A160JZ01D
18	5%	GRM1885C2A180JZ01D
20	5%	GRM1885C2A200JZ01D
22	5%	GRM1885C2A220JZ01D
24	5%	GRM1885C2A240JZ01D
27	5%	GRM1885C2A270JZ01D
30	5%	GRM1885C2A300JZ01D
33	5%	GRM1885C2A330JZ01D
36	5%	GRM1885C2A360JZ01D
39	5%	GRM1885C2A390JZ01D
43	5%	GRM1885C2A430JZ01D
47	5%	GRM1885C2A470JZ01D
51	5%	GRM1885C2A510JZ01D
56	5%	GRM1885C2A560JZ01D
62	5%	GRM1885C2A620JZ01D
68	5%	GRM1885C2A680JZ01D
75	5%	GRM1885C2A750JZ01D
82	5%	GRM1885C2A820JZ01D
91	5%	GRM1885C2A910JZ01D
100	5%	GRM1885C2A101JA01D
110	5%	GRM1885C2A111JZ01D
120	5%	GRM1885C2A121JD01D
130	5%	GRM1885C2A131JD01D
150	5%	GRM1885C2A151JD01D
160	5%	GRM1885C2A161JD01D
180	5%	GRM1885C2A181JA01D
220	5%	GRM1885C2A221JA01D
270	5%	GRM1885C2A271JA01D
330	5%	GRM1885C2A331JA01D
390	5%	GRM1885C2A391JA01D
470	5%	GRM1885C2A471JA01D
560	5%	GRM1885C2A561JA01D
680	5%	GRM1885C2A681JA01D
820	5%	GRM1885C2A821JA01D
1000	5%	GRM1885C2A102JA01D
1200	5%	GRM1885C2A122JA01D
1500	5%	GRM1885C2A152JA01D

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
50 Volt		
0.5	0.25pF	GRM1885C1HR50CZ01D
1.0	0.25pF	GRM1885C1H1R0CZ01D
1.1	0.25pF	GRM1885C1H1R1CZ01D
1.2	0.25pF	GRM1885C1H1R2CZ01D
1.3	0.25pF	GRM1885C1H1R3CZ01D
1.5	0.25pF	GRM1885C1H1R5CZ01D
1.6	0.25pF	GRM1885C1H1R6CZ01D
1.8	0.25pF	GRM1885C1H1R8CZ01D
2.0	0.25pF	GRM1885C1H2R0CZ01D
2.2	0.25pF	GRM1885C1H2R2CZ01D
2.4	0.25pF	GRM1885C1H2R4CZ01D
2.7	0.25pF	GRM1885C1H2R7CZ01D
3.0	0.25pF	GRM1885C1H3R0CZ01D
3.3	0.25pF	GRM1885C1H3R3CZ01D
3.6	0.25pF	GRM1885C1H3R6CZ01D
3.9	0.25pF	GRM1885C1H3R9CZ01D
4.3	0.25pF	GRM1885C1H4R3CZ01D
4.7	0.25pF	GRM1885C1H4R7CZ01D
5.1	0.5pF	GRM1885C1H5R1DZ01D
5.6	0.5pF	GRM1885C1H5R6DZ01D
6.2	0.5pF	GRM1885C1H6R2DZ01D
6.8	0.5pF	GRM1885C1H6R8DZ01D
7.5	0.5pF	GRM1885C1H7R5DZ01D
8.2	0.5pF	GRM1885C1H8R2DZ01D
9.1	0.5pF	GRM1885C1H9R1DZ01D
10	5%	GRM1885C1H100JA01D
11	5%	GRM1885C1H110JZ01D
12	5%	GRM1885C1H120JA01D
13	5%	GRM1885C1H130JZ01D
15	5%	GRM1885C1H150JA01D
16	5%	GRM1885C1H160JA01D
18	5%	GRM1885C1H180JA01D
20	5%	GRM1885C1H200JZ01D
22	5%	GRM1885C1H220JA01D
24	5%	GRM1885C1H240JZ01D
27	5%	GRM1885C1H270JA01D
30	5%	GRM1885C1H300JA01D
33	5%	GRM1885C1H330JA01D
36	5%	GRM1885C1H360JZ01D
39	5%	GRM1885C1H390JA01D
43	5%	GRM1885C1H430JZ01D
47	5%	GRM1885C1H470JA01D
51	5%	GRM1885C1H510JZ01D
56	5%	GRM1885C1H560JA01D
62	5%	GRM1885C1H620JZ01D
68	5%	GRM1885C1H680JA01D
75	5%	GRM1885C1H750JZ01D
82	5%	GRM1885C1H820JA01D
91	5%	GRM1885C1H910JZ01D
100	5%	GRM1885C1H101JA01D
110	5%	GRM1885C1H111JA01D
120	5%	GRM1885C1H121JA01D
130	5%	GRM1885C1H131JA01D
150	5%	GRM1885C1H151JA01D
160	5%	GRM1885C1H161JA01D
180	5%	GRM1885C1H181JA01D
200	5%	GRM1885C1H201JA01D
220	5%	GRM1885C1H221JA01D
240	5%	GRM1885C1H241JA01D
270	5%	GRM1885C1H271JA01D
300	5%	GRM1885C1H301JA01D
330	5%	GRM1885C1H331JA01D
360	5%	GRM1885C1H361JA01D
390	5%	GRM1885C1H391JA01D
430	5%	GRM1885C1H431JA01D
470	5%	GRM1885C1H471JA01D
510	5%	GRM1885C1H511JA01D
560	5%	GRM1885C1H561JA01D
680	5%	GRM1885C1H681JA01D
820	5%	GRM1885C1H821JA01D
1000	5%	GRM1885C1H102JA01D
1200	5%	GRM1885C1H122JA01D
1500	5%	GRM1885C1H152JA01D
1800	5%	GRM1885C1H182JA01D
2200	5%	GRM1885C1H222JA01D
2700	5%	GRM1885C1H272JA01D
3300	5%	GRM1885C1H332JA01D
3900	5%	GRM1885C1H392JA01D

X7R dielectric : 10% tol.

Value (pF)	Order Code
200 Volt	
220	GRM188R72D221KY21D
270	GRM188R72D271KY21D
330	GRM188R72D331KY21D
390	GRM188R72D391KY21D
470	GRM188R72D471KY21D
560	GRM188R72D561KY21D
680	GRM188R72D681KY21D
820	GRM188R72D821KY21D
1000	GRM188R72D102KY21D
1200	GRM188R72D122KY21D
1500	GRM188R72D152KY21D
1800	GRM188R72D182KY21D
100 Volt	
220	GRM188R72A221KA01D
330	GRM188R72A331KA01D
470	GRM188R72A471KA01D
680	GRM188R72A681KA01D
1000	GRM188R72A102KA01D
1500	GRM188R72A152KA01D
2200	GRM188R72A222KD01D
2700	GRM188R72A272KD01D
3300	GRM188R72A332KD01D
4700	GRM188R72A472KA01D
6800	GRM188R72A682KA01D
(µF)	
0.01	GRM188R72A103KA01D
0.1	GRM188R72A104KA35D
(pF)	
50 Volt	
220	GRM188R71H221KD01D
270	GRM188R71H271KD01D
330	GRM188R71H331KA01D
390	GRM188R71H391KA01D
470	GRM188R71H471KA01D
560	GRM188R71H561KA01D
680	GRM188R71H681KA01D
820	GRM188R71H821KA01D
1000	GRM188R71H102KA01D
1200	GRM188R71H122KA01D
1500	GRM188R71H152KA01D
1800	GRM188R71H182KA01D
2200	GRM188R71H222KA01D
2700	GRM188R71H272KA01D
3300	GRM188R71H332KA01D
3900	GRM188R71H392KA01D
4700	GRM188R71H472KA01D
5600	GRM188R71H562KA01D
6800	GRM188R71H682KA01D
8200	GRM188R71H822KA01D
(µF)	
0.01	GRM188R71H103KA01D
0.012	GRM188R71H123KA01D
0.015	GRM188R71H153KA01D
0.018	GRM188R71H183KA01D
0.022	GRM188R71H223KA01D
0.033	GRM188R71H333KA61D
0.047	GRM188R71H473KA61D
0.068	GRM188R71H683KA93D
0.1	GRM188R71H104KA93D
25 Volt	
0.022	GRM188R71E223KA01D
0.027	GRM188R71E273KA01D
0.033	GRM188R71E333KA01D
0.039	GRM188R71E393KA01D
0.047	GRM188R71E473KA01D
0.068	GRM188R71E683KA01D
0.1	GRM188R71E104KA01D
0.15	GRM188R71E154KA01D
0.22	GRM188R71E224KA88D
0.47	GRM188R71E474KA12D

X7R dielectric : 10% tol.

Value (µF)	Order Code
16 Volt	
0.033	GRM188R71C333KA01D
0.039	GRM188R71C393KA01D
0.047	GRM188R71C473KA01D
0.056	GRM188R71C563KA01D
0.068	GRM188R71C683KA01D
0.082	GRM188R71C823KA01D
0.1	GRM188R71C104KA01D
0.15	GRM188R71C154KA01D
0.22	GRM188R71C224KA01D
0.33	GRM188R71C334KA01D
0.47	GRM188R71C474KA88D
10 Volt	
0.12	GRM188R71A124KA01D
0.15	GRM188R71A154KA01D
0.18	GRM188R71A184KA01D
0.22	GRM188R71A224KA01D
0.47	GRM188R71A474KA61D
0.68	GRM188R71A684KA61D

Y5V dielectric : -20, +80% tol.

Value (µF)	Order Code
50 Volt	
0.01	GRM188F51H103ZA01D
0.015	GRM188F51H153ZA01D
0.022	GRM188F51H223ZA01D
0.033	GRM188F51H333ZA01D
0.047	GRM188F51H473ZA01D
25 Volt	
0.068	GRM188F51E683ZA01D
0.1	GRM188F51E104ZA01D
0.1*	GRM188F51E104ZA01J
16 Volt	
0.15	GRM188F51C154ZA01D
0.22	GRM188F51C224ZA01D
0.33	GRM188F51C334ZA01D
10 Volt	
0.47	GRM188F51A474ZA01D
1.0	GRM188F51A105ZC01D

* Supplied in larger quantity, 330mm dia. reels

MURATA type GRM (0805)

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tol.	Order Code
200 Volt		
1.0	0.25pF	GRM2195C2D1R0CY21D
1.1	0.25pF	GRM2195C2D1R1CY51D
1.2	0.25pF	GRM2195C2D1R2CY21D
1.3	0.25pF	GRM2195C2D1R3CY21D
1.5	0.25pF	GRM2195C2D1R5CY21D
1.6	0.25pF	GRM2195C2D1R6CY51D
1.8	0.25pF	GRM2195C2D1R8CY21D
2.0	0.25pF	GRM2195C2D2R0CY51D
2.2	0.25pF	GRM2195C2D2R2CY21D
2.4	0.25pF	GRM2195C2D2R4CY21D
2.7	0.25pF	GRM2195C2D2R7CY21D
3.0	0.25pF	GRM2195C2D3R0CY21D
3.3	0.25pF	GRM2195C2D3R3CY21D
3.6	0.25pF	GRM2195C2D3R6CY51D
3.9	0.25pF	GRM2195C2D3R9CY21D
4.3	0.25pF	GRM2195C2D4R3CY21D
4.7	0.25pF	GRM2195C2D4R7CY21D
5.1	0.5pF	GRM2195C2D5R1DY21D
5.6	0.5pF	GRM2195C2D5R6DV01D
6.2	0.5pF	GRM2195C2D6R2DY21D
6.8	0.5pF	GRM2195C2D6R8DY21D
7.5	0.5pF	GRM2195C2D7R5DY21D
8.2	0.5pF	GRM2195C2D8R2DV01D
9.1	0.5pF	GRM2195C2D9R1DY21D
10	5%	GRM2195C2D100JV01D
11	5%	GRM2195C2D110JY71D
12	5%	GRM2195C2D120JV01D
13	5%	GRM2195C2D130JV01D
15	5%	GRM2195C2D150JY21D
16	5%	GRM2195C2D160JY90D
18	5%	GRM2195C2D180JV01D
20	5%	GRM2195C2D200JY71D
22	5%	GRM2195C2D220JV01D
24	5%	GRM2195C2D240JY71D
27	5%	GRM2195C2D270JV01D
30	5%	GRM2195C2D300JY71D
33	5%	GRM2195C2D330JV01D
36	5%	GRM2195C2D360JY71D
39	5%	GRM2195C2D390JV01D
43	5%	GRM2195C2D430JY71D
47	5%	GRM2195C2D470JV01D
51	5%	GRM2195C2D510JY71D
56	5%	GRM2195C2D560JV01D
62	5%	GRM21B5C2D620JY71L
68	5%	GRM21B5C2D680JV01L
75	5%	GRM21B5C2D750JY71L
82	5%	GRM21B5C2D820JV01L
91	5%	GRM21B5C2D910JY71L
100	5%	GRM21B5C2D101JV01L
110	5%	GRM21B5C2D111JD01L
120	5%	GRM21B5C2D121JV01L
130	5%	GRM21B5C2D131JY71L
150	5%	GRM21B5C2D151JV01L
160	5%	GRM21B5C2D161JD01L
180	5%	GRM21B5C2D181JY21L
200	5%	GRM21B5C2D201JY21L
220	5%	GRM21B5C2D221JY21L
(pF)		
100 Volt		
10	5%	GRM2195C2A100JZ01D
12	5%	GRM2195C2A120JZ01D
15	5%	GRM2195C2A150JZ01D
18	5%	GRM2195C2A180JZ01D
22	5%	GRM2195C2A220JZ01D
27	5%	GRM2195C2A270JZ01D
33	5%	GRM2195C2A330JZ01D
39	5%	GRM2195C2A390JZ01D
47	5%	GRM2195C2A470JZ01D
56	5%	GRM2195C2A560JZ01D
62	5%	GRM2195C2A620JD51D
68	5%	GRM2195C2A680JZ01D
75	5%	GRM2195C2A750JZ01D
82	5%	GRM2195C2A820JZ01D
91	5%	GRM2195C2A910JZ01D
100	5%	GRM2165C2A101JA01D
110	5%	GRM2195C2A111JZ01D
120	5%	GRM2195C2A121JZ01D
130	5%	GRM2195C2A131JZ01D
150	5%	GRM2195C2A151JZ01D
160	5%	GRM2195C2A161JZ01D
180	5%	GRM2195C2A181JZ01D
200	5%	GRM2195C2A201JZ01D
220	5%	GRM2195C2A221JZ01D
240	5%	GRM2195C2A241JZ01D
270	5%	GRM2165C2A271JA01D
300	5%	GRM2195C2A301JZ01D
330	5%	GRM2165C2A331JA01D
360	5%	GRM2195C2A361JZ01D

(cont.)

* Supplied in larger quantity, 330mm dia. reels

NP0 (C0G) dielectric

Value (pF)	Tol.	Order Code
100 Volt (cont.)		
390	5%	GRM21B5C2A391JZ01L
430	5%	GRM21B5C2A431JZ01L
470	5%	GRM21B5C2A471JZ01L
510	5%	GRM21B5C2A511JD01L
560	5%	GRM2165C2A561JA01D
620	5%	GRM21B5C2A621JD01L
680	5%	GRM21B5C2A681JD01L
820	5%	GRM2165C2A821JA01D
1000	5%	GRM2165C2A102JA01D
1200	5%	GRM2165C2A122JA01D
1500	5%	GRM2165C2A152JA01D
1800	5%	GRM2165C2A182JA01D
2200	5%	GRM2165C2A222JA01D
2700	5%	GRM2165C2A272JA01D
3300	5%	GRM2165C2A332JA01D
50 Volt		
0.5	0.25pF	GRM2165C1HR50CD01D
1.0	0.25pF	GRM2165C1H1R0CD01D
1.1	0.25pF	GRM2165C1H1R1CD01D
1.2	0.25pF	GRM2165C1H1R2CD01D
1.3	0.25pF	GRM2165C1H1R3CD01D
1.5	0.25pF	GRM2165C1H1R5CD01D
1.6	0.25pF	GRM2165C1H1R6CD01D
1.8	0.25pF	GRM2165C1H1R8CD01D
2.0	0.25pF	GRM2165C1H2R0CD01D
2.2	0.25pF	GRM2165C1H2R2CD01D
2.4	0.25pF	GRM2165C1H2R4CD01D
2.7	0.25pF	GRM2165C1H2R7CD01D
3.0	0.25pF	GRM2165C1H3R0CD01D
3.3	0.25pF	GRM2165C1H3R3CD01D
3.6	0.25pF	GRM2165C1H3R6CD01D
3.9	0.25pF	GRM2165C1H3R9CD01D
4.3	0.25pF	GRM2165C1H4R3CD01D
4.7	0.25pF	GRM2165C1H4R7CD01D
5.1	0.5pF	GRM2165C1H5R1DD01D
5.6	0.5pF	GRM2165C1H5R6DD01D
6.2	0.5pF	GRM2165C1H6R2DD01D
6.8	0.5pF	GRM2165C1H6R8DD01D
7.5	0.5pF	GRM2165C1H7R5DD01D
8.2	0.5pF	GRM2165C1H8R2DZ01D
9.1	0.5pF	GRM2165C1H9R1DD01D
10	5%	GRM2165C1H100JZ01D
11	5%	GRM2165C1H110JZ01D
12	5%	GRM2165C1H120JZ01D
13	5%	GRM2165C1H130JZ01D
15	5%	GRM2165C1H150JZ01D
16	5%	GRM2165C1H160JZ01D
18	5%	GRM2165C1H180JZ01D
20	5%	GRM2165C1H200JZ01D
22	5%	GRM2165C1H220JZ01D
24	5%	GRM2165C1H240JZ01D
27	5%	GRM2165C1H270JZ01D
30	5%	GRM2165C1H300JZ01D
33	5%	GRM2165C1H330JZ01D
36	5%	GRM2165C1H360JZ01D
39	5%	GRM2165C1H390JZ01D
43	5%	GRM2165C1H430JZ01D
47	5%	GRM2165C1H470JZ01D
51	5%	GRM2165C1H510JZ01D
56	5%	GRM2165C1H560JZ01D
62	5%	GRM2165C1H620JZ01D
68	5%	GRM2165C1H680JD01D
75	5%	GRM2165C1H750JZ01D
82	5%	GRM2165C1H820JZ01D
91	5%	GRM2165C1H910JZ01D
100	5%	GRM2165C1H101JA01D
110	5%	GRM2165C1H111JD01D
120	5%	GRM2165C1H121JA01D
130	5%	GRM2165C1H131JZ01D
150	5%	GRM2165C1H151JA01D
160	5%	GRM2165C1H161JD51D
180	5%	GRM2165C1H181JA01D
200	5%	GRM2165C1H201JA01D
220	5%	GRM2165C1H221JA01D
240	5%	GRM2165C1H241JD01D
270	5%	GRM2165C1H271JA01D
300	5%	GRM2165C1H301JA01D
330	5%	GRM2165C1H331JA01D
360	5%	GRM2165C1H361JD01D
390	5%	GRM2165C1H391JA01D
430	5%	GRM2165C1H431JZ01D
470	5%	GRM2165C1H471JA01D
510	5%	GRM2165C1H511JA01D
560	5%	GRM2165C1H561JA01D
620	5%	GRM2195C1H621JA01D
680	5%	GRM2195C1H681JA01D
750	5%	GRM2195C1H751JA01D
820	5%	GRM2195C1H821JA01D
910	5%	GRM2195C1H911JA01D
1000	5%	GRM2195C1H102JA01D
1100	5%	GRM2195C1H112JA01D
1200	5%	GRM2195C1H122JA01D
1300	5%	GRM2195C1H132JA01D
1500	5%	GRM2195C1H152JA01D
1600	5%	GRM21B5C1H162JD01L
1800	5%	GRM21B5C1H182JD01L
2000	5%	GRM21B5C1H202JD01L
2200	5%	GRM2165C1H222JA01D

(cont.)

NP0 (C0G) dielectric

Value (pF)	Tol.	Order Code
50 Volt (cont.)		
2400	5%	GRM21B5C1H242JD01L
4700	5%	GRM2165C1H472JA01D
5600	5%	GRM2195C1H562JA01D
6800	5%	GRM2195C1H682JA01D
8200	5%	GRM2195C1H822JA01D
(µF)		
0.01	5%	GRM2195C1H103JA01D
0.012	5%	GRM2195C1H123JA01D
0.015	5%	GRM2195C1H153JA01D
0.018	5%	GRM21B5C1H183JA01L
0.022	5%	GRM21B5C1H223JA01L

X7R dielectric : 10% tol.

Value (pF)	Order Code
200 Volt	
220	GRM219R72D221KY21D
270	GRM219R72D271KY21D
330	GRM219R72D331KY21D
390	GRM219R72D391KD01D
470	GRM219R72D471KY21D
560	GRM219R72D561KY21D
680	GRM219R72D681KY21D
820	GRM219R72D821KY21D
1000	GRM219R72D102KY21D
1200	GRM219R72D122KY21D
1500	GRM219R72D152KY21D
1800	GRM219R72D182KY21D
2200	GRM21BR72D222KY21L
2700	GRM21BR72D272KY21L
3300	GRM21BR72D332KY21L
3900	GRM21BR72D392KY21L
4700	GRM21BR72D472KY21L
5600	GRM21BR72D562KY21L
6800	GRM21BR72D682KY21L
8200	GRM21BR72D822KY21L
100 Volt	
220	GRM219R72A221KA01D
330	GRM219R72A331KA01D
470	GRM219R72A471KA01D
680	GRM219R72A681KA01D
1000	GRM219R72A102KA01D
1500	GRM219R72A152KA01D
2200	GRM219R72A222KA01D
2700	GRM219R72A272KD01D
3300	GRM219R72A332KA01D
3900	GRM219R72A392KD01D
4700	GRM219R72A472KA01D
5600	GRM219R72A562KD01D
6800	GRM219R72A682KD01D
8200	GRM21BR72A822KA01L
(µF)	
0.01	GRM21BR72A103KA01L
0.012	GRM21BR72A123KD01L
0.015	GRM21BR72A153KD01L
0.022	GRM21BR72A223KA01L
0.033	GRM21BR72A333KA01L
0.047	GRM21BR72A473KA01L
0.22	GRM21AR72A224KAC5L
0.33	GRM21AR72A334KAC5L
0.47	GRM21BR72A474KA73L
(pF)	
50 Volt	
330	GRM216R71H331KD01D
390	GRM216R71H391KD01D
470	GRM216R71H471KA01D
560	GRM216R71H561KA01D
680	GRM216R71H681KA01D
820	GRM216R71H821KA01D
1000	GRM216R71H102KA01D
1200	GRM216R71H122KA01D
1500	GRM216R71H152KA01D
1800	GRM216R71H182KA01D
2200	GRM216R71H222KA01D
2700	GRM216R71H272KA01D
3300	GRM216R71H332KA01D
3900	GRM216R71H392KA01D
4700	GRM216R71H472KA01D
5600	GRM216R71H562KA01D
6800	GRM216R71H682KA01D
8200	GRM216R71H822KA01D
(µF)	
0.01	GRM216R71H103KA01D
0.01*	GRM216R71H103KA01J
0.012	GRM216R71H123KA01D
0.015	GRM216R71H153KA01D
0.018	GRM216R71H183KA01D
0.022	GRM216R71H223KA01D
0.027	GRM219R71H273KA01D
0.033	GRM219R71H333KA01D
0.033	GRM219R71H333KA01D

(cont.)

X7R dielectric : 10% tol.

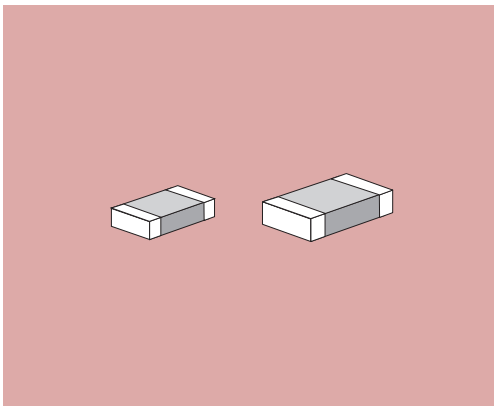
Value (µF)	Order Code
50 Volt (cont.)	
0.039	GRM219R71H393KA01D
0.047	GRM21BR71H473KA01L
0.056	GRM21BR71H563KD01L
0.068	GRM21BR71H683KA01L
0.1	GRM21BR71H104KA01L
0.1*	GRM21BR71H104KA01K
0.15	GRM21BR71H154KA01L
0.22	GRM21BR71H224KA01L
0.33	GRM219R71H334KA88D
0.47	GRM21BR71H474KA88L
25 Volt	
0.022	GRM216R71E223KA01D
0.033	GRM216R71E333KA01D
0.047	GRM219R71E473KA01D
0.056	GRM21BR71E563KA01L
0.068	GRM219R71E683KA01D
0.082	GRM21BR71E823KA01L
0.1	GRM21BR71E104KA01L
0.1*	GRM21BR71E104KA01K
0.12	GRM21BR71E124KA01L
0.15	GRM21BR71E154KA01L
0.22	GRM219R71E224KA01D
0.33	GRM21BR71E334KA01L
0.47	GRM219R71E474KA88D
0.47	GRM21BR71E474KA01L
0.68	GRM219R71E684KA88D
16 Volt	
0.047	GRM216R71C473KA01D
0.1	GRM219R71C104KA01D
0.18	GRM21BR71C184KA01L
0.22	GRM219R71C224KC01D
0.27	GRM219R71C274KC01D
0.33	GRM21BR71C334KA01L
0.39	GRM21BR71C394KA01L
0.47	GRM21BR71C474KA01L
0.47	GRM219R71C474KA01D
0.68	GRM219R71C684KA01D
1.0	GRM21BR71C105KA01L
10 Volt	
0.33	GRM216R71A334KA01D
0.56	GRM219R71A564KC01D
0.68	GRM21BR71A684KC01L
0.82	GRM21BR71A824KC01L
1.0	GRM21BR71A105KA01L

Z5U dielectric : 20% tol.

Value (µF)	Order Code
100 Volt	
0.01	GRM21BE42A103MD01L
0.015	GRM21BE42A153MD01L
50 Volt	
0.01	GRM216E41H103MA01D
0.015	GRM216E41H153MD01D
0.022	GRM216E41H223MA01D
0.033	GRM216E41H333MD01D
0.047	GRM216E41H473MA01D
0.068	GRM21BE41H683MD01L
0.1	GRM219E41H104MA01D
0.1*	GRM219E41H104MA01J

Y5V dielectric : -20,+80% tol.

Value (µF)	Order Code
100 Volt	
0.01	GRM21BF52A103ZD01L
0.015	GRM21BF52A153ZD01L
0.022	GRM21BF52A223ZD01L
50 Volt	
0.01	GRM216F51H103ZA01D
0.015	GRM216F51H153ZD01D
0.022	GRM216F51H223ZA01D
0.033	GRM216F51H333ZA01D
0.047	GRM216F51H473ZA01D
0.068	GRM216F51H683ZA01D
0.1	GRM219F51H104ZA01D
0.1*	GRM219F51H104ZA01J
0.15	GRM219F51H154ZA01D
0.22	GRM21BF51H224ZA01L
0.47	GRM219F51H474ZA01D
25 Volt	
0.1	GRM216F51E104ZA01D
0.1*	GRM216F51E104ZA01J
0.15	GRM216F51E154ZA01D
0.22	GRM219F51E224ZA01D
0.33	GRM21BF51E334ZA01L
0.47	GRM21BF51E474ZA01L
1.0	GRM219F51E105ZA01D
16 Volt	
0.47	GRM21BF51C474ZA01L
0.68	GRM21BF51C684ZA01L
1.0	GRM21BF51C105ZA01L
2.2	GRM21BF51C225ZA01L

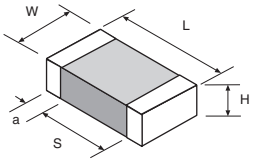


KEMET type C0805C & C1206C

An extensive range of surface mount, multilayer ceramic capacitors from KEMET offering a choice of chip size, dielectric and in numerous cases voltage. Terminations have a nickel barrier for improved solderability. Supplied taped and reeled.

- High performance & reliability
- Choice of dielectric : **NP0 (C0G), X7R, Z5U** or **Y5V**
- Choice of voltage in numerous cases
- Suitable for wave & reflow soldering
- Values from **0.5pF to 10µF**
- Nickel barrier terminations
- Industry standard chip sizes : **0805 & 1206**
- Supplied taped & reeled

Dimensions (mm)



Chip Size	L	W	H max.	a	S min.
0805	2.0	1.25	0.7 – 1.45	0.5	0.75
1206	3.2	1.6	0.88 – 1.9	0.5	(N/A)

Specification	0805 & 1206
Working rating	As listed
Capacitance tolerance	NP0 ±5% (except ±0.25pF & ±0.5pF where listed) X7R ±10% Z5U ±20% Y5V -20, +80%
Temperature coefficient	NP0 ±30ppm/°C X7R ±15% over -55°C to +125°C Z5U +22%, -56% over +10°C to +85°C Y5V +22%, -82% over -30°C to +85°C
Operating temperature range	NP0/X7R -55°C to +125°C Z5U +10°C to +85°C Y5V -30°C to +85°C
Insulation resistance (whichever is less)	≥100,000MΩ or 1000MΩ/µF (NP0 & X7R) ≥10,000MΩ or 100MΩ/µF (Z5U & Y5V ≥16V) ≥10,000MΩ or 50MΩ/µF (Y5V 10V)

Marking and Packaging

Marking	No marking appears on the product.
Tape	8mm wide, 4mm pitch
Reel	178mm dia.

DIELECTRIC PERFORMANCE & APPLICATION

NP0 (C0G): Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. Used for precision timing, active and passive filtering, frequency setting and tuning circuits.

X7R: Medium K semi-stable type offering greater volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

Z5U/Y5V: High K general purpose types for by-pass and decoupling applications where temperature stability is not of major importance. Offer highest volumetric efficiency.

Order Codes for C0805C & C1206C are listed on the following three pages > > > >

KEMET type C0805C (0805)

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
50 Volt *		
0.5	0.25pF	C0805C508C5GAC
0.75	0.25pF	C0805C758C5GAC
1.0	0.25pF	C0805C109C5GAC
1.1	0.25pF	C0805C119C5GAC
1.2	0.25pF	C0805C129C5GAC
1.3	0.25pF	C0805C139C5GAC
1.5	0.25pF	C0805C159C5GAC
1.6	0.25pF	C0805C169C5GAC
1.8	0.25pF	C0805C189C5GAC
2.0	0.25pF	C0805C209C5GAC
2.2	0.25pF	C0805C229C5GAC
2.4	0.25pF	C0805C249C5GAC
2.7	0.25pF	C0805C279C5GAC
3.0	0.25pF	C0805C309C5GAC
3.3	0.25pF	C0805C339C5GAC
3.6	0.25pF	C0805C369C5GAC
3.9	0.25pF	C0805C399C5GAC
4.3	0.25pF	C0805C439C5GAC
4.7	0.25pF	C0805C479C5GAC
5.1	0.5pF	C0805C519D5GAC
5.6	0.5pF	C0805C569D5GAC
6.2	0.5pF	C0805C629D5GAC
6.8	0.5pF	C0805C689D5GAC
7.5	0.5pF	C0805C759D5GAC
8.2	0.5pF	C0805C829D5GAC
9.1	0.5pF	C0805C919D5GAC
10	5%	C0805C100J5GAC
11	5%	C0805C110J5GAC
12	5%	C0805C120J5GAC
13	5%	C0805C130J5GAC
15	5%	C0805C150J5GAC
16	5%	C0805C160J5GAC
18	5%	C0805C180J5GAC
20	5%	C0805C200J5GAC
22	5%	C0805C220J5GAC
24	5%	C0805C240J5GAC
27	5%	C0805C270J5GAC
30	5%	C0805C300J5GAC
33	5%	C0805C330J5GAC
36	5%	C0805C360J5GAC
39	5%	C0805C390J5GAC
43	5%	C0805C430J5GAC
47	5%	C0805C470J5GAC
51	5%	C0805C510J5GAC
56	5%	C0805C560J5GAC
62	5%	C0805C620J5GAC
68	5%	C0805C680J5GAC
75	5%	C0805C750J5GAC
82	5%	C0805C820J5GAC
91	5%	C0805C910J5GAC
100	5%	C0805C101J5GAC
110	5%	C0805C111J5GAC
120	5%	C0805C121J5GAC
130	5%	C0805C131J5GAC
150	5%	C0805C151J5GAC
160	5%	C0805C161J5GAC
180	5%	C0805C181J5GAC
200	5%	C0805C201J5GAC
220	5%	C0805C221J5GAC
240	5%	C0805C241J5GAC
270	5%	C0805C271J5GAC
300	5%	C0805C301J5GAC
330	5%	C0805C331J5GAC
360	5%	C0805C361J5GAC
390	5%	C0805C391J5GAC
430	5%	C0805C431J5GAC
470	5%	C0805C471J5GAC
510	5%	C0805C511J5GAC
560	5%	C0805C561J5GAC
620	5%	C0805C621J5GAC
680	5%	C0805C681J5GAC
750	5%	C0805C751J5GAC
820	5%	C0805C821J5GAC
910	5%	C0805C911J5GAC
1000	5%	C0805C102J5GAC
1100	5%	C0805C112J5GAC
1200	5%	C0805C122J5GAC
1300	5%	C0805C132J5GAC
1500	5%	C0805C152J5GAC
1600	5%	C0805C162J5GAC
1800	5%	C0805C182J5GAC
25 Volt		
2000	5%	C0805C202J3GAC
2200	5%	C0805C222J3GAC
2400	5%	C0805C242J3GAC
2700	5%	C0805C272J3GAC
3000	5%	C0805C302J3GAC
3300	5%	C0805C332J3GAC
3600	5%	C0805C362J3GAC
3900	5%	C0805C392J3GAC

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
100 Volt		
0.5	0.25pF	C0805C508C1GAC
0.75	0.25pF	C0805C758C1GAC
1.0	0.25pF	C0805C109C1GAC
1.1	0.25pF	C0805C119C1GAC
1.2	0.25pF	C0805C129C1GAC
1.3	0.25pF	C0805C139C1GAC
1.5	0.25pF	C0805C159C1GAC
1.6	0.25pF	C0805C169C1GAC
1.8	0.25pF	C0805C189C1GAC
2.0	0.25pF	C0805C209C1GAC
2.2	0.25pF	C0805C229C1GAC
2.4	0.25pF	C0805C249C1GAC
2.7	0.25pF	C0805C279C1GAC
3.0	0.25pF	C0805C309C1GAC
3.3	0.25pF	C0805C339C1GAC
3.6	0.25pF	C0805C369C1GAC
3.9	0.25pF	C0805C399C1GAC
4.3	0.25pF	C0805C439C1GAC
4.7	0.25pF	C0805C479C1GAC
5.1	0.5pF	C0805C519D1GAC
5.6	0.5pF	C0805C569D1GAC
6.2	0.5pF	C0805C629D1GAC
6.8	0.5pF	C0805C689D1GAC
7.5	0.5pF	C0805C759D1GAC
8.2	0.5pF	C0805C829D1GAC
9.1	0.5pF	C0805C919D1GAC
10	5%	C0805C100J1GAC
11	5%	C0805C110J1GAC
12	5%	C0805C120J1GAC
13	5%	C0805C130J1GAC
15	5%	C0805C150J1GAC
16	5%	C0805C160J1GAC
18	5%	C0805C180J1GAC
20	5%	C0805C200J1GAC
22	5%	C0805C220J1GAC
24	5%	C0805C240J1GAC
27	5%	C0805C270J1GAC
30	5%	C0805C300J1GAC
33	5%	C0805C330J1GAC
36	5%	C0805C360J1GAC
39	5%	C0805C390J1GAC
43	5%	C0805C430J1GAC
47	5%	C0805C470J1GAC
51	5%	C0805C510J1GAC
56	5%	C0805C560J1GAC
62	5%	C0805C620J1GAC
68	5%	C0805C680J1GAC
75	5%	C0805C750J1GAC
82	5%	C0805C820J1GAC
91	5%	C0805C910J1GAC
100	5%	C0805C101J1GAC
110	5%	C0805C111J1GAC
120	5%	C0805C121J1GAC
130	5%	C0805C131J1GAC
150	5%	C0805C151J1GAC
160	5%	C0805C161J1GAC
180	5%	C0805C181J1GAC
200	5%	C0805C201J1GAC
220	5%	C0805C221J1GAC
240	5%	C0805C241J1GAC
270	5%	C0805C271J1GAC
300	5%	C0805C301J1GAC
330	5%	C0805C331J1GAC
360	5%	C0805C361J1GAC
390	5%	C0805C391J1GAC
430	5%	C0805C431J1GAC
470	5%	C0805C471J1GAC
510	5%	C0805C511J1GAC
560	5%	C0805C561J1GAC
620	5%	C0805C621J1GAC
680	5%	C0805C681J1GAC
750	5%	C0805C751J1GAC
820	5%	C0805C821J1GAC
910	5%	C0805C911J1GAC
1000	5%	C0805C102J1GAC

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
200 Volt		
0.5	0.25pF	C0805C508C2GAC
0.75	0.25pF	C0805C758C2GAC
1.0	0.25pF	C0805C109C2GAC
1.1	0.25pF	C0805C119C2GAC
1.2	0.25pF	C0805C129C2GAC
1.3	0.25pF	C0805C139C2GAC
1.5	0.25pF	C0805C159C2GAC
1.6	0.25pF	C0805C169C2GAC
1.8	0.25pF	C0805C189C2GAC
2.0	0.25pF	C0805C209C2GAC
2.2	0.25pF	C0805C229C2GAC
2.4	0.25pF	C0805C249C2GAC
2.7	0.25pF	C0805C279C2GAC
3.0	0.25pF	C0805C309C2GAC
3.3	0.25pF	C0805C339C2GAC
3.6	0.25pF	C0805C369C2GAC
3.9	0.25pF	C0805C399C2GAC
4.3	0.25pF	C0805C439C2GAC
4.7	0.25pF	C0805C479C2GAC
5.1	0.5pF	C0805C519D2GAC
5.6	0.5pF	C0805C569D2GAC
6.2	0.5pF	C0805C629D2GAC
6.8	0.5pF	C0805C689D2GAC
7.5	0.5pF	C0805C759D2GAC
8.2	0.5pF	C0805C829D2GAC
9.1	0.5pF	C0805C919D2GAC
10	5%	C0805C100J2GAC
11	5%	C0805C110J2GAC
12	5%	C0805C120J2GAC
13	5%	C0805C130J2GAC
15	5%	C0805C150J2GAC
16	5%	C0805C160J2GAC
18	5%	C0805C180J2GAC
20	5%	C0805C200J2GAC
22	5%	C0805C220J2GAC
24	5%	C0805C240J2GAC
27	5%	C0805C270J2GAC
30	5%	C0805C300J2GAC
33	5%	C0805C330J2GAC
36	5%	C0805C360J2GAC
39	5%	C0805C390J2GAC
43	5%	C0805C430J2GAC
47	5%	C0805C470J2GAC
51	5%	C0805C510J2GAC
56	5%	C0805C560J2GAC
62	5%	C0805C620J2GAC
68	5%	C0805C680J2GAC
75	5%	C0805C750J2GAC
82	5%	C0805C820J2GAC
91	5%	C0805C910J2GAC
100	5%	C0805C101J2GAC
110	5%	C0805C111J2GAC
120	5%	C0805C121J2GAC
130	5%	C0805C131J2GAC
150	5%	C0805C151J2GAC
160	5%	C0805C161J2GAC
180	5%	C0805C181J2GAC
200	5%	C0805C201J2GAC
220	5%	C0805C221J2GAC
240	5%	C0805C241J2GAC
270	5%	C0805C271J2GAC
300	5%	C0805C301J2GAC
330	5%	C0805C331J2GAC
360	5%	C0805C361J2GAC
390	5%	C0805C391J2GAC
430	5%	C0805C431J2GAC
470	5%	C0805C471J2GAC

* 50 Volt parts can be used in 63 Volt applications

KEMET type C1206C (1206)

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
50 Volt *		
1.0	0.25pF	C1206C109C5GAC
1.1	0.25pF	C1206C119C5GAC
1.2	0.25pF	C1206C129C5GAC
1.3	0.25pF	C1206C139C5GAC
1.5	0.25pF	C1206C159C5GAC
1.6	0.25pF	C1206C169C5GAC
1.8	0.25pF	C1206C189C5GAC
2.0	0.25pF	C1206C209C5GAC
2.2	0.25pF	C1206C229C5GAC
2.4	0.25pF	C1206C249C5GAC
2.7	0.25pF	C1206C279C5GAC
3.0	0.25pF	C1206C309C5GAC
3.3	0.25pF	C1206C339C5GAC
3.6	0.25pF	C1206C369C5GAC
3.9	0.25pF	C1206C399C5GAC
4.3	0.25pF	C1206C439C5GAC
4.7	0.25pF	C1206C479C5GAC
5.1	0.5pF	C1206C519D5GAC
5.6	0.5pF	C1206C569D5GAC
6.2	0.5pF	C1206C629D5GAC
6.8	0.5pF	C1206C689D5GAC
7.5	0.5pF	C1206C759D5GAC
8.2	0.5pF	C1206C829D5GAC
9.1	0.5pF	C1206C919D5GAC
10	5%	C1206C100J5GAC
11	5%	C1206C110J5GAC
12	5%	C1206C120J5GAC
13	5%	C1206C130J5GAC
15	5%	C1206C150J5GAC
16	5%	C1206C160J5GAC
18	5%	C1206C180J5GAC
20	5%	C1206C200J5GAC
22	5%	C1206C220J5GAC
24	5%	C1206C240J5GAC
27	5%	C1206C270J5GAC
30	5%	C1206C300J5GAC
33	5%	C1206C330J5GAC
36	5%	C1206C360J5GAC
39	5%	C1206C390J5GAC
43	5%	C1206C430J5GAC
47	5%	C1206C470J5GAC
51	5%	C1206C510J5GAC
56	5%	C1206C560J5GAC
62	5%	C1206C620J5GAC
68	5%	C1206C680J5GAC
75	5%	C1206C750J5GAC
82	5%	C1206C820J5GAC
100	5%	C1206C101J5GAC
110	5%	C1206C111J5GAC
120	5%	C1206C121J5GAC
130	5%	C1206C131J5GAC
150	5%	C1206C151J5GAC
160	5%	C1206C161J5GAC
180	5%	C1206C181J5GAC
200	5%	C1206C201J5GAC
220	5%	C1206C221J5GAC
240	5%	C1206C241J5GAC
270	5%	C1206C271J5GAC
300	5%	C1206C301J5GAC
330	5%	C1206C331J5GAC
360	5%	C1206C361J5GAC

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
50 Volt * *continued*		
390	5%	C1206C391J5GAC
430	5%	C1206C431J5GAC
470	5%	C1206C471J5GAC
510	5%	C1206C511J5GAC
560	5%	C1206C561J5GAC
620	5%	C1206C621J5GAC
680	5%	C1206C681J5GAC
750	5%	C1206C751J5GAC
820	5%	C1206C821J5GAC
910	5%	C1206C911J5GAC
1000	5%	C1206C102J5GAC
1100	5%	C1206C112J5GAC
1200	5%	C1206C122J5GAC
1300	5%	C1206C132J5GAC
1500	5%	C1206C152J5GAC
1600	5%	C1206C162J5GAC
1800	5%	C1206C182J5GAC
2000	5%	C1206C202J5GAC
2200	5%	C1206C222J5GAC
2400	5%	C1206C242J5GAC
2700	5%	C1206C272J5GAC
3000	5%	C1206C302J5GAC
3300	5%	C1206C332J5GAC
3600	5%	C1206C362J5GAC
3900	5%	C1206C392J5GAC
4300	5%	C1206C432J5GAC
4700	5%	C1206C472J5GAC
5100	5%	C1206C512J5GAC
5600	5%	C1206C562J5GAC

* 50 Volt parts can be used in 63 Volt applications

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
100 Volt		
1.0	0.25pF	C1206C109C1GAC
1.1	0.25pF	C1206C119C1GAC
1.2	0.25pF	C1206C129C1GAC
1.3	0.25pF	C1206C139C1GAC
1.5	0.25pF	C1206C159C1GAC
1.6	0.25pF	C1206C169C1GAC
1.8	0.25pF	C1206C189C1GAC
2.0	0.25pF	C1206C209C1GAC
2.2	0.25pF	C1206C229C1GAC
2.4	0.25pF	C1206C249C1GAC
2.7	0.25pF	C1206C279C1GAC
3.0	0.25pF	C1206C309C1GAC
3.3	0.25pF	C1206C339C1GAC
3.6	0.25pF	C1206C369C1GAC
3.9	0.25pF	C1206C399C1GAC
4.3	0.25pF	C1206C439C1GAC
4.7	0.25pF	C1206C479C1GAC
5.1	0.5pF	C1206C519D1GAC
5.6	0.5pF	C1206C569D1GAC
6.2	0.5pF	C1206C629D1GAC
6.8	0.5pF	C1206C689D1GAC
7.5	0.5pF	C1206C759D1GAC
8.2	0.5pF	C1206C829D1GAC
9.1	0.5pF	C1206C919D1GAC
10	5%	C1206C100J1GAC
11	5%	C1206C110J1GAC
12	5%	C1206C120J1GAC
13	5%	C1206C130J1GAC
15	5%	C1206C150J1GAC
16	5%	C1206C160J1GAC
18	5%	C1206C180J1GAC
20	5%	C1206C200J1GAC
22	5%	C1206C220J1GAC
24	5%	C1206C240J1GAC
27	5%	C1206C270J1GAC
30	5%	C1206C300J1GAC
33	5%	C1206C330J1GAC
36	5%	C1206C360J1GAC
39	5%	C1206C390J1GAC
43	5%	C1206C430J1GAC
47	5%	C1206C470J1GAC
51	5%	C1206C510J1GAC
56	5%	C1206C560J1GAC
62	5%	C1206C620J1GAC
68	5%	C1206C680J1GAC
75	5%	C1206C750J1GAC
82	5%	C1206C820J1GAC
100	5%	C1206C101J1GAC
110	5%	C1206C111J1GAC
120	5%	C1206C121J1GAC
130	5%	C1206C131J1GAC
150	5%	C1206C151J1GAC
160	5%	C1206C161J1GAC
180	5%	C1206C181J1GAC
200	5%	C1206C201J1GAC
220	5%	C1206C221J1GAC
240	5%	C1206C241J1GAC
270	5%	C1206C271J1GAC
300	5%	C1206C301J1GAC
330	5%	C1206C331J1GAC
360	5%	C1206C361J1GAC
390	5%	C1206C391J1GAC
430	5%	C1206C431J1GAC
470	5%	C1206C471J1GAC
510	5%	C1206C511J1GAC
560	5%	C1206C561J1GAC
620	5%	C1206C621J1GAC
680	5%	C1206C681J1GAC
750	5%	C1206C751J1GAC
820	5%	C1206C821J1GAC
910	5%	C1206C911J1GAC
1000	5%	C1206C102J1GAC
1100	5%	C1206C112J1GAC
1200	5%	C1206C122J1GAC
1300	5%	C1206C132J1GAC
1500	5%	C1206C152J1GAC
1600	5%	C1206C162J1GAC
1800	5%	C1206C182J1GAC
2000	5%	C1206C202J1GAC
2200	5%	C1206C222J1GAC
2400	5%	C1206C242J1GAC
2700	5%	C1206C272J1GAC
3000	5%	C1206C302J1GAC
3300	5%	C1206C332J1GAC
3600	5%	C1206C362J1GAC
3900	5%	C1206C392J1GAC

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
200 Volt		
1.0	0.25pF	C1206C109C2GAC
1.1	0.25pF	C1206C119C2GAC
1.2	0.25pF	C1206C129C2GAC
1.3	0.25pF	C1206C139C2GAC
1.5	0.25pF	C1206C159C2GAC
1.6	0.25pF	C1206C169C2GAC
1.8	0.25pF	C1206C189C2GAC
2.0	0.25pF	C1206C209C2GAC
2.2	0.25pF	C1206C229C2GAC
2.4	0.25pF	C1206C249C2GAC
2.7	0.25pF	C1206C279C2GAC
3.0	0.25pF	C1206C309C2GAC
3.3	0.25pF	C1206C339C2GAC
3.6	0.25pF	C1206C369C2GAC
3.9	0.25pF	C1206C399C2GAC
4.3	0.25pF	C1206C439C2GAC
4.7	0.25pF	C1206C479C2GAC
5.1	0.5pF	C1206C519D2GAC
5.6	0.5pF	C1206C569D2GAC
6.2	0.5pF	C1206C629D2GAC
6.8	0.5pF	C1206C689D2GAC
7.5	0.5pF	C1206C759D2GAC
8.2	0.5pF	C1206C829D2GAC
9.1	0.5pF	C1206C919D2GAC
10	5%	C1206C100J2GAC
11	5%	C1206C110J2GAC
12	5%	C1206C120J2GAC
13	5%	C1206C130J2GAC
15	5%	C1206C150J2GAC
16	5%	C1206C160J2GAC
18	5%	C1206C180J2GAC
20	5%	C1206C200J2GAC
22	5%	C1206C220J2GAC
24	5%	C1206C240J2GAC
27	5%	C1206C270J2GAC
30	5%	C1206C300J2GAC
33	5%	C1206C330J2GAC
36	5%	C1206C360J2GAC
39	5%	C1206C390J2GAC
43	5%	C1206C430J2GAC
47	5%	C1206C470J2GAC
51	5%	C1206C510J2GAC
56	5%	C1206C560J2GAC
62	5%	C1206C620J2GAC
68	5%	C1206C680J2GAC
75	5%	C1206C750J2GAC
82	5%	C1206C820J2GAC
100	5%	C1206C101J2GAC
110	5%	C1206C111J2GAC
120	5%	C1206C121J2GAC
130	5%	C1206C131J2GAC
150	5%	C1206C151J2GAC
160	5%	C1206C161J2GAC
180	5%	C1206C181J2GAC
200	5%	C1206C201J2GAC
220	5%	C1206C221J2GAC
240	5%	C1206C241J2GAC
270	5%	C1206C271J2GAC
300	5%	C1206C301J2GAC
330	5%	C1206C331J2GAC
360	5%	C1206C361J2GAC
390	5%	C1206C391J2GAC
430	5%	C1206C431J2GAC
470	5%	C1206C471J2GAC
510	5%	C1206C511J2GAC
560	5%	C1206C561J2GAC
620	5%	C1206C621J2GAC
680	5%	C1206C681J2GAC
750	5%	C1206C751J2GAC
820	5%	C1206C821J2GAC
910	5%	C1206C911J2GAC
1000	5%	C1206C102J2GAC
1100	5%	C1206C112J2GAC
1200	5%	C1206C122J2GAC
1300	5%	C1206C132J2GAC
1500	5%	C1206C152J2GAC
1600	5%	C1206C162J2GAC
1800	5%	C1206C182J2GAC

KEMET type C1206C (1206)

ORDER CODES

X7R dielectric : 10% tol.

Value (pF)	Order Code
50 Volt *	
1000	*C1206C102K5RAC*
1200	*C1206C122K5RAC*
1500	*C1206C152K5RAC*
1800	*C1206C182K5RAC*
2200	*C1206C222K5RAC*
2700	*C1206C272K5RAC*
3300	*C1206C332K5RAC*
3900	*C1206C392K5RAC*
4700	*C1206C472K5RAC*
5600	*C1206C562K5RAC*
6800	*C1206C682K5RAC*
8200	*C1206C822K5RAC*
(µF)	
0.01	*C1206C103K5RAC*
0.012	*C1206C123K5RAC*
0.015	*C1206C153K5RAC*
0.018	*C1206C183K5RAC*
0.022	*C1206C223K5RAC*
0.027	*C1206C273K5RAC*
0.033	*C1206C333K5RAC*
0.039	*C1206C393K5RAC*
0.047	*C1206C473K5RAC*
0.056	*C1206C563K5RAC*
0.068	*C1206C683K5RAC*
0.082	*C1206C823K5RAC*
0.1	*C1206C104K5RAC*
0.12	*C1206C124K5RAC*
0.15	*C1206C154K5RAC*
0.18	*C1206C184K5RAC*
0.22	*C1206C224K5RAC*
25 Volt	
0.27	*C1206C274K3RAC*
0.33	*C1206C334K3RAC*
0.39	*C1206C394K3RAC*
0.47	*C1206C474K3RAC*
0.56	*C1206C564K3RAC*
0.68	*C1206C684K3RAC*
0.82	*C1206C824K3RAC*
1.0	*C1206C105K3RAC*
16 Volt	
1.2	*C1206C125K4RAC*
1.5	*C1206C155K4RAC*
1.8	*C1206C185K4RAC*
2.2	*C1206C225K4RAC*

X7R dielectric : 10% tol.

Value (pF)	Order Code
100 Volt	
1000	*C1206C102K1RAC*
1200	*C1206C122K1RAC*
1500	*C1206C152K1RAC*
1800	*C1206C182K1RAC*
2200	*C1206C222K1RAC*
2700	*C1206C272K1RAC*
3300	*C1206C332K1RAC*
3900	*C1206C392K1RAC*
4700	*C1206C472K1RAC*
5600	*C1206C562K1RAC*
6800	*C1206C682K1RAC*
8200	*C1206C822K1RAC*
(µF)	
0.01	*C1206C103K1RAC*
0.012	*C1206C123K1RAC*
0.015	*C1206C153K1RAC*
0.018	*C1206C183K1RAC*
0.022	*C1206C223K1RAC*
0.027	*C1206C273K1RAC*
0.033	*C1206C333K1RAC*
0.039	*C1206C393K1RAC*
0.047	*C1206C473K1RAC*
0.056	*C1206C563K1RAC*
0.068	*C1206C683K1RAC*
0.082	*C1206C823K1RAC*
0.1	*C1206C104K1RAC*
0.12	*C1206C124K1RAC*
0.15	*C1206C154K1RAC*
0.18	*C1206C184K1RAC*
0.22	*C1206C224K1RAC*

X7R dielectric : 10% tol.

Value (pF)	Order Code
200 Volt	
1000	*C1206C102K2RAC*
1200	*C1206C122K2RAC*
1500	*C1206C152K2RAC*
1800	*C1206C182K2RAC*
2200	*C1206C222K2RAC*
2700	*C1206C272K2RAC*
3300	*C1206C332K2RAC*
3900	*C1206C392K2RAC*
4700	*C1206C472K2RAC*
5600	*C1206C562K2RAC*
6800	*C1206C682K2RAC*
8200	*C1206C822K2RAC*
(µF)	
0.01	*C1206C103K2RAC*
0.012	*C1206C123K2RAC*
0.015	*C1206C153K2RAC*
0.018	*C1206C183K2RAC*
0.022	*C1206C223K2RAC*

Z5U dielectric : 20% tol.

Value (µF)	Order Code
50 Volt *	
0.01	*C1206C103M5UAC*
0.015	*C1206C153M5UAC*
0.022	*C1206C223M5UAC*
0.033	*C1206C333M5UAC*
0.047	*C1206C473M5UAC*
0.068	*C1206C683M5UAC*
0.1	*C1206C104M5UAC*
0.15	*C1206C154M5UAC*
0.22	*C1206C224M5UAC*

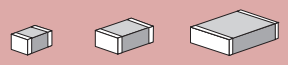
Z5U dielectric : 20% tol.

Value (µF)	Order Code
100 Volt	
0.01	*C1206C103M1UAC*
0.015	*C1206C153M1UAC*
0.022	*C1206C223M1UAC*
0.033	*C1206C333M1UAC*
0.047	*C1206C473M1UAC*
0.068	*C1206C683M1UAC*
0.1	*C1206C104M1UAC*

Y5V dielectric : -20,+80% tol.

Value (µF)	Order Code
50 Volt *	
0.022	*C1206C223Z5VAC*
0.033	*C1206C333Z5VAC*
0.047	*C1206C473Z5VAC*
0.068	*C1206C683Z5VAC*
0.1	*C1206C104Z5VAC*
25 Volt	
0.47	*C1206C474Z3VAC*
0.68	*C1206C684Z3VAC*
1.0	*C1206C105Z3VAC*
16 Volt	
1.5	*C1206C155Z4VAC*
2.2	*C1206C225Z4VAC*
3.3	*C1206C335Z4VAC*
4.7	*C1206C475Z4VAC*
10 Volt	
6.8	*C1206C685Z8VAC*
10	*C1206C106Z8VAC*

* 50 Volt parts can be used in 63 Volt applications

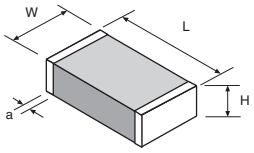


SYFER type 1210, 1812 & 2220

An extensive range of surface mount, X7R dielectric, multilayer ceramic capacitors offering a choice of chip size and in some cases voltage. Terminations have a nickel barrier for improved solderability. Supplied taped and reeled.

- High performance & reliability
- **X7R** dielectric
- Choice of voltage in some cases
- Values from **1000pF to 4.7µF**
- Nickel barrier terminations
- Suitable for wave & reflow soldering
- Industry standard chip sizes : **1210, 1812 & 2220**
- Supplied taped & reeled

Dimensions (mm)



Chip Size	L	W	a (min.)	H (max.)
1210	3.2	2.5	0.25	1.8
1812	4.5	3.2	0.25	1.8
2220	5.7	5.0	0.25	1.8

Specification	1210, 1812 & 2220
Working rating	As listed
Capacitance tolerance	±10%
Temperature coefficient	±15% over -55°C to +125°C
Operating temperature range	-55°C to +125°C
Insulation resistance (whichever is less)	≥100,000MΩ or 1000 sec (whichever is less)

Marking and Packaging

Marking	No marking appears on the product.
Tape	8mm wide, 4mm pitch
Reel	178mm dia.

DIELECTRIC PERFORMANCE & APPLICATION

X7R: Medium K semi-stable type offering good volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

ORDER CODES

SYFER type 1210

X7R dielectric : 10% tol.

Value (pF)	Order Code
50 Volt	
1000	*1210J0500102KXT*
1200	*1210J0500122KXT*
1500	*1210J0500152KXT*
1800	*1210J0500182KXT*
2200	*1210J0500222KXT*
2700	*1210J0500272KXT*
3300	*1210J0500332KXT*
3900	*1210J0500392KXT*
4700	*1210J0500472KXT*
5600	*1210J0500562KXT*
6800	*1210J0500682KXT*
8200	*1210J0500822KXT*
(µF)	
0.01	*1210J0500103KXT*
0.012	*1210J0500123KXT*
0.015	*1210J0500153KXT*
0.018	*1210J0500183KXT*
0.022	*1210J0500223KXT*
0.027	*1210J0500273KXT*
0.033	*1210J0500333KXT*
0.039	*1210J0500393KXT*
0.047	*1210J0500473KXT*
0.056	*1210J0500563KXT*
0.068	*1210J0500683KXT*
0.082	*1210J0500823KXT*
0.1	*1210J0500104KXT*
0.12	*1210J0500124KXT*
0.15	*1210J0500154KXT*
0.18	*1210J0500184KXT*
0.22	*1210J0500224KXT*
0.27	*1210J0500274KXT*
0.33	*1210J0500334KXT*
0.39	*1210J0500394KXT*
0.47	*1210J0500474KXT*
0.56	*1210J0500564KXT*
0.68	*1210J0500684KXT*
25 Volt	
0.33	*1210J0250334KXT*
0.47	*1210J0250474KXT*
0.68	*1210J0250684KXT*
0.82	*1210J0250824KXT*
1.0	*1210J0250105KXT*
1.2	*1210J0250125KXT*

X7R dielectric : 10% tol.

Value (µF)	Order Code
100 Volt	
0.1	*1210J1000104KXT*
0.22	*1210J1000224KXT*

X7R dielectric : 10% tol.

Value (µF)	Order Code
200 Volt	
0.1	*1210J2000104KXT*

SYFER type 1812

X7R dielectric : 10% tol.

Value (pF)	Order Code
50 Volt	
3900	*1812J0500392KXT*
4700	*1812J0500472KXT*
5600	*1812J0500562KXT*
6800	*1812J0500682KXT*
8200	*1812J0500822KXT*
(µF)	
0.01	*1812J0500103KXT*
0.012	*1812J0500123KXT*
0.015	*1812J0500153KXT*
0.018	*1812J0500183KXT*
0.022	*1812J0500223KXT*
0.027	*1812J0500273KXT*
0.033	*1812J0500333KXT*
0.039	*1812J0500393KXT*
0.047	*1812J0500473KXT*
0.056	*1812J0500563KXT*
0.068	*1812J0500683KXT*
0.082	*1812J0500823KXT*
0.1	*1812J0500104KXT*
0.12	*1812J0500124KXT*
0.15	*1812J0500154KXT*
0.18	*1812J0500184KXT*
0.22	*1812J0500224KXT*
0.27	*1812J0500274KXT*
0.33	*1812J0500334KXT*
0.39	*1812J0500394KXT*
0.47	*1812J0500474KXT*
0.56	*1812J0500564KXT*
0.68	*1812J0500684KXT*
0.82	*1812J0500824KXT*
1.0	*1812J0500105KXT*
1.2	*1812J0500125KXT*
1.5	*1812J0500155KXT*
25 Volt	
1.8	*1812J0250185KXT*
2.2	*1812J0250225KXT*

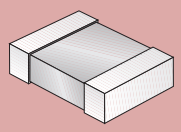
SYFER type 2220

X7R dielectric : 10% tol.

Value (µF)	Order Code
50 Volt	
0.01	*2220J0500103KXT*
0.012	*2220J0500123KXT*
0.015	*2220J0500153KXT*
0.018	*2220J0500183KXT*
0.022	*2220J0500223KXT*
0.027	*2220J0500273KXT*
0.033	*2220J0500333KXT*
0.039	*2220J0500393KXT*
0.047	*2220J0500473KXT*
0.056	*2220J0500563KXT*
0.068	*2220J0500683KXT*
0.082	*2220J0500823KXT*
0.1	*2220J0500104KXT*
0.12	*2220J0500124KXT*
0.15	*2220J0500154KXT*
0.18	*2220J0500184KXT*
0.22	*2220J0500224KXT*
0.27	*2220J0500274KXT*
0.33	*2220J0500334KXT*
0.39	*2220J0500394KXT*
0.47	*2220J0500474KXT*
0.56	*2220J0500564KXT*
0.68	*2220J0500684KXT*
0.82	*2220J0500824KXT*
1.0	*2220J0500105KXT*
1.2	*2220J0500125KXT*
1.5	*2220J0500155KXT*
1.8	*2220J0500185KXT*
25 Volt	
2.7	*2220J0250275KXT*
3.3	*2220J0250335KXT*
3.9	*2220J0250395KXT*
4.7	*2220J0250475KXT*

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

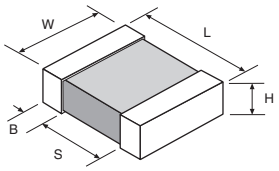


KEMET type Open Mode

A range of Open Mode ceramic surface mount capacitors from KEMET which are designed to significantly minimize the probability of a low IR or short circuit condition when forced to failure in a board flex situation. Supplied taped and reeled.

- High performance & reliability
- **X7R** dielectric
- Industry standard chip sizes : **0805, 1206, 1210 & 1812**
- Values from **1000pF to 6.8µF**
- Choice of voltage in numerous cases
- Suitable for wave & reflow soldering
- Nickel barrier terminations
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H max.	B	S
0805	2.0	1.25	1.4	0.5	0.75
1206	3.2	1.6	1.8	0.5	N/A
1210	3.2	2.5	2.7	0.5	N/A
1812	4.5	3.2	2.2	0.6	N/A

Specification — Open Mode

Working voltage	As listed
Capacitance tolerance	±10%
Temperature coefficient	±15% over -55°C to +125°C
Operating temperature range	-55°C to +125°C
Insulation resistance (whichever is less)	≥100,000MΩ or 1000MΩ/µF

Marking and Packaging

Marking		No marking appears on the product
Tape		
	≤1210	8mm width, 4mm pitch
	>1210	12mm width, 4mm pitch
Reel		178mm dia.

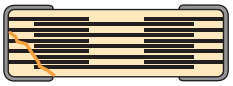
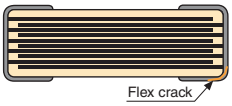
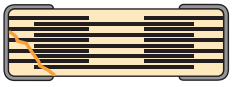
The range of values listed are 10% tolerance. 5% & 20% tolerances are also available to order. Please contact our Sales Desk to discuss your requirements.

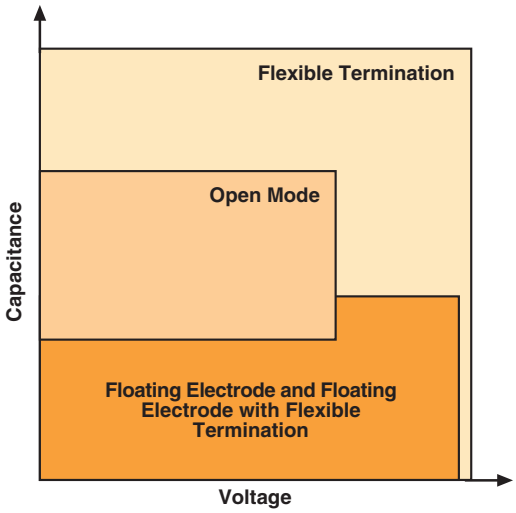
Flex Mitigation Solutions from KEMET

KEMET, an innovation leader in new technologies for customers sensitive to board flex stress, offers a full range of products for Flex Crack mitigation.

With the release of Open Mode devices, KEMET were able to provide a Flex Robust solution to accommodate mid-capacitance and mid-voltage ranges. To complement the Open Mode product, KEMET now offers the "FE-CAP" which utilizes a floating electrode design for lower capacitance values, while simultaneously providing enhanced voltage and ESD capabilities. In addition, KEMET has introduced the "FT-CAP (Flexible Termination) primarily for high CV values. Finally, for the ultimate in protection, customers can now select the "FF-CAP" (Floating Electrode + Flexible Termination).

The chart below graphically illustrates the internal construction differences for Floating Electrode, Open Mode and Flexible Termination technology.

Technology	Target Values	Example	Page No.
Floating Electrode "FE CAP" (CxxxxS)	Low Capacitance		**121 - 123**
Open Mode (CxxxxF)	Mid Capacitance		**118 - 120**
Flexible Termination "FT CAP" (CxxxxX)	High Capacitance		**124 - 126**
Flexible Termination w/ Electrode "FF-CAP" (CxxxxY)	Low to Mid Capacitance		**127 - 129**



KEMET type Open Mode

ORDER CODES

X7R dielectric : 10% tol.

0805

Value (pF)	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
1000	C0805F102K4RAC	C0805F102K3RAC	C0805F102K5RAC	C0805F102K1RAC	C0805F102K2RAC
1200	C0805F122K4RAC	C0805F122K3RAC	C0805F122K5RAC	C0805F122K1RAC	C0805F122K2RAC
1500	C0805F152K4RAC	C0805F152K3RAC	C0805F152K5RAC	C0805F152K1RAC	C0805F152K2RAC
1800	C0805F182K4RAC	C0805F182K3RAC	C0805F182K5RAC	C0805F182K1RAC	C0805F182K2RAC
2200	C0805F222K4RAC	C0805F222K3RAC	C0805F222K5RAC	C0805F222K1RAC	C0805F222K2RAC
2700	C0805F272K4RAC	C0805F272K3RAC	C0805F272K5RAC	C0805F272K1RAC	C0805F272K2RAC
3300	C0805F332K4RAC	C0805F332K3RAC	C0805F332K5RAC	C0805F332K1RAC	C0805F332K2RAC
3900	C0805F392K4RAC	C0805F392K3RAC	C0805F392K5RAC	C0805F392K1RAC	C0805F392K2RAC
4700	C0805F472K4RAC	C0805F472K3RAC	C0805F472K5RAC	C0805F472K1RAC	C0805F472K2RAC
5600	C0805F562K4RAC	C0805F562K3RAC	C0805F562K5RAC	C0805F562K1RAC	C0805F562K2RAC
6800	C0805F682K4RAC	C0805F682K3RAC	C0805F682K5RAC	C0805F682K1RAC	C0805F682K2RAC
8200	C0805F822K4RAC	C0805F822K3RAC	C0805F822K5RAC	C0805F822K1RAC	C0805F822K2RAC
(µF)					
0.01	C0805F103K4RAC	C0805F103K3RAC	C0805F103K5RAC	C0805F103K1RAC	C0805F103K2RAC
0.012	C0805F123K4RAC	C0805F123K3RAC	C0805F123K5RAC	C0805F123K1RAC	C0805F123K2RAC
0.015	C0805F153K4RAC	C0805F153K3RAC	C0805F153K5RAC	C0805F153K1RAC	C0805F153K2RAC
0.018	C0805F183K4RAC	C0805F183K3RAC	C0805F183K5RAC	C0805F183K1RAC	–
0.022	C0805F223K4RAC	C0805F223K3RAC	C0805F223K5RAC	C0805F223K1RAC	–
0.027	C0805F273K4RAC	C0805F273K3RAC	C0805F273K5RAC	C0805F273K1RAC	–
0.033	C0805F333K4RAC	C0805F333K3RAC	C0805F333K5RAC	C0805F333K1RAC	–
0.039	C0805F393K4RAC	C0805F393K3RAC	C0805F393K5RAC	C0805F393K1RAC	–
0.047	C0805F473K4RAC	C0805F473K3RAC	C0805F473K5RAC	C0805F473K1RAC	–
0.056	C0805F563K4RAC	C0805F563K3RAC	C0805F563K5RAC	–	–
0.068	C0805F683K4RAC	C0805F683K3RAC	C0805F683K5RAC	C0805F683K1RAC	–
0.082	C0805F823K4RAC	C0805F823K3RAC	C0805F823K5RAC	–	–
0.1	C0805F104K4RAC	C0805F104K3RAC	C0805F104K5RAC	–	–
0.12	C0805F124K4RAC	C0805F124K3RAC	–	–	–
0.15	C0805F154K4RAC	C0805F154K3RAC	–	–	–
0.18	C0805F184K4RAC	C0805F184K3RAC	–	–	–
0.22	C0805F224K4RAC	C0805F224K3RAC	C0805F224K5RAC	–	–
0.27	C0805F274K4RAC	C0805F274K3RAC	–	–	–
0.33	C0805F334K4RAC	C0805F334K3RAC	–	–	–
0.39	C0805F394K4RAC	C0805F394K3RAC	–	–	–
0.47	C0805F474K4RAC	C0805F474K3RAC	–	–	–
0.68	C0805F684K4RAC	–	–	–	–

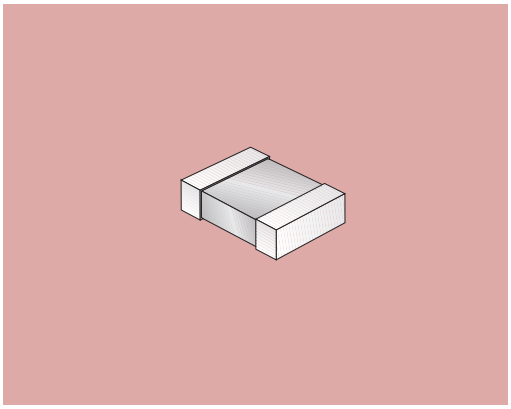
1206

Value (µF)	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
0.018	–	–	–	–	C1206F183K2RAC
0.022	–	–	–	–	C1206F223K2RAC
0.027	–	–	–	–	C1206F273K2RAC
0.033	–	–	–	–	C1206F333K2RAC
0.039	–	–	–	–	C1206F393K2RAC
0.047	C1206F473K4RAC	C1206F473K3RAC	C1206F473K5RAC	C1206F473K1RAC	C1206F473K2RAC
0.056	C1206F563K4RAC	C1206F563K3RAC	C1206F563K5RAC	C1206F563K1RAC	C1206F563K2RAC
0.068	C1206F683K4RAC	C1206F683K3RAC	C1206F683K5RAC	C1206F683K1RAC	C1206F683K2RAC
0.082	C1206F823K4RAC	C1206F823K3RAC	C1206F823K5RAC	C1206F823K1RAC	C1206F823K2RAC
0.1	C1206F104K4RAC	C1206F104K3RAC	C1206F104K5RAC	C1206F104K1RAC	C1206F104K2RAC
0.12	C1206F124K4RAC	C1206F124K3RAC	C1206F124K5RAC	C1206F124K1RAC	–
0.15	C1206F154K4RAC	C1206F154K3RAC	C1206F154K5RAC	C1206F154K1RAC	–
0.18	C1206F184K4RAC	C1206F184K3RAC	C1206F184K5RAC	C1206F184K1RAC	–
0.22	C1206F224K4RAC	C1206F224K3RAC	C1206F224K5RAC	C1206F224K1RAC	–
0.27	C1206F274K4RAC	C1206F274K3RAC	C1206F274K5RAC	–	–
0.33	C1206F334K4RAC	C1206F334K3RAC	C1206F334K5RAC	C1206F334K1RAC	–
0.39	C1206F394K4RAC	C1206F394K3RAC	–	–	–
0.47	C1206F474K4RAC	C1206F474K3RAC	C1206F474K5RAC	–	–
0.56	C1206F564K4RAC	–	–	–	–
0.68	C1206F684K4RAC	–	–	–	–
0.82	C1206F824K4RAC	–	–	–	–
1.0	C1206F105K4RAC	C1206F105K3RAC	C1206F105K5RAC	–	–
2.2	C1206F225K4RAC	C1206F225K3RAC	C1206F225K5RAC	–	–
4.7	C1206F475K4RAC	–	–	–	–

KEMET type Open Mode continued overleaf > > > >

KEMET type Open Mode *continued*

ORDER CODES					
1210					
Value (µF)	**16 Volt**	**25 Volt**	**50 Volt**	**100 Volt**	**200 Volt**
0.068	–	–	–	–	C1210F683K2RAC
0.082	–	–	–	–	C1210F823K2RAC
0.1	C1210F104K4RAC	C1210F104K3RAC	C1210F104K5RAC	C1210F104K1RAC	C1210F104K2RAC
0.12	C1210F124K4RAC	C1210F124K3RAC	C1210F124K5RAC	C1210F124K1RAC	C1210F124K2RAC
0.15	C1210F154K4RAC	C1210F154K3RAC	C1210F154K5RAC	C1210F154K1RAC	C1210F154K2RAC
0.18	C1210F184K4RAC	C1210F184K3RAC	C1210F184K5RAC	C1210F184K1RAC	C1210F184K2RAC
0.22	C1210F224K4RAC	C1210F224K3RAC	C1210F224K5RAC	C1210F224K1RAC	C1210F224K2RAC
0.27	C1210F274K4RAC	C1210F274K3RAC	C1210F274K5RAC	C1210F274K1RAC	–
0.33	C1210F334K4RAC	C1210F334K3RAC	C1210F334K5RAC	C1210F334K1RAC	–
0.39	C1210F394K4RAC	C1210F394K3RAC	C1210F394K5RAC	C1210F394K1RAC	–
0.47	C1210F474K4RAC	C1210F474K3RAC	C1210F474K5RAC	C1210F474K1RAC	–
0.56	C1210F564K4RAC	C1210F564K3RAC	C1210F564K5RAC	C1210F564K1RAC	–
0.68	C1210F684K4RAC	C1210F684K3RAC	C1210F684K5RAC	C1210F684K1RAC	–
0.82	C1210F824K4RAC	C1210F824K3RAC	C1210F824K5RAC	–	–
1.0	C1210F105K4RAC	C1210F105K3RAC	C1210F105K5RAC	C1210F105K1RAC	–
1.2	C1210F125K4RAC	–	–	–	–
1.5	C1210F155K4RAC	–	–	–	–
1.8	C1210F185K4RAC	–	–	–	–
2.2	C1210F225K4RAC	–	C1210F225K5RAC	–	–
4.7	C1210F475K4RAC	C1210F475K3RAC	–	–	–
6.8	–	C1210F685K3RAC	–	–	–
1812					
Value (µF)	**16 Volt**	**25 Volt**	**50 Volt**	**100 Volt**	**200 Volt**
0.047	–	–	–	–	C1812F473K2RAC
0.056	–	–	–	–	C1812F563K2RAC
0.068	–	–	–	–	C1812F683K2RAC
0.082	–	–	–	–	C1812F823K2RAC
0.1	C1812F104K4RAC	C1812F104K3RAC	C1812F104K5RAC	C1812F104K1RAC	C1812F104K2RAC
0.12	C1812F124K4RAC	C1812F124K3RAC	C1812F124K5RAC	C1812F124K1RAC	C1812F124K2RAC
0.15	C1812F154K4RAC	C1812F154K3RAC	C1812F154K5RAC	C1812F154K1RAC	C1812F154K2RAC
0.18	C1812F184K4RAC	C1812F184K3RAC	C1812F184K5RAC	C1812F184K1RAC	C1812F184K2RAC
0.22	C1812F224K4RAC	C1812F224K3RAC	C1812F224K5RAC	C1812F224K1RAC	C1812F224K2RAC
0.27	C1812F274K4RAC	C1812F274K3RAC	C1812F274K5RAC	C1812F274K1RAC	C1812F274K2RAC
0.33	C1812F334K4RAC	C1812F334K3RAC	C1812F334K5RAC	C1812F334K1RAC	C1812F334K2RAC
0.39	C1812F394K4RAC	C1812F394K3RAC	C1812F394K5RAC	C1812F394K1RAC	C1812F394K2RAC
0.47	C1812F474K4RAC	C1812F474K3RAC	C1812F474K5RAC	C1812F474K1RAC	–
0.56	C1812F564K4RAC	C1812F564K3RAC	C1812F564K5RAC	C1812F564K1RAC	–
0.68	C1812F684K4RAC	C1812F684K3RAC	C1812F684K5RAC	C1812F684K1RAC	–
0.82	C1812F824K4RAC	C1812F824K3RAC	C1812F824K5RAC	C1812F824K1RAC	–
1.0	C1812F105K4RAC	C1812F105K3RAC	C1812F105K5RAC	C1812F105K1RAC	–

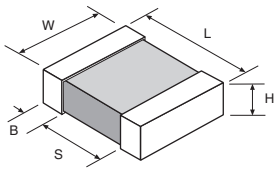


KEMET type FE-CAP

The FE-CAP utilises a floating internal electrode design, wherein the electrodes are configured to form multiple capacitors in series within a single MLCC package. This improves voltage and ESD performance over standard designs as well as reducing risk of low IR or short circuit failures that can occur due to board flex. Supplied taped and reeled.

- High performance & reliability
- **X7R** dielectric
- Industry standard chip sizes : **0402, 0603, 0805, 1206, 1210 & 1812**
- Choice of voltage in numerous cases
- Values from **150pF to 0.22µF**
- Suitable for wave & reflow soldering
- Nickel barrier terminations
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H max.	B	S
0402	1.0	0.5	0.55	0.2	0.3
0603	1.6	0.8	0.95	0.35	0.7
0805	2.0	1.25	1.4	0.5	0.75
1206	3.2	1.6	1.8	0.5	N/A
1210	3.2	2.5	2.7	0.5	N/A
1812	4.5	3.2	2.2	0.6	N/A

Specification	FE
Working voltage	As listed
Capacitance tolerance	±10%
Temperature coefficient	±15% over -55°C to +125°C
Operating temperature range	-65°C to +125°C
Insulation resistance (whichever is less)	≥100,000MΩ or 1000MΩ/µF

Marking and Packaging		
Marking		No marking appears on the product
Tape		
	≤1210	8mm width, 4mm pitch
	>1210	12mm width, 8mm pitch
Reel		178mm dia.

The range of values listed overleaf are 10% tolerance. 5% & 20% tolerances are also available to order. Please contact our Sales Desk to discuss your requirements.

KEMET type FE-CAP
continued overleaf > > > >

FE-CAP ORDER CODES

X7R dielectric : 10% tol.

0402

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt
150	C0402S151K9RAC	C0402S151K8RAC	C0402S151K4RAC	C0402S151K3RAC	C0402S151K5RAC
180	C0402S181K9RAC	C0402S181K8RAC	C0402S181K4RAC	C0402S181K3RAC	C0402S181K5RAC
220	C0402S221K9RAC	C0402S221K8RAC	C0402S221K4RAC	C0402S221K3RAC	C0402S221K5RAC
270	C0402S271K9RAC	C0402S271K8RAC	C0402S271K4RAC	C0402S271K3RAC	C0402S271K5RAC
330	C0402S331K9RAC	C0402S331K8RAC	C0402S331K4RAC	C0402S331K3RAC	C0402S331K5RAC
390	C0402S391K9RAC	C0402S391K8RAC	C0402S391K4RAC	C0402S391K3RAC	C0402S391K5RAC
470	C0402S471K9RAC	C0402S471K8RAC	C0402S471K4RAC	C0402S471K3RAC	C0402S471K5RAC
560	C0402S561K9RAC	C0402S561K8RAC	C0402S561K4RAC	C0402S561K3RAC	C0402S561K5RAC
680	C0402S681K9RAC	C0402S681K8RAC	C0402S681K4RAC	C0402S681K3RAC	C0402S681K5RAC
820	C0402S821K9RAC	C0402S821K8RAC	C0402S821K4RAC	C0402S821K3RAC	C0402S821K5RAC
1000	C0402S102K9RAC	C0402S102K8RAC	C0402S102K4RAC	C0402S102K3RAC	C0402S102K5RAC

0603

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
180	C0603S181K9RAC	C0603S181K8RAC	C0603S181K4RAC	C0603S181K3RAC	C0603S181K5RAC	C0603S181K1RAC	C0603S181K2RAC
220	C0603S221K9RAC	C0603S221K8RAC	C0603S221K4RAC	C0603S221K3RAC	C0603S221K5RAC	C0603S221K1RAC	C0603S221K2RAC
270	C0603S271K9RAC	C0603S271K8RAC	C0603S271K4RAC	C0603S271K3RAC	C0603S271K5RAC	C0603S271K1RAC	C0603S271K2RAC
330	C0603S331K9RAC	C0603S331K8RAC	C0603S331K4RAC	C0603S331K3RAC	C0603S331K5RAC	C0603S331K1RAC	C0603S331K2RAC
390	C0603S391K9RAC	C0603S391K8RAC	C0603S391K4RAC	C0603S391K3RAC	C0603S391K5RAC	C0603S391K1RAC	C0603S391K2RAC
470	C0603S471K9RAC	C0603S471K8RAC	C0603S471K4RAC	C0603S471K3RAC	C0603S471K5RAC	C0603S471K1RAC	C0603S471K2RAC
560	C0603S561K9RAC	C0603S561K8RAC	C0603S561K4RAC	C0603S561K3RAC	C0603S561K5RAC	C0603S561K1RAC	C0603S561K2RAC
680	C0603S681K9RAC	C0603S681K8RAC	C0603S681K4RAC	C0603S681K3RAC	C0603S681K5RAC	C0603S681K1RAC	C0603S681K2RAC
820	C0603S821K9RAC	C0603S821K8RAC	C0603S821K4RAC	C0603S821K3RAC	C0603S821K5RAC	C0603S821K1RAC	C0603S821K2RAC
1000	C0603S102K9RAC	C0603S102K8RAC	C0603S102K4RAC	C0603S102K3RAC	C0603S102K5RAC	C0603S102K1RAC	C0603S102K2RAC
1200	C0603S122K9RAC	C0603S122K8RAC	C0603S122K4RAC	C0603S122K3RAC	C0603S122K5RAC	C0603S122K1RAC	C0603S122K2RAC
1500	C0603S152K9RAC	C0603S152K8RAC	C0603S152K4RAC	C0603S152K3RAC	C0603S152K5RAC	C0603S152K1RAC	C0603S152K2RAC
1800	C0603S182K9RAC	C0603S182K8RAC	C0603S182K4RAC	C0603S182K3RAC	C0603S182K5RAC	C0603S182K1RAC	C0603S182K2RAC
2200	C0603S222K9RAC	C0603S222K8RAC	C0603S222K4RAC	C0603S222K3RAC	C0603S222K5RAC	C0603S222K1RAC	C0603S222K2RAC
2700	C0603S272K9RAC	C0603S272K8RAC	C0603S272K4RAC	C0603S272K3RAC	C0603S272K5RAC	C0603S272K1RAC	C0603S272K2RAC
3300	C0603S332K9RAC	C0603S332K8RAC	C0603S332K4RAC	C0603S332K3RAC	C0603S332K5RAC	C0603S332K1RAC	C0603S332K2RAC
3900	C0603S392K9RAC	C0603S392K8RAC	C0603S392K4RAC	C0603S392K3RAC	C0603S392K5RAC	C0603S392K1RAC	C0603S392K2RAC
4700	C0603S472K9RAC	C0603S472K8RAC	C0603S472K4RAC	C0603S472K3RAC	C0603S472K5RAC	C0603S472K1RAC	C0603S472K2RAC
5600	C0603S562K9RAC	C0603S562K8RAC	C0603S562K4RAC	C0603S562K3RAC	C0603S562K5RAC	C0603S562K1RAC	–
6800	C0603S682K9RAC	C0603S682K8RAC	C0603S682K4RAC	C0603S682K3RAC	C0603S682K5RAC	C0603S682K1RAC	–
8200	C0603S822K9RAC	C0603S822K8RAC	C0603S822K4RAC	C0603S822K3RAC	C0603S822K5RAC	C0603S822K1RAC	–
(µF)							
0.01	C0603S103K9RAC	C0603S103K8RAC	C0603S103K4RAC	C0603S103K3RAC	C0603S103K5RAC	–	–
0.012	C0603S123K9RAC	C0603S123K8RAC	C0603S123K4RAC	C0603S123K3RAC	C0603S123K5RAC	–	–
0.015	C0603S153K9RAC	C0603S153K8RAC	C0603S153K4RAC	C0603S153K3RAC	C0603S153K5RAC	–	–
0.018	C0603S183K9RAC	C0603S183K8RAC	C0603S183K4RAC	C0603S183K3RAC	C0603S183K5RAC	–	–
0.022	C0603S223K9RAC	C0603S223K8RAC	C0603S223K4RAC	C0603S223K3RAC	C0603S223K5RAC	–	–

0805

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
180	C0805S181K9RAC	C0805S181K8RAC	C0805S181K4RAC	C0805S181K3RAC	C0805S181K5RAC	C0805S181K1RAC	C0805S181K2RAC	C0805S181KARAC
220	C0805S221K9RAC	C0805S221K8RAC	C0805S221K4RAC	C0805S221K3RAC	C0805S221K5RAC	C0805S221K1RAC	C0805S221K2RAC	C0805S221KARAC
270	C0805S271K9RAC	C0805S271K8RAC	C0805S271K4RAC	C0805S271K3RAC	C0805S271K5RAC	C0805S271K1RAC	C0805S271K2RAC	C0805S271KARAC
330	C0805S331K9RAC	C0805S331K8RAC	C0805S331K4RAC	C0805S331K3RAC	C0805S331K5RAC	C0805S331K1RAC	C0805S331K2RAC	C0805S331KARAC
390	C0805S391K9RAC	C0805S391K8RAC	C0805S391K4RAC	C0805S391K3RAC	C0805S391K5RAC	C0805S391K1RAC	C0805S391K2RAC	C0805S391KARAC
470	C0805S471K9RAC	C0805S471K8RAC	C0805S471K4RAC	C0805S471K3RAC	C0805S471K5RAC	C0805S471K1RAC	C0805S471K2RAC	C0805S471KARAC
560	C0805S561K9RAC	C0805S561K8RAC	C0805S561K4RAC	C0805S561K3RAC	C0805S561K5RAC	C0805S561K1RAC	C0805S561K2RAC	C0805S561KARAC
680	C0805S681K9RAC	C0805S681K8RAC	C0805S681K4RAC	C0805S681K3RAC	C0805S681K5RAC	C0805S681K1RAC	C0805S681K2RAC	C0805S681KARAC
820	C0805S821K9RAC	C0805S821K8RAC	C0805S821K4RAC	C0805S821K3RAC	C0805S821K5RAC	C0805S821K1RAC	C0805S821K2RAC	C0805S821KARAC
1000	C0805S102K9RAC	C0805S102K8RAC	C0805S102K4RAC	C0805S102K3RAC	C0805S102K5RAC	C0805S102K1RAC	C0805S102K2RAC	C0805S102KARAC
1200	C0805S122K9RAC	C0805S122K8RAC	C0805S122K4RAC	C0805S122K3RAC	C0805S122K5RAC	C0805S122K1RAC	C0805S122K2RAC	C0805S122KARAC
1500	C0805S152K9RAC	C0805S152K8RAC	C0805S152K4RAC	C0805S152K3RAC	C0805S152K5RAC	C0805S152K1RAC	C0805S152K2RAC	C0805S152KARAC
1800	C0805S182K9RAC	C0805S182K8RAC	C0805S182K4RAC	C0805S182K3RAC	C0805S182K5RAC	C0805S182K1RAC	C0805S182K2RAC	C0805S182KARAC
2200	C0805S222K9RAC	C0805S222K8RAC	C0805S222K4RAC	C0805S222K3RAC	C0805S222K5RAC	C0805S222K1RAC	C0805S222K2RAC	C0805S222KARAC
2700	C0805S272K9RAC	C0805S272K8RAC	C0805S272K4RAC	C0805S272K3RAC	C0805S272K5RAC	C0805S272K1RAC	C0805S272K2RAC	C0805S272KARAC
3300	C0805S332K9RAC	C0805S332K8RAC	C0805S332K4RAC	C0805S332K3RAC	C0805S332K5RAC	C0805S332K1RAC	C0805S332K2RAC	C0805S332KARAC
3900	C0805S392K9RAC	C0805S392K8RAC	C0805S392K4RAC	C0805S392K3RAC	C0805S392K5RAC	C0805S392K1RAC	C0805S392K2RAC	C0805S392KARAC
4700	C0805S472K9RAC	C0805S472K8RAC	C0805S472K4RAC	C0805S472K3RAC	C0805S472K5RAC	C0805S472K1RAC	C0805S472K2RAC	C0805S472KARAC
5600	C0805S562K9RAC	C0805S562K8RAC	C0805S562K4RAC	C0805S562K3RAC	C0805S562K5RAC	C0805S562K1RAC	C0805S562K2RAC	C0805S562KARAC
6800	C0805S682K9RAC	C0805S682K8RAC	C0805S682K4RAC	C0805S682K3RAC	C0805S682K5RAC	C0805S682K1RAC	C0805S682K2RAC	C0805S682KARAC
8200	C0805S822K9RAC	C0805S822K8RAC	C0805S822K4RAC	C0805S822K3RAC	C0805S822K5RAC	C0805S822K1RAC	C0805S822K2RAC	C0805S822KARAC
(µF)								
0.01	C0805S103K9RAC	C0805S103K8RAC	C0805S103K4RAC	C0805S103K3RAC	C0805S103K5RAC	C0805S103K1RAC	C0805S103K2RAC	C0805S103KARAC
0.012	C0805S123K9RAC	C0805S123K8RAC	C0805S123K4RAC	C0805S123K3RAC	C0805S123K5RAC	C0805S123K1RAC	C0805S123K2RAC	C0805S123KARAC
0.015	C0805S153K9RAC	C0805S153K8RAC	C0805S153K4RAC	C0805S153K3RAC	C0805S153K5RAC	C0805S153K1RAC	–	–
0.018	C0805S183K9RAC	C0805S183K8RAC	C0805S183K4RAC	C0805S183K3RAC	C0805S183K5RAC	C0805S183K1RAC	–	–
0.022	C0805S223K9RAC	C0805S223K8RAC	C0805S223K4RAC	C0805S223K3RAC	C0805S223K5RAC	C0805S223K1RAC	–	–
0.027	C0805S273K9RAC	C0805S273K8RAC	C0805S273K4RAC	C0805S273K3RAC	C0805S273K5RAC	C0805S273K1RAC	–	–
0.033	C0805S333K9RAC	C0805S333K8RAC	C0805S333K4RAC	C0805S333K3RAC	C0805S333K5RAC	–	–	–
0.039	C0805S393K9RAC	C0805S393K8RAC	C0805S393K4RAC	C0805S393K3RAC	C0805S393K5RAC	–	–	–
0.047	C0805S473K9RAC	C0805S473K8RAC	C0805S473K4RAC	C0805S473K3RAC	C0805S473K5RAC	–	–	–
0.056	C0805S563K9RAC	C0805S563K8RAC	C0805S563K4RAC	C0805S563K3RAC	C0805S563K5RAC	–	–	–

FE-CAP ORDER CODES

1206

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
820	C1206S821K9RAC	C1206S821K8RAC	C1206S821K4RAC	C1206S821K3RAC	C1206S821K5RAC	C1206S821K1RAC	C1206S821K2RAC	C1206S821KARAC
1000	C1206S102K9RAC	C1206S102K8RAC	C1206S102K4RAC	C1206S102K3RAC	C1206S102K5RAC	C1206S102K1RAC	C1206S102K2RAC	C1206S102KARAC
1200	C1206S122K9RAC	C1206S122K8RAC	C1206S122K4RAC	C1206S122K3RAC	C1206S122K5RAC	C1206S122K1RAC	C1206S122K2RAC	C1206S122KARAC
1500	C1206S152K9RAC	C1206S152K8RAC	C1206S152K4RAC	C1206S152K3RAC	C1206S152K5RAC	C1206S152K1RAC	C1206S152K2RAC	C1206S152KARAC
1800	C1206S182K9RAC	C1206S182K8RAC	C1206S182K4RAC	C1206S182K3RAC	C1206S182K5RAC	C1206S182K1RAC	C1206S182K2RAC	C1206S182KARAC
2200	C1206S222K9RAC	C1206S222K8RAC	C1206S222K4RAC	C1206S222K3RAC	C1206S222K5RAC	C1206S222K1RAC	C1206S222K2RAC	C1206S222KARAC
2700	C1206S272K9RAC	C1206S272K8RAC	C1206S272K4RAC	C1206S272K3RAC	C1206S272K5RAC	C1206S272K1RAC	C1206S272K2RAC	C1206S272KARAC
3300	C1206S332K9RAC	C1206S332K8RAC	C1206S332K4RAC	C1206S332K3RAC	C1206S332K5RAC	C1206S332K1RAC	C1206S332K2RAC	C1206S332KARAC
3900	C1206S392K9RAC	C1206S392K8RAC	C1206S392K4RAC	C1206S392K3RAC	C1206S392K5RAC	C1206S392K1RAC	C1206S392K2RAC	C1206S392KARAC
4700	C1206S472K9RAC	C1206S472K8RAC	C1206S472K4RAC	C1206S472K3RAC	C1206S472K5RAC	C1206S472K1RAC	C1206S472K2RAC	C1206S472KARAC
5600	C1206S562K9RAC	C1206S562K8RAC	C1206S562K4RAC	C1206S562K3RAC	C1206S562K5RAC	C1206S562K1RAC	C1206S562K2RAC	C1206S562KARAC
6800	C1206S682K9RAC	C1206S682K8RAC	C1206S682K4RAC	C1206S682K3RAC	C1206S682K5RAC	C1206S682K1RAC	C1206S682K2RAC	C1206S682KARAC
8200	C1206S822K9RAC	C1206S822K8RAC	C1206S822K4RAC	C1206S822K3RAC	C1206S822K5RAC	C1206S822K1RAC	C1206S822K2RAC	C1206S822KARAC
(µF)								
0.01	C1206S103K9RAC	C1206S103K8RAC	C1206S103K4RAC	C1206S103K3RAC	C1206S103K5RAC	C1206S103K1RAC	C1206S103K2RAC	C1206S103KARAC
0.012	C1206S123K9RAC	C1206S123K8RAC	C1206S123K4RAC	C1206S123K3RAC	C1206S123K5RAC	C1206S123K1RAC	C1206S123K2RAC	C1206S123KARAC
0.015	C1206S153K9RAC	C1206S153K8RAC	C1206S153K4RAC	C1206S153K3RAC	C1206S153K5RAC	C1206S153K1RAC	C1206S153K2RAC	C1206S153KARAC
0.018	C1206S183K9RAC	C1206S183K8RAC	C1206S183K4RAC	C1206S183K3RAC	C1206S183K5RAC	C1206S183K1RAC	C1206S183K2RAC	C1206S183KARAC
0.022	C1206S223K9RAC	C1206S223K8RAC	C1206S223K4RAC	C1206S223K3RAC	C1206S223K5RAC	C1206S223K1RAC	C1206S223K2RAC	C1206S223KARAC
0.027	C1206S273K9RAC	C1206S273K8RAC	C1206S273K4RAC	C1206S273K3RAC	C1206S273K5RAC	C1206S273K1RAC	C1206S273K2RAC	C1206S273KARAC
0.033	C1206S333K9RAC	C1206S333K8RAC	C1206S333K4RAC	C1206S333K3RAC	C1206S333K5RAC	C1206S333K1RAC	–	–
0.039	C1206S393K9RAC	C1206S393K8RAC	C1206S393K4RAC	C1206S393K3RAC	C1206S393K5RAC	C1206S393K1RAC	–	–
0.047	C1206S473K9RAC	C1206S473K8RAC	C1206S473K4RAC	C1206S473K3RAC	C1206S473K5RAC	C1206S473K1RAC	–	–
0.056	C1206S563K9RAC	C1206S563K8RAC	C1206S563K4RAC	C1206S563K3RAC	C1206S563K5RAC	C1206S563K1RAC	–	–
0.068	C1206S683K9RAC	C1206S683K8RAC	C1206S683K4RAC	C1206S683K3RAC	C1206S683K5RAC	–	–	–
0.082	C1206S823K9RAC	C1206S823K8RAC	C1206S823K4RAC	C1206S823K3RAC	C1206S823K5RAC	–	–	–
0.1	C1206S104K9RAC	C1206S104K8RAC	C1206S104K4RAC	C1206S104K3RAC	C1206S104K5RAC	–	–	–
0.12	C1206S124K9RAC	C1206S124K8RAC	C1206S124K4RAC	C1206S124K3RAC	C1206S124K5RAC	–	–	–

1210

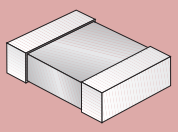
Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
2200	C1210S222K9RAC	C1210S222K8RAC	C1210S222K4RAC	C1210S222K3RAC	C1210S222K5RAC	C1210S222K1RAC	C1210S222K2RAC	C1210S222KARAC
2700	C1210S272K9RAC	C1210S272K8RAC	C1210S272K4RAC	C1210S272K3RAC	C1210S272K5RAC	C1210S272K1RAC	C1210S272K2RAC	C1210S272KARAC
3300	C1210S332K9RAC	C1210S332K8RAC	C1210S332K4RAC	C1210S332K3RAC	C1210S332K5RAC	C1210S332K1RAC	C1210S332K2RAC	C1210S332KARAC
3900	C1210S392K9RAC	C1210S392K8RAC	C1210S392K4RAC	C1210S392K3RAC	C1210S392K5RAC	C1210S392K1RAC	C1210S392K2RAC	C1210S392KARAC
4700	C1210S472K9RAC	C1210S472K8RAC	C1210S472K4RAC	C1210S472K3RAC	C1210S472K5RAC	C1210S472K1RAC	C1210S472K2RAC	C1210S472KARAC
5600	C1210S562K9RAC	C1210S562K8RAC	C1210S562K4RAC	C1210S562K3RAC	C1210S562K5RAC	C1210S562K1RAC	C1210S562K2RAC	C1210S562KARAC
6800	C1210S682K9RAC	C1210S682K8RAC	C1210S682K4RAC	C1210S682K3RAC	C1210S682K5RAC	C1210S682K1RAC	C1210S682K2RAC	C1210S682KARAC
8200	C1210S822K9RAC	C1210S822K8RAC	C1210S822K4RAC	C1210S822K3RAC	C1210S822K5RAC	C1210S822K1RAC	C1210S822K2RAC	C1210S822KARAC
(µF)								
0.01	C1210S103K9RAC	C1210S103K8RAC	C1210S103K4RAC	C1210S103K3RAC	C1210S103K5RAC	C1210S103K1RAC	C1210S103K2RAC	C1210S103KARAC
0.012	C1210S123K9RAC	C1210S123K8RAC	C1210S123K4RAC	C1210S123K3RAC	C1210S123K5RAC	C1210S123K1RAC	C1210S123K2RAC	C1210S123KARAC
0.015	C1210S153K9RAC	C1210S153K8RAC	C1210S153K4RAC	C1210S153K3RAC	C1210S153K5RAC	C1210S153K1RAC	C1210S153K2RAC	C1210S153KARAC
0.018	C1210S183K9RAC	C1210S183K8RAC	C1210S183K4RAC	C1210S183K3RAC	C1210S183K5RAC	C1210S183K1RAC	C1210S183K2RAC	C1210S183KARAC
0.022	C1210S223K9RAC	C1210S223K8RAC	C1210S223K4RAC	C1210S223K3RAC	C1210S223K5RAC	C1210S223K1RAC	C1210S223K2RAC	C1210S223KARAC
0.027	C1210S273K9RAC	C1210S273K8RAC	C1210S273K4RAC	C1210S273K3RAC	C1210S273K5RAC	C1210S273K1RAC	C1210S273K2RAC	C1210S273KARAC
0.033	C1210S333K9RAC	C1210S333K8RAC	C1210S333K4RAC	C1210S333K3RAC	C1210S333K5RAC	C1210S333K1RAC	C1210S333K2RAC	C1210S333KARAC
0.039	C1210S393K9RAC	C1210S393K8RAC	C1210S393K4RAC	C1210S393K3RAC	C1210S393K5RAC	C1210S393K1RAC	C1210S393K2RAC	C1210S393KARAC
0.047	C1210S473K9RAC	C1210S473K8RAC	C1210S473K4RAC	C1210S473K3RAC	C1210S473K5RAC	C1210S473K1RAC	C1210S473K2RAC	C1210S473KARAC
0.056	C1210S563K9RAC	C1210S563K8RAC	C1210S563K4RAC	C1210S563K3RAC	C1210S563K5RAC	C1210S563K1RAC	C1210S563K2RAC	C1210S563KARAC
0.068	C1210S683K9RAC	C1210S683K8RAC	C1210S683K4RAC	C1210S683K3RAC	C1210S683K5RAC	C1210S683K1RAC	–	–
0.082	C1210S823K9RAC	C1210S823K8RAC	C1210S823K4RAC	C1210S823K3RAC	C1210S823K5RAC	C1210S823K1RAC	–	–
0.1	C1210S104K9RAC	C1210S104K8RAC	C1210S104K4RAC	C1210S104K3RAC	C1210S104K5RAC	C1210S104K1RAC	–	–
0.12	C1210S124K9RAC	C1210S124K8RAC	C1210S124K4RAC	C1210S124K3RAC	C1210S124K5RAC	–	–	–
0.15	C1210S154K9RAC	C1210S154K8RAC	C1210S154K4RAC	C1210S154K3RAC	C1210S154K5RAC	–	–	–
0.18	C1210S184K9RAC	C1210S184K8RAC	C1210S184K4RAC	C1210S184K3RAC	C1210S184K5RAC	–	–	–
0.22	C1210S224K9RAC	C1210S224K8RAC	C1210S224K4RAC	C1210S224K3RAC	C1210S224K5RAC	–	–	–

1812

Value (µF)	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
0.0068	C1812S682K3RAC	C1812S682K5RAC	C1812S682K1RAC	C1812S682K2RAC	C1812S682KARAC
0.0082	C1812S822K3RAC	C1812S822K5RAC	C1812S822K1RAC	C1812S822K2RAC	C1812S822KARAC
0.01	C1812S103K3RAC	C1812S103K5RAC	C1812S103K1RAC	C1812S103K2RAC	C1812S103KARAC
0.012	C1812S123K3RAC	C1812S123K5RAC	C1812S123K1RAC	C1812S123K2RAC	C1812S123KARAC
0.015	C1812S153K3RAC	C1812S153K5RAC	C1812S153K1RAC	C1812S153K2RAC	C1812S153KARAC
0.018	C1812S183K3RAC	C1812S183K5RAC	C1812S183K1RAC	C1812S183K2RAC	C1812S183KARAC
0.022	C1812S223K3RAC	C1812S223K5RAC	C1812S223K1RAC	C1812S223K2RAC	C1812S223KARAC
0.027	C1812S273K3RAC	C1812S273K5RAC	C1812S273K1RAC	C1812S273K2RAC	C1812S273KARAC
0.033	C1812S333K3RAC	C1812S333K5RAC	C1812S333K1RAC	C1812S333K2RAC	C1812S333KARAC
0.039	C1812S393K3RAC	C1812S393K5RAC	C1812S393K1RAC	C1812S393K2RAC	C1812S393KARAC
0.047	C1812S473K3RAC	C1812S473K5RAC	C1812S473K1RAC	C1812S473K2RAC	C1812S473KARAC
0.056	C1812S563K3RAC	C1812S563K5RAC	C1812S563K1RAC	C1812S563K2RAC	C1812S563KARAC
0.068	C1812S683K3RAC	C1812S683K5RAC	C1812S683K1RAC	C1812S683K2RAC	C1812S683KARAC
0.082	C1812S823K3RAC	C1812S823K5RAC	C1812S823K1RAC	C1812S823K2RAC	C1812S823KARAC
0.1	C1812S104K3RAC	C1812S104K5RAC	C1812S104K1RAC	–	–
0.12	C1812S124K3RAC	C1812S124K5RAC	C1812S124K1RAC	–	–
0.15	C1812S154K3RAC	C1812S154K5RAC	C1812S154K1RAC	–	–
0.18	C1812S184K3RAC	C1812S184K5RAC	–	–	–
0.22	C1812S224K3RAC	C1812S224K5RAC	–	–	–

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

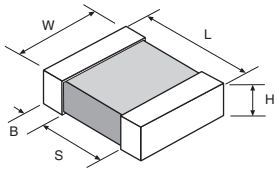


KEMET type FT-CAP

Integrated with KEMET's standard termination materials, a conductive epoxy is utilised between the conductive metallization and nickel barrier finish in order to establish pliability while maintaining terminal strength. This directs board flex stress away from the ceramic body and into the termination area. As a result, this termination system mitigates the risk of low IR or short circuit failures associated with board flex. Supplied taped and reeled.

- High performance & reliability
- **X7R** dielectric
- Industry standard chip sizes : **0603, 0805, 1206** & **1210**
- Values from **180pF to 10uF**
- Choice of voltage in numerous cases
- Suitable for wave & reflow soldering
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H max.	B	S
0603	1.6	0.8	0.95	0.35	0.7
0805	2.0	1.25	1.45	0.5	0.75
1206	3.2	1.6	1.90	0.5	N/A
1210	3.2	2.5	2.70	0.5	N/A

Specification

	FT
Working voltage	as listed
Capacitance tolerance	±10%
Temperature Coefficient	±15% over -55°C to +125°C
Operating temperature range	-55°C to +125°C
Insulation resistance (whichever is less)	≥100,000MΩ or 500MΩ/µF

Marking and Packaging

Marking	No marking appears on the product
Tape	8mm width, 4mm pitch
Reel	178mm dia.

The range of values listed are 10% tolerance. 5% & 20% tolerances are also available to order. Please contact our Sales Desk to discuss your requirements.

FT-CAP ORDER CODES

0603

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
180	C0603X181K9RAC	C0603X181K8RAC	C0603X181K4RAC	C0603X181K3RAC	C0603X181K5RAC	C0603X181K1RAC	C0603X181K2RAC
220	C0603X221K9RAC	C0603X221K8RAC	C0603X221K4RAC	C0603X221K3RAC	C0603X221K5RAC	C0603X221K1RAC	C0603X221K2RAC
270	C0603X271K9RAC	C0603X271K8RAC	C0603X271K4RAC	C0603X271K3RAC	C0603X271K5RAC	C0603X271K1RAC	C0603X271K2RAC
330	C0603X331K9RAC	C0603X331K8RAC	C0603X331K4RAC	C0603X331K3RAC	C0603X331K5RAC	C0603X331K1RAC	C0603X331K2RAC
390	C0603X391K9RAC	C0603X391K8RAC	C0603X391K4RAC	C0603X391K3RAC	C0603X391K5RAC	C0603X391K1RAC	C0603X391K2RAC
470	C0603X471K9RAC	C0603X471K8RAC	C0603X471K4RAC	C0603X471K3RAC	C0603X471K5RAC	C0603X471K1RAC	C0603X471K2RAC
560	C0603X561K9RAC	C0603X561K8RAC	C0603X561K4RAC	C0603X561K3RAC	C0603X561K5RAC	C0603X561K1RAC	C0603X561K2RAC
680	C0603X681K9RAC	C0603X681K8RAC	C0603X681K4RAC	C0603X681K3RAC	C0603X681K5RAC	C0603X681K1RAC	C0603X681K2RAC
820	C0603X821K9RAC	C0603X821K8RAC	C0603X821K4RAC	C0603X821K3RAC	C0603X821K5RAC	C0603X821K1RAC	C0603X821K2RAC
1000	C0603X102K9RAC	C0603X102K8RAC	C0603X102K4RAC	C0603X102K3RAC	C0603X102K5RAC	C0603X102K1RAC	C0603X102K2RAC
1200	C0603X122K9RAC	C0603X122K8RAC	C0603X122K4RAC	C0603X122K3RAC	C0603X122K5RAC	C0603X122K1RAC	C0603X122K2RAC
1500	C0603X152K9RAC	C0603X152K8RAC	C0603X152K4RAC	C0603X152K3RAC	C0603X152K5RAC	C0603X152K1RAC	C0603X152K2RAC
1800	C0603X182K9RAC	C0603X182K8RAC	C0603X182K4RAC	C0603X182K3RAC	C0603X182K5RAC	C0603X182K1RAC	C0603X182K2RAC
2200	C0603X222K9RAC	C0603X222K8RAC	C0603X222K4RAC	C0603X222K3RAC	C0603X222K5RAC	C0603X222K1RAC	C0603X222K2RAC
2700	C0603X272K9RAC	C0603X272K8RAC	C0603X272K4RAC	C0603X272K3RAC	C0603X272K5RAC	C0603X272K1RAC	C0603X272K2RAC
3300	C0603X332K9RAC	C0603X332K8RAC	C0603X332K4RAC	C0603X332K3RAC	C0603X332K5RAC	C0603X332K1RAC	C0603X332K2RAC
3900	C0603X392K9RAC	C0603X392K8RAC	C0603X392K4RAC	C0603X392K3RAC	C0603X392K5RAC	C0603X392K1RAC	C0603X392K2RAC
4700	C0603X472K9RAC	C0603X472K8RAC	C0603X472K4RAC	C0603X472K3RAC	C0603X472K5RAC	C0603X472K1RAC	C0603X472K2RAC
5600	C0603X562K9RAC	C0603X562K8RAC	C0603X562K4RAC	C0603X562K3RAC	C0603X562K5RAC	C0603X562K1RAC	C0603X562K2RAC
6800	C0603X682K9RAC	C0603X682K8RAC	C0603X682K4RAC	C0603X682K3RAC	C0603X682K5RAC	C0603X682K1RAC	C0603X682K2RAC
8200	C0603X822K9RAC	C0603X822K8RAC	C0603X822K4RAC	C0603X822K3RAC	C0603X822K5RAC	C0603X822K1RAC	C0603X822K2RAC
(µF)							
0.01	C0603X103K9RAC	C0603X103K8RAC	C0603X103K4RAC	C0603X103K3RAC	C0603X103K5RAC	C0603X103K1RAC	C0603X103K2RAC
0.012	C0603X123K9RAC	C0603X123K8RAC	C0603X123K4RAC	C0603X123K3RAC	C0603X123K5RAC	C0603X123K1RAC	–
0.015	C0603X153K9RAC	C0603X153K8RAC	C0603X153K4RAC	C0603X153K3RAC	C0603X153K5RAC	C0603X153K1RAC	–
0.018	C0603X183K9RAC	C0603X183K8RAC	C0603X183K4RAC	C0603X183K3RAC	C0603X183K5RAC	C0603X183K1RAC	–
0.022	C0603X223K9RAC	C0603X223K8RAC	C0603X223K4RAC	C0603X223K3RAC	C0603X223K5RAC	C0603X223K1RAC	–
0.027	C0603X273K9RAC	C0603X273K8RAC	C0603X273K4RAC	C0603X273K3RAC	C0603X273K5RAC	C0603X273K1RAC	–
0.033	C0603X333K9RAC	C0603X333K8RAC	C0603X333K4RAC	C0603X333K3RAC	C0603X333K5RAC	C0603X333K1RAC	–
0.039	C0603X393K9RAC	C0603X393K8RAC	C0603X393K4RAC	C0603X393K3RAC	C0603X393K5RAC	C0603X393K1RAC	–
0.047	C0603X473K9RAC	C0603X473K8RAC	C0603X473K4RAC	C0603X473K3RAC	C0603X473K5RAC	C0603X473K1RAC	–
0.056	C0603X563K9RAC	C0603X563K8RAC	C0603X563K4RAC	C0603X563K3RAC	C0603X563K5RAC	–	–
0.068	C0603X683K9RAC	C0603X683K8RAC	C0603X683K4RAC	C0603X683K3RAC	C0603X683K5RAC	–	–
0.082	C0603X823K9RAC	C0603X823K8RAC	C0603X823K4RAC	C0603X823K3RAC	C0603X823K5RAC	–	–
0.1	C0603X104K9RAC	C0603X104K8RAC	C0603X104K4RAC	C0603X104K3RAC	C0603X104K5RAC	–	–
0.12	C0603X124K9RAC	C0603X124K8RAC	C0603X124K4RAC	–	–	–	–
0.15	C0603X154K9RAC	C0603X154K8RAC	C0603X154K4RAC	–	C0603X154K5RAC	–	–
0.18	C0603X184K9RAC	C0603X184K8RAC	C0603X184K4RAC	–	–	–	–
0.22	C0603X224K9RAC	C0603X224K8RAC	C0603X224K4RAC	C0603X224K3RAC	–	–	–
0.27	C0603X274K9RAC	C0603X274K8RAC	C0603X274K4RAC	–	–	–	–
0.33	C0603X334K9RAC	C0603X334K8RAC	C0603X334K4RAC	–	–	–	–
0.39	C0603X394K9RAC	C0603X394K8RAC	C0603X394K4RAC	–	–	–	–
0.47	C0603X474K9RAC	C0603X474K8RAC	C0603X474K4RAC	–	–	–	–

FT-CAP ORDER CODES

0805

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
220	C0805X221K9RAC	C0805X221K8RAC	C0805X221K4RAC	C0805X221K3RAC	C0805X221K5RAC	C0805X221K1RAC	C0805X221K2RAC
270	C0805X271K9RAC	C0805X271K8RAC	C0805X271K4RAC	C0805X271K3RAC	C0805X271K5RAC	C0805X271K1RAC	C0805X271K2RAC
330	C0805X331K9RAC	C0805X331K8RAC	C0805X331K4RAC	C0805X331K3RAC	C0805X331K5RAC	C0805X331K1RAC	C0805X331K2RAC
390	C0805X391K9RAC	C0805X391K8RAC	C0805X391K4RAC	C0805X391K3RAC	C0805X391K5RAC	C0805X391K1RAC	C0805X391K2RAC
470	C0805X471K9RAC	C0805X471K8RAC	C0805X471K4RAC	C0805X471K3RAC	C0805X471K5RAC	C0805X471K1RAC	C0805X471K2RAC
560	C0805X561K9RAC	C0805X561K8RAC	C0805X561K4RAC	C0805X561K3RAC	C0805X561K5RAC	C0805X561K1RAC	C0805X561K2RAC
680	C0805X681K9RAC	C0805X681K8RAC	C0805X681K4RAC	C0805X681K3RAC	C0805X681K5RAC	C0805X681K1RAC	C0805X681K2RAC
820	C0805X821K9RAC	C0805X821K8RAC	C0805X821K4RAC	C0805X821K3RAC	C0805X821K5RAC	C0805X821K1RAC	C0805X821K2RAC
1000	C0805X102K9RAC	C0805X102K8RAC	C0805X102K4RAC	C0805X102K3RAC	C0805X102K5RAC	C0805X102K1RAC	C0805X102K2RAC
1200	C0805X122K9RAC	C0805X122K8RAC	C0805X122K4RAC	C0805X122K3RAC	C0805X122K5RAC	C0805X122K1RAC	C0805X122K2RAC
1500	C0805X152K9RAC	C0805X152K8RAC	C0805X152K4RAC	C0805X152K3RAC	C0805X152K5RAC	C0805X152K1RAC	C0805X152K2RAC
1800	C0805X182K9RAC	C0805X182K8RAC	C0805X182K4RAC	C0805X182K3RAC	C0805X182K5RAC	C0805X182K1RAC	C0805X182K2RAC
2200	C0805X222K9RAC	C0805X222K8RAC	C0805X222K4RAC	C0805X222K3RAC	C0805X222K5RAC	C0805X222K1RAC	C0805X222K2RAC
2700	C0805X272K9RAC	C0805X272K8RAC	C0805X272K4RAC	C0805X272K3RAC	C0805X272K5RAC	C0805X272K1RAC	C0805X272K2RAC
3300	C0805X332K9RAC	C0805X332K8RAC	C0805X332K4RAC	C0805X332K3RAC	C0805X332K5RAC	C0805X332K1RAC	C0805X332K2RAC
3900	C0805X392K9RAC	C0805X392K8RAC	C0805X392K4RAC	C0805X392K3RAC	C0805X392K5RAC	C0805X392K1RAC	C0805X392K2RAC
4700	C0805X472K9RAC	C0805X472K8RAC	C0805X472K4RAC	C0805X472K3RAC	C0805X472K5RAC	C0805X472K1RAC	C0805X472K2RAC
5600	C0805X562K9RAC	C0805X562K8RAC	C0805X562K4RAC	C0805X562K3RAC	C0805X562K5RAC	C0805X562K1RAC	C0805X562K2RAC
6800	C0805X682K9RAC	C0805X682K8RAC	C0805X682K4RAC	C0805X682K3RAC	C0805X682K5RAC	C0805X682K1RAC	C0805X682K2RAC
8200	C0805X822K9RAC	C0805X822K8RAC	C0805X822K4RAC	C0805X822K3RAC	C0805X822K5RAC	C0805X822K1RAC	C0805X822K2RAC
(µF)							
0.01	C0805X103K9RAC	C0805X103K8RAC	C0805X103K4RAC	C0805X103K3RAC	C0805X103K5RAC	C0805X103K1RAC	C0805X103K2RAC
0.012	C0805X123K9RAC	C0805X123K8RAC	C0805X123K4RAC	C0805X123K3RAC	C0805X123K5RAC	C0805X123K1RAC	C0805X123K2RAC
0.015	C0805X153K9RAC	C0805X153K8RAC	C0805X153K4RAC	C0805X153K3RAC	C0805X153K5RAC	C0805X153K1RAC	C0805X153K2RAC
0.018	C0805X183K9RAC	C0805X183K8RAC	C0805X183K4RAC	C0805X183K3RAC	C0805X183K5RAC	C0805X183K1RAC	C0805X183K2RAC
0.022	C0805X223K9RAC	C0805X223K8RAC	C0805X223K4RAC	C0805X223K3RAC	C0805X223K5RAC	C0805X223K1RAC	C0805X223K2RAC
0.027	C0805X273K9RAC	C0805X273K8RAC	C0805X273K4RAC	C0805X273K3RAC	C0805X273K5RAC	C0805X273K1RAC	C0805X273K2RAC
0.033	C0805X333K9RAC	C0805X333K8RAC	C0805X333K4RAC	C0805X333K3RAC	C0805X333K5RAC	C0805X333K1RAC	C0805X333K2RAC
0.039	C0805X393K9RAC	C0805X393K8RAC	C0805X393K4RAC	C0805X393K3RAC	C0805X393K5RAC	C0805X393K1RAC	C0805X393K2RAC
0.047	C0805X473K9RAC	C0805X473K8RAC	C0805X473K4RAC	C0805X473K3RAC	C0805X473K5RAC	C0805X473K1RAC	C0805X473K2RAC
0.056	C0805X563K9RAC	C0805X563K8RAC	C0805X563K4RAC	C0805X563K3RAC	C0805X563K5RAC	C0805X563K1RAC	C0805X563K2RAC
0.068	C0805X683K9RAC	C0805X683K8RAC	C0805X683K4RAC	C0805X683K3RAC	C0805X683K5RAC	C0805X683K1RAC	–
0.082	C0805X823K9RAC	C0805X823K8RAC	C0805X823K4RAC	C0805X823K3RAC	C0805X823K5RAC	C0805X823K1RAC	–
0.1	C0805X104K9RAC	C0805X104K8RAC	C0805X104K4RAC	C0805X104K3RAC	C0805X104K5RAC	C0805X104K1RAC	–
0.12	C0805X124K9RAC	C0805X124K8RAC	C0805X124K4RAC	C0805X124K3RAC	C0805X124K5RAC	C0805X124K1RAC	–
0.15	C0805X154K9RAC	C0805X154K8RAC	C0805X154K4RAC	C0805X154K3RAC	C0805X154K5RAC	C0805X154K1RAC	–
0.18	C0805X184K9RAC	C0805X184K8RAC	C0805X184K4RAC	C0805X184K3RAC	C0805X184K5RAC	C0805X184K1RAC	–
0.22	C0805X224K9RAC	C0805X224K8RAC	C0805X224K4RAC	C0805X224K3RAC	C0805X224K5RAC	C0805X224K1RAC	–
0.27	C0805X274K9RAC	C0805X274K8RAC	C0805X274K4RAC	C0805X274K3RAC	–	–	–
0.33	C0805X334K9RAC	C0805X334K8RAC	C0805X334K4RAC	C0805X334K3RAC	–	–	–
0.39	C0805X394K9RAC	C0805X394K8RAC	C0805X394K4RAC	C0805X394K3RAC	–	–	–
0.47	C0805X474K9RAC	C0805X474K8RAC	C0805X474K4RAC	C0805X474K3RAC	C0805X474K5RAC	–	–
0.56	C0805X564K9RAC	C0805X564K8RAC	C0805X564K4RAC	C0805X564K3RAC	–	–	–
0.68	C0805X684K9RAC	C0805X684K8RAC	C0805X684K4RAC	–	C0805X684K5RAC	–	–
0.82	C0805X824K9RAC	C0805X824K8RAC	C0805X824K4RAC	–	–	–	–
1.0	C0805X105K9RAC	C0805X105K8RAC	C0805X105K4RAC	C0805X105K3RAC	–	–	–
1.2	C0805X125K9RAC	C0805X125K8RAC	C0805X125K4RAC	–	–	–	–
1.5	C0805X155K9RAC	C0805X155K8RAC	C0805X155K4RAC	–	–	–	–
1.8	C0805X185K9RAC	C0805X185K8RAC	C0805X185K4RAC	–	–	–	–
2.2	C0805X225K9RAC	C0805X225K8RAC	C0805X225K4RAC	–	–	–	–

1206

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
1000	C1206X102K9RAC	C1206X102K8RAC	C1206X102K4RAC	C1206X102K3RAC	C1206X102K5RAC	C1206X102K1RAC	C1206X102K2RAC
1200	C1206X122K9RAC	C1206X122K8RAC	C1206X122K4RAC	C1206X122K3RAC	C1206X122K5RAC	C1206X122K1RAC	C1206X122K2RAC
1500	C1206X152K9RAC	C1206X152K8RAC	C1206X152K4RAC	C1206X152K3RAC	C1206X152K5RAC	C1206X152K1RAC	C1206X152K2RAC
1800	C1206X182K9RAC	C1206X182K8RAC	C1206X182K4RAC	C1206X182K3RAC	C1206X182K5RAC	C1206X182K1RAC	C1206X182K2RAC
2200	C1206X222K9RAC	C1206X222K8RAC	C1206X222K4RAC	C1206X222K3RAC	C1206X222K5RAC	C1206X222K1RAC	C1206X222K2RAC
2700	C1206X272K9RAC	C1206X272K8RAC	C1206X272K4RAC	C1206X272K3RAC	C1206X272K5RAC	C1206X272K1RAC	C1206X272K2RAC
3300	C1206X332K9RAC	C1206X332K8RAC	C1206X332K4RAC	C1206X332K3RAC	C1206X332K5RAC	C1206X332K1RAC	C1206X332K2RAC
3900	C1206X392K9RAC	C1206X392K8RAC	C1206X392K4RAC	C1206X392K3RAC	C1206X392K5RAC	C1206X392K1RAC	C1206X392K2RAC
4700	C1206X472K9RAC	C1206X472K8RAC	C1206X472K4RAC	C1206X472K3RAC	C1206X472K5RAC	C1206X472K1RAC	C1206X472K2RAC
5600	C1206X562K9RAC	C1206X562K8RAC	C1206X562K4RAC	C1206X562K3RAC	C1206X562K5RAC	C1206X562K1RAC	C1206X562K2RAC
6800	C1206X682K9RAC	C1206X682K8RAC	C1206X682K4RAC	C1206X682K3RAC	C1206X682K5RAC	C1206X682K1RAC	C1206X682K2RAC
8200	C1206X822K9RAC	C1206X822K8RAC	C1206X822K4RAC	C1206X822K3RAC	C1206X822K5RAC	C1206X822K1RAC	C1206X822K2RAC
(µF)							
0.01	C1206X103K9RAC	C1206X103K8RAC	C1206X103K4RAC	C1206X103K3RAC	C1206X103K5RAC	C1206X103K1RAC	C1206X103K2RAC
0.012	C1206X123K9RAC	C1206X123K8RAC	C1206X123K4RAC	C1206X123K3RAC	C1206X123K5RAC	C1206X123K1RAC	C1206X123K2RAC
0.015	C1206X153K9RAC	C1206X153K8RAC	C1206X153K4RAC	C1206X153K3RAC	C1206X153K5RAC	C1206X153K1RAC	C1206X153K2RAC
0.018	C1206X183K9RAC	C1206X183K8RAC	C1206X183K4RAC	C1206X183K3RAC	C1206X183K5RAC	C1206X183K1RAC	C1206X183K2RAC
0.022	C1206X223K9RAC	C1206X223K8RAC	C1206X223K4RAC	C1206X223K3RAC	C1206X223K5RAC	C1206X223K1RAC	C1206X223K2RAC
0.027	C1206X273K9RAC	C1206X273K8RAC	C1206X273K4RAC	C1206X273K3RAC	C1206X273K5RAC	C1206X273K1RAC	C1206X273K2RAC
0.033	C1206X333K9RAC	C1206X333K8RAC	C1206X333K4RAC	C1206X333K3RAC	C1206X333K5RAC	C1206X333K1RAC	C1206X333K2RAC
0.039	C1206X393K9RAC	C1206X393K8RAC	C1206X393K4RAC	C1206X393K3RAC	C1206X393K5RAC	C1206X393K1RAC	C1206X393K2RAC
0.047	C1206X473K9RAC	C1206X473K8RAC	C1206X473K4RAC	C1206X473K3RAC	C1206X473K5RAC	C1206X473K1RAC	C1206X473K2RAC
0.056	C1206X563K9RAC	C1206X563K8RAC	C1206X563K4RAC	C1206X563K3RAC	C1206X563K5RAC	C1206X563K1RAC	C1206X563K2RAC
0.068	C1206X683K9RAC	C1206X683K8RAC	C1206X683K4RAC	C1206X683K3RAC	C1206X683K5RAC	C1206X683K1RAC	C1206X683K2RAC
0.082	C1206X823K9RAC	C1206X823K8RAC	C1206X823K4RAC	C1206X823K3RAC	C1206X823K5RAC	C1206X823K1RAC	C1206X823K2RAC

KEMET type FT-CAP continued overleaf > > > >

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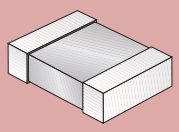
FT-CAP ORDER CODES

1206 *continued*

Value (µF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
0.1	C1206X104K9RAC	C1206X104K8RAC	C1206X104K4RAC	C1206X104K3RAC	C1206X104K5RAC	C1206X104K1RAC	C1206X104K2RAC
0.12	C1206X124K9RAC	C1206X124K8RAC	C1206X124K4RAC	C1206X124K3RAC	C1206X124K5RAC	C1206X124K1RAC	C1206X124K2RAC
0.15	C1206X154K9RAC	C1206X154K8RAC	C1206X154K4RAC	C1206X154K3RAC	C1206X154K5RAC	C1206X154K1RAC	C1206X154K2RAC
0.18	C1206X184K9RAC	C1206X184K8RAC	C1206X184K4RAC	C1206X184K3RAC	C1206X184K5RAC	C1206X184K1RAC	–
0.22	C1206X224K9RAC	C1206X224K8RAC	C1206X224K4RAC	C1206X224K3RAC	C1206X224K5RAC	C1206X224K1RAC	–
0.27	C1206X274K9RAC	C1206X274K8RAC	C1206X274K4RAC	C1206X274K3RAC	C1206X274K5RAC	C1206X274K1RAC	–
0.33	C1206X334K9RAC	C1206X334K8RAC	C1206X334K4RAC	C1206X334K3RAC	C1206X334K5RAC	C1206X334K1RAC	–
0.39	C1206X394K9RAC	C1206X394K8RAC	C1206X394K4RAC	C1206X394K3RAC	C1206X394K5RAC	C1206X394K1RAC	–
0.47	C1206X474K9RAC	C1206X474K8RAC	C1206X474K4RAC	C1206X474K3RAC	C1206X474K5RAC	C1206X474K1RAC	–
0.56	C1206X564K9RAC	C1206X564K8RAC	C1206X564K4RAC	C1206X564K3RAC	C1206X564K5RAC	–	–
0.68	C1206X684K9RAC	C1206X684K8RAC	C1206X684K4RAC	C1206X684K3RAC	C1206X684K5RAC	–	–
0.82	C1206X824K9RAC	C1206X824K8RAC	C1206X824K4RAC	C1206X824K3RAC	–	–	–
1.0	C1206X105K9RAC	C1206X105K8RAC	C1206X105K4RAC	C1206X105K3RAC	C1206X105K5RAC	–	–
1.2	C1206X125K9RAC	C1206X125K8RAC	C1206X125K4RAC	C1206X125K3RAC	–	–	–
1.5	C1206X155K9RAC	C1206X155K8RAC	C1206X155K4RAC	C1206X155K3RAC	–	–	–
1.8	C1206X185K9RAC	C1206X185K8RAC	C1206X185K4RAC	–	–	–	–
2.2	C1206X225K9RAC	C1206X225K8RAC	C1206X225K4RAC	C1206X225K3RAC	C1206X225K5RAC	–	–
2.7	C1206X275K9RAC	C1206X275K8RAC	C1206X275K4RAC	–	–	–	–
3.3	C1206X335K9RAC	C1206X335K8RAC	C1206X335K4RAC	–	–	–	–
3.9	C1206X395K9RAC	C1206X395K8RAC	C1206X395K4RAC	–	–	–	–
4.7	C1206X475K9RAC	C1206X475K8RAC	C1206X475K4RAC	C1206X475K3RAC	–	–	–
5.6	C1206X565K9RAC	C1206X565K8RAC	C1206X565K4RAC	–	–	–	–
6.8	C1206X685K9RAC	C1206X685K8RAC	C1206X685K4RAC	–	–	–	–
8.2	C1206X825K9RAC	C1206X825K8RAC	C1206X825K4RAC	–	–	–	–
10	C1206X106K9RAC	C1206X106K8RAC	C1206X106K4RAC	–	–	–	–

1210

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
2200	C1210X222K9RAC	C1210X222K8RAC	C1210X222K4RAC	C1210X222K3RAC	C1210X222K5RAC	C1210X222K1RAC	C1210X222K2RAC
2700	C1210X272K9RAC	C1210X272K8RAC	C1210X272K4RAC	C1210X272K3RAC	C1210X272K5RAC	C1210X272K1RAC	C1210X272K2RAC
3300	C1210X332K9RAC	C1210X332K8RAC	C1210X332K4RAC	C1210X332K3RAC	C1210X332K5RAC	C1210X332K1RAC	C1210X332K2RAC
3900	C1210X392K9RAC	C1210X392K8RAC	C1210X392K4RAC	C1210X392K3RAC	C1210X392K5RAC	C1210X392K1RAC	C1210X392K2RAC
4700	C1210X472K9RAC	C1210X472K8RAC	C1210X472K4RAC	C1210X472K3RAC	C1210X472K5RAC	C1210X472K1RAC	C1210X472K2RAC
5600	C1210X562K9RAC	C1210X562K8RAC	C1210X562K4RAC	C1210X562K3RAC	C1210X562K5RAC	C1210X562K1RAC	C1210X562K2RAC
6800	C1210X682K9RAC	C1210X682K8RAC	C1210X682K4RAC	C1210X682K3RAC	C1210X682K5RAC	C1210X682K1RAC	C1210X682K2RAC
8200	C1210X822K9RAC	C1210X822K8RAC	C1210X822K4RAC	C1210X822K3RAC	C1210X822K5RAC	C1210X822K1RAC	C1210X822K2RAC
(µF)							
0.01	C1210X103K9RAC	C1210X103K8RAC	C1210X103K4RAC	C1210X103K3RAC	C1210X103K5RAC	C1210X103K1RAC	C1210X103K2RAC
0.012	C1210X123K9RAC	C1210X123K8RAC	C1210X123K4RAC	C1210X123K3RAC	C1210X123K5RAC	C1210X123K1RAC	C1210X123K2RAC
0.015	C1210X153K9RAC	C1210X153K8RAC	C1210X153K4RAC	C1210X153K3RAC	C1210X153K5RAC	C1210X153K1RAC	C1210X153K2RAC
0.018	C1210X183K9RAC	C1210X183K8RAC	C1210X183K4RAC	C1210X183K3RAC	C1210X183K5RAC	C1210X183K1RAC	C1210X183K2RAC
0.022	C1210X223K9RAC	C1210X223K8RAC	C1210X223K4RAC	C1210X223K3RAC	C1210X223K5RAC	C1210X223K1RAC	C1210X223K2RAC
0.027	C1210X273K9RAC	C1210X273K8RAC	C1210X273K4RAC	C1210X273K3RAC	C1210X273K5RAC	C1210X273K1RAC	C1210X273K2RAC
0.033	C1210X333K9RAC	C1210X333K8RAC	C1210X333K4RAC	C1210X333K3RAC	C1210X333K5RAC	C1210X333K1RAC	C1210X333K2RAC
0.039	C1210X393K9RAC	C1210X393K8RAC	C1210X393K4RAC	C1210X393K3RAC	C1210X393K5RAC	C1210X393K1RAC	C1210X393K2RAC
0.047	C1210X473K9RAC	C1210X473K8RAC	C1210X473K4RAC	C1210X473K3RAC	C1210X473K5RAC	C1210X473K1RAC	C1210X473K2RAC
0.056	C1210X563K9RAC	C1210X563K8RAC	C1210X563K4RAC	C1210X563K3RAC	C1210X563K5RAC	C1210X563K1RAC	C1210X563K2RAC
0.068	C1210X683K9RAC	C1210X683K8RAC	C1210X683K4RAC	C1210X683K3RAC	C1210X683K5RAC	C1210X683K1RAC	C1210X683K2RAC
0.082	C1210X823K9RAC	C1210X823K8RAC	C1210X823K4RAC	C1210X823K3RAC	C1210X823K5RAC	C1210X823K1RAC	C1210X823K2RAC
0.1	C1210X104K9RAC	C1210X104K8RAC	C1210X104K4RAC	C1210X104K3RAC	C1210X104K5RAC	C1210X104K1RAC	C1210X104K2RAC
0.12	C1210X124K9RAC	C1210X124K8RAC	C1210X124K4RAC	C1210X124K3RAC	C1210X124K5RAC	C1210X124K1RAC	–
0.15	C1210X154K9RAC	C1210X154K8RAC	C1210X154K4RAC	C1210X154K3RAC	C1210X154K5RAC	C1210X154K1RAC	–
0.18	C1210X184K9RAC	C1210X184K8RAC	C1210X184K4RAC	C1210X184K3RAC	C1210X184K5RAC	C1210X184K1RAC	–
0.22	C1210X224K9RAC	C1210X224K8RAC	C1210X224K4RAC	C1210X224K3RAC	C1210X224K5RAC	C1210X224K1RAC	–
0.27	C1210X274K9RAC	C1210X274K8RAC	C1210X274K4RAC	C1210X274K3RAC	C1210X274K5RAC	C1210X274K1RAC	–
0.33	C1210X334K9RAC	C1210X334K8RAC	C1210X334K4RAC	C1210X334K3RAC	C1210X334K5RAC	C1210X334K1RAC	–
0.39	C1210X394K9RAC	C1210X394K8RAC	C1210X394K4RAC	C1210X394K3RAC	C1210X394K5RAC	–	–
0.47	C1210X474K9RAC	C1210X474K8RAC	C1210X474K4RAC	C1210X474K3RAC	C1210X474K5RAC	C1210X474K1RAC	–
0.56	C1210X564K9RAC	C1210X564K8RAC	C1210X564K4RAC	C1210X564K3RAC	C1210X564K5RAC	–	–
0.68	C1210X684K9RAC	C1210X684K8RAC	C1210X684K4RAC	C1210X684K3RAC	C1210X684K5RAC	–	–
0.82	C1210X824K9RAC	C1210X824K8RAC	C1210X824K4RAC	C1210X824K3RAC	C1210X824K5RAC	–	–
1.0	C1210X105K9RAC	C1210X105K8RAC	C1210X105K4RAC	C1210X105K3RAC	C1210X105K5RAC	C1210X105K1RAC	–
1.2	C1210X125K9RAC	C1210X125K8RAC	C1210X125K4RAC	C1210X125K3RAC	C1210X125K5RAC	–	–
1.5	C1210X155K9RAC	C1210X155K8RAC	C1210X155K4RAC	C1210X155K3RAC	C1210X155K5RAC	–	–
1.8	C1210X185K9RAC	C1210X185K8RAC	C1210X185K4RAC	C1210X185K3RAC	C1210X185K5RAC	–	–
2.5	–	–	–	C1210X225K3RAC	C1210X225K5RAC	–	–
3.3	–	–	–	–	C1210X335K5RAC	–	–
4.7	C1210X475K9RAC	C1210X475K8RAC	C1210X475K4RAC	C1210X475K3RAC	C1210X475K5RAC	–	–
6.8	–	–	–	C1210X685K3RAC	–	–	–
10	C1210X106K9RAC	C1210X106K8RAC	C1210X106K4RAC	C1210X106K3RAC	–	–	–

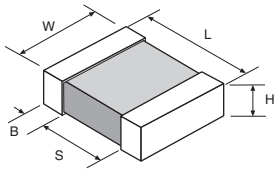


KEMET type FF-CAP

The FF-CAP has both Floating Electrode and Flexible Termination. The combination of these technologies ensures an increased measure of protection from board flex, offering up to 5mm of flex-bend capability. This provides for an enhanced level of mechanical flex crack protection for low to mid capacitance values. Supplied taped and reeled.

- High performance & reliability
- **X7R** dielectric
- Industry standard chip sizes : **0603, 0805, 1206 & 1210**
- Choice of voltage in numerous cases
- Values from **180pF to 220nF**
- Suitable for wave & reflow soldering
- Supplied taped & reeled

Dimensions (mm)



Case Size	L	W	H max.	B	S
0603	1.8	0.8	0.95	0.35	0.7
0805	2.2	1.25	1.45	0.5	0.75
1206	3.4	1.6	1.9	0.5	N/A
1210	3.4	2.5	2.7	0.5	N/A

Specification	FF-CAP
Working voltage	as listed
Capacitance tolerance	±10%
Temperature Coefficient	±15% over -55°C to +125°C
Operating temperature range	-55°C to +125°C
Insulation resistance (whichever is less)	≥100,000MΩ or 1000MΩ/µF

Marking and Packaging	
Marking	No marking appears on the product
Tape	8mm width, 4mm pitch
Reel	178mm dia.

The range of values listed overleaf are 10% tolerance. 5% & 20% tolerances are also available to order. Please contact our Sales Desk to discuss your requirements.

KEMET type FF-CAP
continued overleaf > > > >

KEMET type FF-CAP continued

ORDER CODES

X7R dielectric : 10% tol.

0603

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
180	C0603Y181K9RAC	C0603Y181K8RAC	C0603Y181K4RAC	C0603Y181K3RAC	C0603Y181K5RAC	C0603Y181K1RAC	C0603Y181K2RAC
220	C0603Y221K9RAC	C0603Y221K8RAC	C0603Y221K4RAC	C0603Y221K3RAC	C0603Y221K5RAC	C0603Y221K1RAC	C0603Y221K2RAC
270	C0603Y271K9RAC	C0603Y271K8RAC	C0603Y271K4RAC	C0603Y271K3RAC	C0603Y271K5RAC	C0603Y271K1RAC	C0603Y271K2RAC
330	C0603Y331K9RAC	C0603Y331K8RAC	C0603Y331K4RAC	C0603Y331K3RAC	C0603Y331K5RAC	C0603Y331K1RAC	C0603Y331K2RAC
390	C0603Y391K9RAC	C0603Y391K8RAC	C0603Y391K4RAC	C0603Y391K3RAC	C0603Y391K5RAC	C0603Y391K1RAC	C0603Y391K2RAC
470	C0603Y471K9RAC	C0603Y471K8RAC	C0603Y471K4RAC	C0603Y471K3RAC	C0603Y471K5RAC	C0603Y471K1RAC	C0603Y471K2RAC
560	C0603Y561K9RAC	C0603Y561K8RAC	C0603Y561K4RAC	C0603Y561K3RAC	C0603Y561K5RAC	C0603Y561K1RAC	C0603Y561K2RAC
680	C0603Y681K9RAC	C0603Y681K8RAC	C0603Y681K4RAC	C0603Y681K3RAC	C0603Y681K5RAC	C0603Y681K1RAC	C0603Y681K2RAC
820	C0603Y821K9RAC	C0603Y821K8RAC	C0603Y821K4RAC	C0603Y821K3RAC	C0603Y821K5RAC	C0603Y821K1RAC	C0603Y821K2RAC
1000	C0603Y102K9RAC	C0603Y102K8RAC	C0603Y102K4RAC	C0603Y102K3RAC	C0603Y102K5RAC	C0603Y102K1RAC	C0603Y102K2RAC
1200	C0603Y122K9RAC	C0603Y122K8RAC	C0603Y122K4RAC	C0603Y122K3RAC	C0603Y122K5RAC	C0603Y122K1RAC	C0603Y122K2RAC
1500	C0603Y152K9RAC	C0603Y152K8RAC	C0603Y152K4RAC	C0603Y152K3RAC	C0603Y152K5RAC	C0603Y152K1RAC	C0603Y152K2RAC
1800	C0603Y182K9RAC	C0603Y182K8RAC	C0603Y182K4RAC	C0603Y182K3RAC	C0603Y182K5RAC	C0603Y182K1RAC	C0603Y182K2RAC
2200	C0603Y222K9RAC	C0603Y222K8RAC	C0603Y222K4RAC	C0603Y222K3RAC	C0603Y222K5RAC	C0603Y222K1RAC	C0603Y222K2RAC
2700	C0603Y272K9RAC	C0603Y272K8RAC	C0603Y272K4RAC	C0603Y272K3RAC	C0603Y272K5RAC	C0603Y272K1RAC	C0603Y272K2RAC
3300	C0603Y332K9RAC	C0603Y332K8RAC	C0603Y332K4RAC	C0603Y332K3RAC	C0603Y332K5RAC	C0603Y332K1RAC	C0603Y332K2RAC
3900	C0603Y392K9RAC	C0603Y392K8RAC	C0603Y392K4RAC	C0603Y392K3RAC	C0603Y392K5RAC	C0603Y392K1RAC	C0603Y392K2RAC
4700	C0603Y472K9RAC	C0603Y472K8RAC	C0603Y472K4RAC	C0603Y472K3RAC	C0603Y472K5RAC	C0603Y472K1RAC	C0603Y472K2RAC
5600	C0603Y562K9RAC	C0603Y562K8RAC	C0603Y562K4RAC	C0603Y562K3RAC	C0603Y562K5RAC	C0603Y562K1RAC	–
6800	C0603Y682K9RAC	C0603Y682K8RAC	C0603Y682K4RAC	C0603Y682K3RAC	C0603Y682K5RAC	C0603Y682K1RAC	–
8200	C0603Y822K9RAC	C0603Y822K8RAC	C0603Y822K4RAC	C0603Y822K3RAC	C0603Y822K5RAC	C0603Y822K1RAC	–
(µF)							
0.01	C0603Y103K9RAC	C0603Y103K8RAC	C0603Y103K4RAC	C0603Y103K3RAC	C0603Y103K5RAC	–	–
0.012	C0603Y123K9RAC	C0603Y123K8RAC	C0603Y123K4RAC	C0603Y123K3RAC	C0603Y123K5RAC	–	–
0.015	C0603Y153K9RAC	C0603Y153K8RAC	C0603Y153K4RAC	C0603Y153K3RAC	C0603Y153K5RAC	–	–
0.018	C0603Y183K9RAC	C0603Y183K8RAC	C0603Y183K4RAC	C0603Y183K3RAC	C0603Y183K5RAC	–	–
0.022	C0603Y223K9RAC	C0603Y223K8RAC	C0603Y223K4RAC	C0603Y223K3RAC	C0603Y223K5RAC	–	–

0805

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
180	C0805Y181K9RAC	C0805Y181K8RAC	C0805Y181K4RAC	C0805Y181K3RAC	C0805Y181K5RAC	C0805Y181K1RAC	C0805Y181K2RAC	C0805Y181KARAC
220	C0805Y221K9RAC	C0805Y221K8RAC	C0805Y221K4RAC	C0805Y221K3RAC	C0805Y221K5RAC	C0805Y221K1RAC	C0805Y221K2RAC	C0805Y221KARAC
270	C0805Y271K9RAC	C0805Y271K8RAC	C0805Y271K4RAC	C0805Y271K3RAC	C0805Y271K5RAC	C0805Y271K1RAC	C0805Y271K2RAC	C0805Y271KARAC
330	C0805Y331K9RAC	C0805Y331K8RAC	C0805Y331K4RAC	C0805Y331K3RAC	C0805Y331K5RAC	C0805Y331K1RAC	C0805Y331K2RAC	C0805Y331KARAC
390	C0805Y391K9RAC	C0805Y391K8RAC	C0805Y391K4RAC	C0805Y391K3RAC	C0805Y391K5RAC	C0805Y391K1RAC	C0805Y391K2RAC	C0805Y391KARAC
470	C0805Y471K9RAC	C0805Y471K8RAC	C0805Y471K4RAC	C0805Y471K3RAC	C0805Y471K5RAC	C0805Y471K1RAC	C0805Y471K2RAC	C0805Y471KARAC
560	C0805Y561K9RAC	C0805Y561K8RAC	C0805Y561K4RAC	C0805Y561K3RAC	C0805Y561K5RAC	C0805Y561K1RAC	C0805Y561K2RAC	C0805Y561KARAC
680	C0805Y681K9RAC	C0805Y681K8RAC	C0805Y681K4RAC	C0805Y681K3RAC	C0805Y681K5RAC	C0805Y681K1RAC	C0805Y681K2RAC	C0805Y681KARAC
820	C0805Y821K9RAC	C0805Y821K8RAC	C0805Y821K4RAC	C0805Y821K3RAC	C0805Y821K5RAC	C0805Y821K1RAC	C0805Y821K2RAC	C0805Y821KARAC
1000	C0805Y102K9RAC	C0805Y102K8RAC	C0805Y102K4RAC	C0805Y102K3RAC	C0805Y102K5RAC	C0805Y102K1RAC	C0805Y102K2RAC	C0805Y102KARAC
1200	C0805Y122K9RAC	C0805Y122K8RAC	C0805Y122K4RAC	C0805Y122K3RAC	C0805Y122K5RAC	C0805Y122K1RAC	C0805Y122K2RAC	C0805Y122KARAC
1500	C0805Y152K9RAC	C0805Y152K8RAC	C0805Y152K4RAC	C0805Y152K3RAC	C0805Y152K5RAC	C0805Y152K1RAC	C0805Y152K2RAC	C0805Y152KARAC
1800	C0805Y182K9RAC	C0805Y182K8RAC	C0805Y182K4RAC	C0805Y182K3RAC	C0805Y182K5RAC	C0805Y182K1RAC	C0805Y182K2RAC	C0805Y182KARAC
2200	C0805Y222K9RAC	C0805Y222K8RAC	C0805Y222K4RAC	C0805Y222K3RAC	C0805Y222K5RAC	C0805Y222K1RAC	C0805Y222K2RAC	C0805Y222KARAC
2700	C0805Y272K9RAC	C0805Y272K8RAC	C0805Y272K4RAC	C0805Y272K3RAC	C0805Y272K5RAC	C0805Y272K1RAC	C0805Y272K2RAC	C0805Y272KARAC
3300	C0805Y332K9RAC	C0805Y332K8RAC	C0805Y332K4RAC	C0805Y332K3RAC	C0805Y332K5RAC	C0805Y332K1RAC	C0805Y332K2RAC	C0805Y332KARAC
3900	C0805Y392K9RAC	C0805Y392K8RAC	C0805Y392K4RAC	C0805Y392K3RAC	C0805Y392K5RAC	C0805Y392K1RAC	C0805Y392K2RAC	C0805Y392KARAC
4700	C0805Y472K9RAC	C0805Y472K8RAC	C0805Y472K4RAC	C0805Y472K3RAC	C0805Y472K5RAC	C0805Y472K1RAC	C0805Y472K2RAC	C0805Y472KARAC
5600	C0805Y562K9RAC	C0805Y562K8RAC	C0805Y562K4RAC	C0805Y562K3RAC	C0805Y562K5RAC	C0805Y562K1RAC	C0805Y562K2RAC	C0805Y562KARAC
6800	C0805Y682K9RAC	C0805Y682K8RAC	C0805Y682K4RAC	C0805Y682K3RAC	C0805Y682K5RAC	C0805Y682K1RAC	C0805Y682K2RAC	C0805Y682KARAC
8200	C0805Y822K9RAC	C0805Y822K8RAC	C0805Y822K4RAC	C0805Y822K3RAC	C0805Y822K5RAC	C0805Y822K1RAC	C0805Y822K2RAC	C0805Y822KARAC
(µF)								
0.01	C0805Y103K9RAC	C0805Y103K8RAC	C0805Y103K4RAC	C0805Y103K3RAC	C0805Y103K5RAC	C0805Y103K1RAC	C0805Y103K2RAC	C0805Y103KARAC
0.012	C0805Y123K9RAC	C0805Y123K8RAC	C0805Y123K4RAC	C0805Y123K3RAC	C0805Y123K5RAC	C0805Y123K1RAC	C0805Y123K2RAC	C0805Y123KARAC
0.015	C0805Y153K9RAC	C0805Y153K8RAC	C0805Y153K4RAC	C0805Y153K3RAC	C0805Y153K5RAC	C0805Y153K1RAC	–	–
0.018	C0805Y183K9RAC	C0805Y183K8RAC	C0805Y183K4RAC	C0805Y183K3RAC	C0805Y183K5RAC	C0805Y183K1RAC	–	–
0.022	C0805Y223K9RAC	C0805Y223K8RAC	C0805Y223K4RAC	C0805Y223K3RAC	C0805Y223K5RAC	C0805Y223K1RAC	–	–
0.027	C0805Y273K9RAC	C0805Y273K8RAC	C0805Y273K4RAC	C0805Y273K3RAC	C0805Y273K5RAC	–	–	–
0.033	C0805Y333K9RAC	C0805Y333K8RAC	C0805Y333K4RAC	C0805Y333K3RAC	C0805Y333K5RAC	–	–	–
0.039	C0805Y393K9RAC	C0805Y393K8RAC	C0805Y393K4RAC	C0805Y393K3RAC	C0805Y393K5RAC	–	–	–
0.047	C0805Y473K9RAC	C0805Y473K8RAC	C0805Y473K4RAC	C0805Y473K3RAC	C0805Y473K5RAC	–	–	–
0.056	C0805Y563K9RAC	C0805Y563K8RAC	C0805Y563K4RAC	C0805Y563K3RAC	C0805Y563K5RAC	–	–	–

KEMET type FF-CAP continued

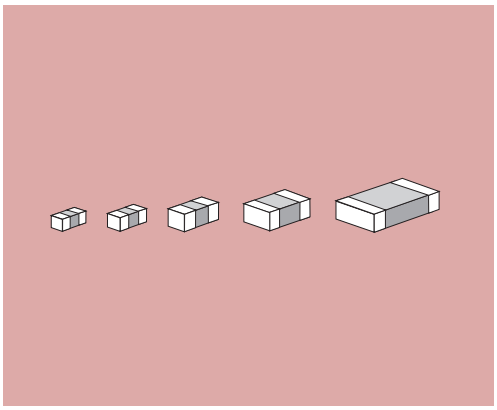
ORDER CODES

1206

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
1000	C1206Y102K9RAC	C1206Y102K8RAC	C1206Y102K4RAC	C1206Y102K3RAC	C1206Y102K5RAC	C1206Y102K1RAC	C1206Y102K2RAC	C0805Y102KARAC
1200	C1206Y122K9RAC	C1206Y122K8RAC	C1206Y122K4RAC	C1206Y122K3RAC	C1206Y122K5RAC	C1206Y122K1RAC	C1206Y122K2RAC	C0805Y122KARAC
1500	C1206Y152K9RAC	C1206Y152K8RAC	C1206Y152K4RAC	C1206Y152K3RAC	C1206Y152K5RAC	C1206Y152K1RAC	C1206Y152K2RAC	C0805Y152KARAC
1800	C1206Y182K9RAC	C1206Y182K8RAC	C1206Y182K4RAC	C1206Y182K3RAC	C1206Y182K5RAC	C1206Y182K1RAC	C1206Y182K2RAC	C0805Y182KARAC
2200	C1206Y222K9RAC	C1206Y222K8RAC	C1206Y222K4RAC	C1206Y222K3RAC	C1206Y222K5RAC	C1206Y222K1RAC	C1206Y222K2RAC	C0805Y222KARAC
2700	C1206Y272K9RAC	C1206Y272K8RAC	C1206Y272K4RAC	C1206Y272K3RAC	C1206Y272K5RAC	C1206Y272K1RAC	C1206Y272K2RAC	C0805Y272KARAC
3300	C1206Y332K9RAC	C1206Y332K8RAC	C1206Y332K4RAC	C1206Y332K3RAC	C1206Y332K5RAC	C1206Y332K1RAC	C1206Y332K2RAC	C0805Y332KARAC
3900	C1206Y392K9RAC	C1206Y392K8RAC	C1206Y392K4RAC	C1206Y392K3RAC	C1206Y392K5RAC	C1206Y392K1RAC	C1206Y392K2RAC	C0805Y392KARAC
4700	C1206Y472K9RAC	C1206Y472K8RAC	C1206Y472K4RAC	C1206Y472K3RAC	C1206Y472K5RAC	C1206Y472K1RAC	C1206Y472K2RAC	C0805Y472KARAC
5600	C1206Y562K9RAC	C1206Y562K8RAC	C1206Y562K4RAC	C1206Y562K3RAC	C1206Y562K5RAC	C1206Y562K1RAC	C1206Y562K2RAC	C0805Y562KARAC
6800	C1206Y682K9RAC	C1206Y682K8RAC	C1206Y682K4RAC	C1206Y682K3RAC	C1206Y682K5RAC	C1206Y682K1RAC	C1206Y682K2RAC	C0805Y682KARAC
8200	C1206Y822K9RAC	C1206Y822K8RAC	C1206Y822K4RAC	C1206Y822K3RAC	C1206Y822K5RAC	C1206Y822K1RAC	C1206Y822K2RAC	C0805Y822KARAC
(µF)								
0.01	C1206Y103K9RAC	C1206Y103K8RAC	C1206Y103K4RAC	C1206Y103K3RAC	C1206Y103K5RAC	C1206Y103K1RAC	C1206Y103K2RAC	C0805Y103KARAC
0.012	C1206Y123K9RAC	C1206Y123K8RAC	C1206Y123K4RAC	C1206Y123K3RAC	C1206Y123K5RAC	C1206Y123K1RAC	C1206Y123K2RAC	C0805Y123KARAC
0.015	C1206Y153K9RAC	C1206Y153K8RAC	C1206Y153K4RAC	C1206Y153K3RAC	C1206Y153K5RAC	C1206Y153K1RAC	C1206Y153K2RAC	C0805Y153KARAC
0.018	C1206Y183K9RAC	C1206Y183K8RAC	C1206Y183K4RAC	C1206Y183K3RAC	C1206Y183K5RAC	C1206Y183K1RAC	C1206Y183K2RAC	C0805Y183KARAC
0.022	C1206Y223K9RAC	C1206Y223K8RAC	C1206Y223K4RAC	C1206Y223K3RAC	C1206Y223K5RAC	C1206Y223K1RAC	C1206Y223K2RAC	C0805Y223KARAC
0.027	C1206Y273K9RAC	C1206Y273K8RAC	C1206Y273K4RAC	C1206Y273K3RAC	C1206Y273K5RAC	C1206Y273K1RAC	C1206Y273K2RAC	C0805Y273KARAC
0.033	C1206Y333K9RAC	C1206Y333K8RAC	C1206Y333K4RAC	C1206Y333K3RAC	C1206Y333K5RAC	C1206Y333K1RAC	–	–
0.039	C1206Y393K9RAC	C1206Y393K8RAC	C1206Y393K4RAC	C1206Y393K3RAC	C1206Y393K5RAC	C1206Y393K1RAC	–	–
0.047	C1206Y473K9RAC	C1206Y473K8RAC	C1206Y473K4RAC	C1206Y473K3RAC	C1206Y473K5RAC	C1206Y473K1RAC	–	–
0.056	C1206Y563K9RAC	C1206Y563K8RAC	C1206Y563K4RAC	C1206Y563K3RAC	C1206Y563K5RAC	C1206Y563K1RAC	–	–
0.068	C1206Y683K9RAC	C1206Y683K8RAC	C1206Y683K4RAC	C1206Y683K3RAC	C1206Y683K5RAC	–	–	–
0.082	C1206Y823K9RAC	C1206Y823K8RAC	C1206Y823K4RAC	C1206Y823K3RAC	C1206Y823K5RAC	–	–	–
0.1	C1206Y104K9RAC	C1206Y104K8RAC	C1206Y104K4RAC	C1206Y104K3RAC	C1206Y104K5RAC	–	–	–
0.12	C1206Y124K9RAC	C1206Y124K8RAC	C1206Y124K4RAC	C1206Y124K3RAC	C1206Y124K5RAC	–	–	–

1210

Value (pF)	6.3 Volt	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt	250 Volt
2200	C1210Y222K9RAC	C1210Y222K8RAC	C1210Y222K4RAC	C1210Y222K3RAC	C1210Y222K5RAC	C1210Y222K1RAC	C1210Y222K2RAC	C0805Y222KARAC
2700	C1210Y272K9RAC	C1210Y272K8RAC	C1210Y272K4RAC	C1210Y272K3RAC	C1210Y272K5RAC	C1210Y272K1RAC	C1210Y272K2RAC	C0805Y272KARAC
3300	C1210Y332K9RAC	C1210Y332K8RAC	C1210Y332K4RAC	C1210Y332K3RAC	C1210Y332K5RAC	C1210Y332K1RAC	C1210Y332K2RAC	C0805Y332KARAC
3900	C1210Y392K9RAC	C1210Y392K8RAC	C1210Y392K4RAC	C1210Y392K3RAC	C1210Y392K5RAC	C1210Y392K1RAC	C1210Y392K2RAC	C0805Y392KARAC
4700	C1210Y472K9RAC	C1210Y472K8RAC	C1210Y472K4RAC	C1210Y472K3RAC	C1210Y472K5RAC	C1210Y472K1RAC	C1210Y472K2RAC	C0805Y472KARAC
5600	C1210Y562K9RAC	C1210Y562K8RAC	C1210Y562K4RAC	C1210Y562K3RAC	C1210Y562K5RAC	C1210Y562K1RAC	C1210Y562K2RAC	C0805Y562KARAC
6800	C1210Y682K9RAC	C1210Y682K8RAC	C1210Y682K4RAC	C1210Y682K3RAC	C1210Y682K5RAC	C1210Y682K1RAC	C1210Y682K2RAC	C0805Y682KARAC
8200	C1210Y822K9RAC	C1210Y822K8RAC	C1210Y822K4RAC	C1210Y822K3RAC	C1210Y822K5RAC	C1210Y822K1RAC	C1210Y822K2RAC	C0805Y822KARAC
(µF)								
0.01	C1210Y103K9RAC	C1210Y103K8RAC	C1210Y103K4RAC	C1210Y103K3RAC	C1210Y103K5RAC	C1210Y103K1RAC	C1210Y103K2RAC	C0805Y103KARAC
0.012	C1210Y123K9RAC	C1210Y123K8RAC	C1210Y123K4RAC	C1210Y123K3RAC	C1210Y123K5RAC	C1210Y123K1RAC	C1210Y123K2RAC	C0805Y123KARAC
0.015	C1210Y153K9RAC	C1210Y153K8RAC	C1210Y153K4RAC	C1210Y153K3RAC	C1210Y153K5RAC	C1210Y153K1RAC	C1210Y153K2RAC	C0805Y153KARAC
0.018	C1210Y183K9RAC	C1210Y183K8RAC	C1210Y183K4RAC	C1210Y183K3RAC	C1210Y183K5RAC	C1210Y183K1RAC	C1210Y183K2RAC	C0805Y183KARAC
0.022	C1210Y223K9RAC	C1210Y223K8RAC	C1210Y223K4RAC	C1210Y223K3RAC	C1210Y223K5RAC	C1210Y223K1RAC	C1210Y223K2RAC	C0805Y223KARAC
0.027	C1210Y273K9RAC	C1210Y273K8RAC	C1210Y273K4RAC	C1210Y273K3RAC	C1210Y273K5RAC	C1210Y273K1RAC	C1210Y273K2RAC	C0805Y273KARAC
0.033	C1210Y333K9RAC	C1210Y333K8RAC	C1210Y333K4RAC	C1210Y333K3RAC	C1210Y333K5RAC	C1210Y333K1RAC	C1210Y333K2RAC	C0805Y333KARAC
0.039	C1210Y393K9RAC	C1210Y393K8RAC	C1210Y393K4RAC	C1210Y393K3RAC	C1210Y393K5RAC	C1210Y393K1RAC	C1210Y393K2RAC	C0805Y393KARAC
0.047	C1210Y473K9RAC	C1210Y473K8RAC	C1210Y473K4RAC	C1210Y473K3RAC	C1210Y473K5RAC	C1210Y473K1RAC	C1210Y473K2RAC	C0805Y473KARAC
0.056	C1210Y563K9RAC	C1210Y563K8RAC	C1210Y563K4RAC	C1210Y563K3RAC	C1210Y563K5RAC	C1210Y563K1RAC	C1210Y563K2RAC	C0805Y563KARAC
0.068	C1210Y683K9RAC	C1210Y683K8RAC	C1210Y683K4RAC	C1210Y683K3RAC	C1210Y683K5RAC	C1210Y683K1RAC	–	–
0.082	C1210Y823K9RAC	C1210Y823K8RAC	C1210Y823K4RAC	C1210Y823K3RAC	C1210Y823K5RAC	C1210Y823K1RAC	–	–
0.1	C1210Y104K9RAC	C1210Y104K8RAC	C1210Y104K4RAC	C1210Y104K3RAC	C1210Y104K5RAC	C1210Y104K1RAC	–	–
0.12	C1210Y124K9RAC	C1210Y124K8RAC	C1210Y124K4RAC	C1210Y124K3RAC	C1210Y124K5RAC	–	–	–
0.15	C1210Y154K9RAC	C1210Y154K8RAC	C1210Y154K4RAC	C1210Y154K3RAC	C1210Y154K5RAC	–	–	–
0.18	C1210Y184K9RAC	C1210Y184K8RAC	C1210Y184K4RAC	C1210Y184K3RAC	C1210Y184K5RAC	–	–	–
0.22	C1210Y224K9RAC	C1210Y224K8RAC	C1210Y224K4RAC	C1210Y224K3RAC	C1210Y224K5RAC	–	–	–

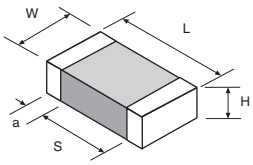


MURATA type GRM Hi-Cap

A range of surface mount, multilayer ceramic capacitors with increased levels of capacitance up to 100µF offering an effective alternative to tantalum devices. The components are available in a wide variety of industry standard chip sizes and manufactured with nickel barrier terminations for improved solderability. Supplied taped and reeled.

- **Effective alternative to tantalum**
- Values from **1µF to 100µF**
- Choice of dielectric **X5R**, **X6S**, **X6T**, **X7R**, **X7S** or **X7U**
- Industry standard chip sizes : **0402, 0603, 0805, 1206 & 1210**
- Low profile variants included
- Nickel barrier terminations
- Suitable for wave & reflow soldering
- Supplied taped & reeled

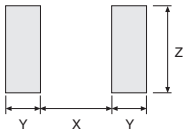
Dimensions (mm)



Chip Size	L	W	a	S
0402	1.0	0.5	0.15 min.	0.4 min.
0603	1.6	0.8	0.2 min.	0.5 min.
0805	2.0	1.25	0.2 min.	0.7 min.
1206	3.2	1.6	0.3 min.	1.5 min.
1210	3.2	2.5	0.3 min.	1.0 min.

Dimension **H** : see following page

Pad Pattern



Chip Size	X	Y	Z
0402	0.3 - 0.5	0.35 - 0.45	0.4 - 0.6
0603	0.6 - 0.8	0.6 - 0.7	0.6 - 0.8
0805	1.0 - 1.2	0.6 - 0.7	0.8 - 1.1
1206	2.2 - 2.4	0.8 - 0.9	1.0 - 1.4
1210	2.0 - 2.4	1.0 - 1.2	1.8 - 2.3

Specification

	Hi-Cap
Working voltage	As listed
Capacitance tolerance	X5R ±10% or ±20% X6S ±10% or ±20% X6T ±20% X7R ±10% X7S ±10% X7U ±20%
Temperature coefficient	X5R ±15% over -55°C to +85°C X6S ±22% over -55°C to +105°C X6T +22%, -33% over -55°C to 105°C X7R ±15% over -55°C to +125°C X7S ±22% over -55°C to +125°C X7U +22%, -56% over -55°C to +125°C
Operating temperature range	X5R -55°C to +85°C X6S -55°C to +105°C X6T -55°C to +105°C X7R -55°C to +125°C X7S -55°C to +125°C X7U -55°C to +125°C
Insulation resistance (whichever is less)	≥10,000MΩ or 500MΩ/µF

Marking and Packaging

Marking	No marking appears on the product.
Tape	8mm wide, 2mm pitch (0402) 8mm wide, 4mm pitch (0603, 0805, 1206, 1210)
Reel	178mm dia.

DIELECTRIC PERFORMANCE & APPLICATION

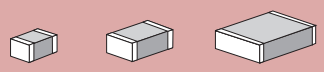
X5R/X6S/X6T/X7R/X7S/X7U: Medium K semi-stable types offering good volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

MURATA type GRM Hi-Cap

ORDER CODES

Value (µF)	Chip Size	Dielectric	Tolerance	Chip Height H max. (mm)	Order code
2.5 Volt					
2.2	0402	X6S	20%	0.55	*GRM155C80E225ME15D*
4 Volt					
1.0	0402	X5R	20%	0.33	*GRM153R60G105ME19D*
1.0	0402	X6S	10%	0.55	*GRM155C80G105KE19D*
2.2	0402	X5R	20%	0.55	*GRM155R60G225ME15D*
4.7	0603	X5R	20%	0.50	*GRM185R60G475ME15D*
4.7	0603	X6S	10%	0.90	*GRM188C80G475KE19D*
10	0603	X5R	20%	0.90	*GRM188R60G106ME47D*
10	0805	X6S	10%	0.95	*GRM219C80G106KE19D*
22	0805	X6S	20%	1.40	*GRM21BC80G226ME39L*
22	1206	X7S	10%	1.80	*GRM31CC70G226KE01L*
47	0805	X5R	20%	1.40	*GRM21BR60G476ME15L*
47	1206	X6S	20%	1.80	*GRM31CC80G476ME19L*
47	1206	X7U	20%	1.80	*GRM31CE70G476ME15L*
100	1206	X6T	20%	1.90	*GRM31CD80G107ME39L*
100	1210	X7U	20%	2.70	*GRM32EE70G107ME19L*
6.3 Volt					
1.0	0402	X5R	10%	0.55	*GRM155R60J105KE19D*
1.0	0603	X5R	10%	0.90	*GRM188R60J105KA01D*
1.0	0603	X6S	10%	0.50	*GRM185C80J105KE26D*
1.0	0603	X7R	10%	0.90	*GRM188R70J105KA01D*
2.2	0603	X5R	10%	0.50	*GRM185R60J225KE26D*
2.2	0603	X5R	10%	0.90	*GRM188R60J225KE19D*
2.2	0603	X6S	10%	0.90	*GRM188C80J225KE19D*
2.2	0603	X7S	10%	0.90	*GRM188C70J225KE20D*
2.2	0805	X7R	10%	1.35	*GRM21BR70J225KA01L*
4.7	0603	X5R	10%	0.90	*GRM188R60J475KE19D*
4.7	0805	X5R	10%	0.95	*GRM219R60J475KE19D*
10	0603	X5R	20%	0.95	*GRM188R60J106ME47D*
10	0805	X5R	10%	0.95	*GRM219R60J106KE19D*
10	0805	X5R	10%	1.35	*GRM21BR60J106KE19L*
10	0805	X6S	10%	1.35	*GRM21BC80J106KE19L*
10	0805	X7R	10%	1.40	*GRM21BR70J106KE76L*
10	1206	X5R	10%	1.25	*GRM31MR60J106KE19L*
10	1206	X7R	10%	1.80	*GRM31CR70J106KA01L*
22	0805	X5R	20%	1.40	*GRM21BR60J226ME39L*
22	1206	X5R	10%	1.80	*GRM31CR60J226KE19L*
22	1206	X6S	10%	1.80	*GRM31CC80J226KE19L*
22	1206	X7R	10%	1.80	*GRM31CR70J226KE19L*
47	1206	X5R	10%	1.80	*GRM31CR60J476KE19L*
47	1210	X5R	20%	2.70	*GRM32ER60J476ME20L*
47	1210	X6S	10%	2.70	*GRM32EC80J476KE64L*
47	1210	X7R	10%	2.70	*GRM32ER70J476KE20L*
100	1206	X5R	20%	1.80	*GRM31CR60J107ME39L*
100	1210	X5R	20%	2.70	*GRM32ER60J107ME20L*
100	1210	X6S	20%	2.70	*GRM32EC80J107ME20L*
10 Volt					
1.0	0402	X5R	10%	0.55	*GRM155R61A105KE15D*
1.0	0603	X5R	10%	0.50	*GRM185R61A105KE36D*
1.0	0603	X5R	10%	0.90	*GRM188R61A105KA61D*
1.0	0603	X6S	10%	0.50	*GRM185C81A105KE36D*
1.0	0603	X7R	10%	0.90	*GRM188R71A105KA61D*
2.2	0603	X5R	10%	0.90	*GRM188R61A225KE34D*
2.2	0603	X6S	10%	0.90	*GRM188C81A225KE34D*
2.2	0603	X7R	10%	0.90	*GRM188R71A225KE15D*
2.2	0805	X5R	10%	0.70	*GRM216R61A225KE24D*
2.2	0805	X7R	10%	1.35	*GRM21BR71A225KA01L*
2.2	1206	X5R	10%	0.95	*GRM319R61A225KA01D*
4.7	0805	X5R	10%	0.95	*GRM219R61A475KE34D*
4.7	0805	X5R	10%	1.40	*GRM21BR61A475KA73L*
4.7	0805	X6S	10%	0.95	*GRM219C81A475KE34D*
4.7	0805	X7R	10%	1.40	*GRM21BR71A475KA73L*
4.7	1206	X5R	10%	0.70	*GRM316R61A475KE19D*
10	0805	X5R	10%	0.95	*GRM219R61A106KE44D*
10	0805	X5R	10%	1.35	*GRM21BR61A106KE19L*
10	0805	X7R	10%	1.40	*GRM21BR71A106KE51L*
10	1206	X5R	10%	0.95	*GRM319R61A106KE19D*
10	1206	X5R	10%	1.25	*GRM31MR61A106KE19L*
10	1206	X7R	10%	1.80	*GRM31CR71A106KA01L*
22	1206	X5R	10%	1.80	*GRM31CR61A226KE19L*
22	1206	X6S	10%	1.80	*GRM31CC81A226KE19L*
22	1206	X7R	10%	1.80	*GRM31CR71A226KE15L*
22	1210	X5R	10%	1.40	*GRM32NR61A226KE19L*
22	1210	X5R	10%	2.70	*GRM32ER61A226KA65L*
22	1210	X7R	10%	2.70	*GRM32ER71A226KE20L*
47	1210	X5R	10%	2.70	*GRM32ER61A476KE20L*
47	1210	X6S	10%	2.70	*GRM32EC81A476KE19L*
47	1210	X7R	10%	2.70	*GRM32ER71A476KE15L*

Value (µF)	Chip Size	Dielectric	Tolerance	Chip Height H max. (mm)	Order code
16 Volt					
1.0	0603	X5R	10%	0.50	*GRM185R61C105KE44D*
1.0	0603	X5R	10%	0.90	*GRM188R61C105KA93D*
1.0	0603	X7R	10%	0.90	*GRM188R71C105KA12D*
1.0	0805	X5R	10%	0.70	*GRM216R61C105KA88D*
2.2	0603	X5R	10%	0.90	*GRM188R61C225KE15D*
2.2	0805	X5R	10%	0.95	*GRM219R61C225KA88D*
2.2	0805	X7R	10%	1.35	*GRM21BR71C225KA12L*
2.2	1206	X5R	10%	0.70	*GRM316R61C225KA88D*
2.2	1206	X7R	10%	1.40	*GRM31MR71C225KA35L*
4.7	0805	X5R	10%	1.35	*GRM21BR61C475KA88L*
4.7	0805	X6S	10%	1.35	*GRM21BC81C475KA88L*
4.7	0805	X7R	10%	1.40	*GRM21BR71C475KA73L*
4.7	1206	X5R	10%	0.95	*GRM319R61C475KA88D*
4.7	1206	X7R	10%	1.80	*GRM31CR71C475KA01L*
4.7	1210	X7R	10%	2.00	*GRM32RR71C475KA01L*
10	0805	X5R	10%	1.35	*GRM21BR61C106KE15L*
10	1206	X5R	10%	1.80	*GRM31CR61C475KA01L*
10	1206	X7R	10%	1.80	*GRM31CR71C106KAC7L*
10	1210	X7R	10%	2.20	*GRM32DR71C106KA01L*
22	1206	X5R	10%	1.80	*GRM31CR61C226KE15L*
22	1210	X5R	10%	2.70	*GRM32ER61C226KE20L*
22	1210	X7R	10%	2.70	*GRM32ER71C226KE18L*
47	1210	X5R	10%	2.70	*GRM32ER61C476KE15L*
25 Volt					
1.0	0603	X5R	10%	0.90	*GRM188R61E105KA12D*
1.0	0603	X7R	10%	0.90	*GRM188R71E105KA12D*
1.0	0805	X5R	10%	0.70	*GRM216R61E105KA12D*
1.0	0805	X7R	10%	0.95	*GRM219R71E105KA88D*
2.2	0805	X5R	10%	0.95	*GRM219R61E225KA12D*
2.2	0805	X5R	10%	1.35	*GRM21BR61E225KA12L*
2.2	0805	X7R	10%	1.40	*GRM21BR71E225KA73L*
2.2	1206	X5R	10%	0.70	*GRM316R61E225KA12D*
2.2	1206	X7R	10%	1.40	*GRM31MR71E225KA93L*
4.7	0805	X5R	10%	1.35	*GRM21BR61E475KA12L*
4.7	0805	X6S	10%	1.35	*GRM21BC81E475KA12L*
4.7	1206	X5R	10%	0.95	*GRM319R61E475KA12D*
4.7	1206	X5R	10%	1.80	*GRM31CR61E475KA88L*
4.7	1210	X7R	10%	2.20	*GRM32DR71E475KA61L*
10	1210	X5R	10%	2.20	*GRM32DR61E106KA12L*
10	1206	X6S	10%	1.80	*GRM31CC81E106KA12L*
10	1206	X5R	10%	1.80	*GRM31CR61E106KA12L*
10	1206	X7R	10%	1.80	*GRM31CR71E106KA12L*
22	1210	X5R	10%	2.70	*GRM32ER61E226KE15L*
22	1210	X6S	10%	2.70	*GRM32EC81E226KE15L*
22	1210	X7R	10%	2.70	*GRM32ER71E226KE15L*
50 Volt					
1.0	0805	X7R	10%	1.40	*GRM21BR71H105KA12L*
1.0	1206	X7R	10%	1.25	*GRM31MR71H105KA88L*
4.7	1206	X7R	10%	1.80	*GRM31CR71H475KA12L*
4.7	1210	X7R	10%	2.70	*GRM32ER71H475KA88L*
100 Volt					
1.0	1206	X7R	10%	1.80	*GRM31CR72A105KA01L*
1.0	1210	X7R	10%	1.80	*GRM32CR72A105KA35L*
2.2	1210	X7R	10%	2.70	*GRM32ER72A225KA35L*

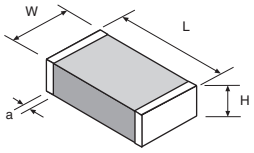


SYFER type 1210, 1812 & 2220

An extensive range of high voltage, surface mount, multilayer ceramic capacitors. Offers a choice of voltage and dielectric over three chip sizes. Terminations have a nickel barrier for improved solderability. Supplied taped and reeled.

- High voltage **500V to 3000V**
- Choice of dielectric : **NP0 (C0G)** or **X7R**
- Values from **3.9pF to 0.27µF**
- High performance & reliability
- Nickel barrier terminations
- Suitable for wave & reflow soldering
- Industry standard chip sizes : **1210, 1812 & 2220**
- Supplied taped & reeled

Dimensions (mm)



Chip Size	L	W	a (min.)	H (max.)
1210	3.2	2.5	0.25	2.0
1812	4.5	3.2	0.25	2.5
2220	5.7	5.0	0.25	2.5

Specification	1210, 1812 & 2220
Working voltage	As listed
Capacitance tolerance	NP0 ±5% (≤8.2pF 1210, 1000V = ±0.25pF/±0.5pF) X7R ±10%
Temperature coefficient	NP0 ±30ppm/°C over -55°C to 125°C X7R ±15% over -55°C to +125°C
Operating temperature range	-55°C to +125°C
Insulation resistance/time constant	≥100,000MΩ or 1000 sec (whichever is less)

Marking and Packaging	
Marking	No marking appears on the product.
Tape	8mm wide, 4mm pitch
Reel	178mm dia.

DIELECTRIC PERFORMANCE & APPLICATION

NP0 (C0G): Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. Used for precision timing, active and passive filtering, frequency setting and tuning circuits.

X7R: Medium K semi-stable type offering greater volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

SYFER type 1210

ORDER CODES

NP0 (C0G) dielectric

Value (pF)	Tolerance	Order Code
500 Volt		
10	5%	*1210J5000100JCT*
12	5%	*1210J5000120JCT*
15	5%	*1210J5000150JCT*
18	5%	*1210J5000180JCT*
22	5%	*1210J5000220JCT*
27	5%	*1210J5000270JCT*
33	5%	*1210J5000330JCT*
39	5%	*1210J5000390JCT*
47	5%	*1210J5000470JCT*
56	5%	*1210J5000560JCT*
68	5%	*1210J5000680JCT*
82	5%	*1210J5000820JCT*
100	5%	*1210J5000101JCT*
120	5%	*1210J5000121JCT*
150	5%	*1210J5000151JCT*
180	5%	*1210J5000181JCT*
220	5%	*1210J5000221JCT*
270	5%	*1210J5000271JCT*
330	5%	*1210J5000331JCT*
390	5%	*1210J5000391JCT*
470	5%	*1210J5000471JCT*
560	5%	*1210J5000561JCT*
680	5%	*1210J5000681JCT*
820	5%	*1210J5000821JCT*
1000	5%	*1210J5000102JCT*
1200	5%	*1210J5000122JCT*
1500	5%	*1210J5000152JCT*
1800	5%	*1210J5000182JCT*
2200	5%	*1210J5000222JCT*
2700	5%	*1210J5000272JCT*
1000 Volt		
3.9	0.25pF	*1210J1K003P9CCT*
4.7	0.25pF	*1210J1K004P7CCT*
5.6	0.5pF	*1210J1K005P6DCT*
6.8	0.5pF	*1210J1K006P8DCT*
8.2	0.5pF	*1210J1K008P2DCT*
10	5%	*1210J1K00100JCT*
12	5%	*1210J1K00120JCT*
15	5%	*1210J1K00150JCT*
18	5%	*1210J1K00180JCT*
22	5%	*1210J1K00220JCT*
27	5%	*1210J1K00270JCT*
33	5%	*1210J1K00330JCT*
39	5%	*1210J1K00390JCT*
47	5%	*1210J1K00470JCT*
56	5%	*1210J1K00560JCT*
68	5%	*1210J1K00680JCT*
82	5%	*1210J1K00820JCT*
100	5%	*1210J1K00101JCT*
120	5%	*1210J1K00121JCT*
150	5%	*1210J1K00151JCT*
180	5%	*1210J1K00181JCT*
220	5%	*1210J1K00221JCT*

X7R dielectric

Value (pF)	Tolerance	Order Code
500 Volt		
390	10%	*1210J5000391KXT*
470	10%	*1210J5000471KXT*
560	10%	*1210J5000561KXT*
680	10%	*1210J5000681KXT*
820	10%	*1210J5000821KXT*
1000	10%	*1210J5000102KXT*
1200	10%	*1210J5000122KXT*
1500	10%	*1210J5000152KXT*
1800	10%	*1210J5000182KXT*
2200	10%	*1210J5000222KXT*
2700	10%	*1210J5000272KXT*
3300	10%	*1210J5000332KXT*
3900	10%	*1210J5000392KXT*
4700	10%	*1210J5000472KXT*
5600	10%	*1210J5000562KXT*
6800	10%	*1210J5000682KXT*
8200	10%	*1210J5000822KXT*
(µF)		
0.01	10%	*1210J5000103KXT*
0.012	10%	*1210J5000123KXT*
0.015	10%	*1210J5000153KXT*
0.018	10%	*1210J5000183KXT*
0.022	10%	*1210J5000223KXT*
0.027	10%	*1210J5000273KXT*
0.033	10%	*1210J5000333KXT*
0.039	10%	*1210J5000393KXT*
1000 Volt		
(pF)		
180	10%	*1210J1K00181KXT*
220	10%	*1210J1K00221KXT*
270	10%	*1210J1K00271KXT*
330	10%	*1210J1K00331KXT*
390	10%	*1210J1K00391KXT*
470	10%	*1210J1K00471KXT*
560	10%	*1210J1K00561KXT*
680	10%	*1210J1K00681KXT*
820	10%	*1210J1K00821KXT*
1000	10%	*1210J1K00102KXT*
1200	10%	*1210J1K00122KXT*
1500	10%	*1210J1K00152KXT*
1800	10%	*1210J1K00182KXT*
2200	10%	*1210J1K00222KXT*
2700	10%	*1210J1K00272KXT*
3300	10%	*1210J1K00332KXT*
3900	10%	*1210J1K00392KXT*
4700	10%	*1210J1K00472KXT*
5600	10%	*1210J1K00562KXT*

SYFER type 1812 & 2220
shown overleaf > > > >

SYFER type 1812

ORDER CODES

NP0 (C0G) dielectric : 5% tol.

Value (pF)	Order Code
500 Volt	
180	1812J5000181JCT
220	1812J5000221JCT
270	1812J5000271JCT
330	1812J5000331JCT
390	1812J5000391JCT
470	1812J5000471JCT
560	1812J5000561JCT
680	1812J5000681JCT
820	1812J5000821JCT
1000	1812J5000102JCT
1200	1812J5000122JCT
1500	1812J5000152JCT
1800	1812J5000182JCT
2200	1812J5000222JCT
2700	1812J5000272JCT
3300	1812J5000332JCT
3900	1812J5000392JCT
4700	1812J5000472JCT
5600	1812J5000562JCT
6800	1812J5000682JCT
1000 Volt	
39	1812J1K00390JCT
47	1812J1K00470JCT
56	1812J1K00560JCT
68	1812J1K00680JCT
82	1812J1K00820JCT
100	1812J1K00101JCT
120	1812J1K00121JCT
150	1812J1K00151JCT
180	1812J1K00181JCT
220	1812J1K00221JCT
270	1812J1K00271JCT
330	1812J1K00331JCT
390	1812J1K00391JCT
470	1812J1K00471JCT
560	1812J1K00561JCT
680	1812J1K00681JCT
820	1812J1K00821JCT
1000	1812J1K00102JCT
1200	1812J1K00122JCT
1500	1812J1K00152JCT
1800	1812J1K00182JCT
2200	1812J1K00222JCT
2700	1812J1K00272JCT
2000 Volt	
39	1812J2K00390JCT
47	1812J2K00470JCT
56	1812J2K00560JCT
68	1812J2K00680JCT
82	1812J2K00820JCT
100	1812J2K00101JCT
120	1812J2K00121JCT
150	1812J2K00151JCT
180	1812J2K00181JCT
220	1812J2K00221JCT
270	1812J2K00271JCT
330	1812J2K00331JCT
390	1812J2K00391JCT
470	1812J2K00471JCT
560	1812J2K00561JCT
680	1812J2K00681JCT
820	1812J2K00821JCT
3000 Volt	
10	1812J3K00100JCT
12	1812J3K00120JCT
15	1812J3K00150JCT
18	1812J3K00180JCT
22	1812J3K00220JCT
27	1812J3K00270JCT
33	1812J3K00330JCT
39	1812J3K00390JCT
47	1812J3K00470JCT
56	1812J3K00560JCT
68	1812J3K00680JCT
82	1812J3K00820JCT
100	1812J3K00101JCT
120	1812J3K00121JCT
150	1812J3K00151JCT
180	1812J3K00181JCT

X7R dielectric : 10% tol.

Value (pF)	Order Code
500 Volt	
390	1812J5000391KXT
470	1812J5000471KXT
560	1812J5000561KXT
680	1812J5000681KXT
820	1812J5000821KXT
1000	1812J5000102KXT
1200	1812J5000122KXT
1500	1812J5000152KXT
1800	1812J5000182KXT
2200	1812J5000222KXT
2700	1812J5000272KXT
3300	1812J5000332KXT
3900	1812J5000392KXT
4700	1812J5000472KXT
5600	1812J5000562KXT
6800	1812J5000682KXT
8200	1812J5000822KXT
(µF)	
0.01	1812J5000103KXT
0.012	1812J5000123KXT
0.015	1812J5000153KXT
0.018	1812J5000183KXT
0.022	1812J5000223KXT
0.027	1812J5000273KXT
0.033	1812J5000333KXT
0.039	1812J5000393KXT
0.047	1812J5000473KXT
0.056	1812J5000563KXT
0.068	1812J5000683KXT
0.082	1812J5000823KXT
0.1	1812J5000104KXT
0.12	1812J5000124KXT
1000 Volt	
(pF)	
390	1812J1K00391KXT
470	1812J1K00471KXT
560	1812J1K00561KXT
680	1812J1K00681KXT
820	1812J1K00821KXT
1000	1812J1K00102KXT
1200	1812J1K00122KXT
1500	1812J1K00152KXT
1800	1812J1K00182KXT
2200	1812J1K00222KXT
2700	1812J1K00272KXT
3300	1812J1K00332KXT
3900	1812J1K00392KXT
4700	1812J1K00472KXT
5600	1812J1K00562KXT
6800	1812J1K00682KXT
8200	1812J1K00822KXT
(µF)	
0.01	1812J1K00103KXT
0.012	1812J1K00123KXT
0.015	1812J1K00153KXT
0.018	1812J1K00183KXT
0.022	1812J1K00223KXT

X7R dielectric : 10% tol. *(cont.)*

Value (pF)	Order Code
2000 Volt	
390	1812J2K00391KXT
470	1812J2K00471KXT
560	1812J2K00561KXT
680	1812J2K00681KXT
820	1812J2K00821KXT
1000	1812J2K00102KXT
1200	1812J2K00122KXT
1500	1812J2K00152KXT
2200	1812J2K00222KXT
2700	1812J2K00272KXT
3300	1812J2K00332KXT
3900	1812J2K00392KXT
4700	1812J2K00472KXT
3000 Volt	
100	1812J3K00101KXT
120	1812J3K00121KXT
150	1812J3K00151KXT
180	1812J3K00181KXT
220	1812J3K00221KXT
270	1812J3K00271KXT
330	1812J3K00331KXT
390	1812J3K00391KXT
470	1812J3K00471KXT
560	1812J3K00561KXT
680	1812J3K00681KXT
820	1812J3K00821KXT
1000	1812J3K00102KXT
1200	1812J3K00122KXT
1500	1812J3K00152KXT

CAPACITANCE CONVERSION GUIDE

Pico-Farad (pF)	Nano-Farad (nF)	Micro-Farad (µF)
1000	1.0	0.001
1500	1.5	0.0015
2200	2.2	0.0022
3300	3.3	0.0033
4700	4.7	0.0047
6800	6.8	0.0068
10000	10	0.01
15000	15	0.015
22000	22	0.022
33000	33	0.033
47000	47	0.047
68000	68	0.068
100000	100	0.1
150000	150	0.15
220000	220	0.22
330000	330	0.33
470000	470	0.47
680000	680	0.68

SYFER type 2220

ORDER CODES

NP0 (C0G) dielectric : 5% tol.

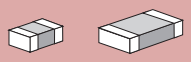
Value (pF)	Order Code
500 Volt	
390	2220J5000391JCT
470	2220J5000471JCT
560	2220J5000561JCT
680	2220J5000681JCT
820	2220J5000821JCT
1000	2220J5000102JCT
1200	2220J5000122JCT
1500	2220J5000152JCT
1800	2220J5000182JCT
2200	2220J5000222JCT
2700	2220J5000272JCT
3300	2220J5000332JCT
3900	2220J5000392JCT
4700	2220J5000472JCT
5600	2220J5000562JCT
6800	2220J5000682JCT
8200	2220J5000822JCT
10000	2220J5000103JCT
12000	2220J5000123JCT
15000	2220J5000153JCT
1000 Volt	
39	2220J1K00390JCT
47	2220J1K00470JCT
56	2220J1K00560JCT
68	2220J1K00680JCT
82	2220J1K00820JCT
100	2220J1K00101JCT
120	2220J1K00121JCT
150	2220J1K00151JCT
180	2220J1K00181JCT
220	2220J1K00221JCT
270	2220J1K00271JCT
330	2220J1K00331JCT
390	2220J1K00391JCT
470	2220J1K00471JCT
560	2220J1K00561JCT
680	2220J1K00681JCT
820	2220J1K00821JCT
1000	2220J1K00102JCT
1200	2220J1K00122JCT
1500	2220J1K00152JCT
1800	2220J1K00182JCT
2200	2220J1K00222JCT
2700	2220J1K00272JCT
3300	2220J1K00332JCT
3900	2220J1K00392JCT
4700	2220J1K00472JCT
5600	2220J1K00562JCT
6800	2220J1K00682JCT
2000 Volt	
39	2220J2K00390JCT
47	2220J2K00470JCT
56	2220J2K00560JCT
68	2220J2K00680JCT
82	2220J2K00820JCT
100	2220J2K00101JCT
120	2220J2K00121JCT
150	2220J2K00151JCT
180	2220J2K00181JCT
220	2220J2K00221JCT
270	2220J2K00271JCT
330	2220J2K00331JCT
390	2220J2K00391JCT
470	2220J2K00471JCT
560	2220J2K00561JCT
680	2220J2K00681JCT
820	2220J2K00821JCT
1000	2220J2K00102JCT
1200	2220J2K00122JCT
1500	2220J2K00152JCT
1800	2220J2K00182JCT
3000 Volt	
10	2220J3K00100JCT
12	2220J3K00120JCT
15	2220J3K00150JCT
18	2220J3K00180JCT
22	2220J3K00220JCT
27	2220J3K00270JCT
33	2220J3K00330JCT
39	2220J3K00390JCT
47	2220J3K00470JCT
56	2220J3K00560JCT
68	2220J3K00680JCT
82	2220J3K00820JCT
100	2220J3K00101JCT
120	2220J3K00121JCT
150	2220J3K00151JCT
180	2220J3K00181JCT
220	2220J3K00221JCT
270	2220J3K00271JCT
330	2220J3K00331JCT
390	2220J3K00391JCT

X7R dielectric : 10% tol.

Value (pF)	Order Code
500 Volt	
1000	2220J5000102KXT
1200	2220J5000122KXT
1500	2220J5000152KXT
1800	2220J5000182KXT
2200	2220J5000222KXT
2700	2220J5000272KXT
3300	2220J5000332KXT
3900	2220J5000392KXT
4700	2220J5000472KXT
5600	2220J5000562KXT
6800	2220J5000682KXT
8200	2220J5000822KXT
(µF)	
0.01	2220J5000103KXT
0.012	2220J5000123KXT
0.015	2220J5000153KXT
0.018	2220J5000183KXT
0.022	2220J5000223KXT
0.027	2220J5000273KXT
0.033	2220J5000333KXT
0.039	2220J5000393KXT
0.047	2220J5000473KXT
0.056	2220J5000563KXT
0.068	2220J5000683KXT
0.082	2220J5000823KXT
0.1	2220J5000104KXT
0.12	2220J5000124KXT
0.15	2220J5000154KXT
0.18	2220J5000184KXT
0.22	2220J5000224KXT
0.27	2220J5000274KXT
1000 Volt	
(pF)	
390	2220J1K00391KXT
470	2220J1K00471KXT
560	2220J1K00561KXT
680	2220J1K00681KXT
820	2220J1K00821KXT
1000	2220J1K00102KXT
1200	2220J1K00122KXT
1500	2220J1K00152KXT
1800	2220J1K00182KXT
2200	2220J1K00222KXT
2700	2220J1K00272KXT
3300	2220J1K00332KXT
3900	2220J1K00392KXT
4700	2220J1K00472KXT
5600	2220J1K00562KXT
6800	2220J1K00682KXT
8200	2220J1K00822KXT
(µF)	
0.01	2220J1K00103KXT
0.012	2220J1K00123KXT
0.015	2220J1K00153KXT
0.018	2220J1K00183KXT
0.022	2220J1K00223KXT
0.027	2220J1K00273KXT
0.033	2220J1K00333KXT
0.039	2220J1K00393KXT
0.047	2220J1K00473KXT
0.056	2220J1K00563KXT

X7R dielectric : 10% tol. *(cont.)*

Value (pF)	Order Code
2000 Volt	
390	2220J2K00391KXT
470	2220J2K00471KXT
560	2220J2K00561KXT
680	2220J2K00681KXT
820	2220J2K00821KXT
1000	2220J2K00102KXT
1200	2220J2K00122KXT
1500	2220J2K00152KXT
1800	2220J2K00182KXT
2200	2220J2K00222KXT
2700	2220J2K00272KXT
3300	2220J2K00332KXT
3900	2220J2K00392KXT
4700	2220J2K00472KXT
5600	2220J2K00562KXT
6800	2220J2K00682KXT
8200	2220J2K00822KXT
(µF)	
0.01	2220J2K00103KXT
0.012	2220J2K00123KXT
3000 Volt	
(pF)	
180	2220J3K00181KXT
220	2220J3K00221KXT
270	2220J3K00271KXT
330	2220J3K00331KXT
390	2220J3K00391KXT
470	2220J3K00471KXT
560	2220J3K00561KXT
680	2220J3K00681KXT
820	2220J3K00821KXT
1000	2220J3K00102KXT
1200	2220J3K00122KXT
1500	2220J3K00152KXT
1800	2220J3K00182KXT
2200	2220J3K00222KXT
2700	2220J3K00272KXT

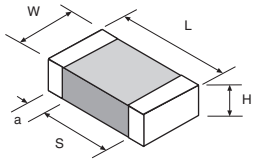


MURATA type GQM

A range of surface mount, multilayer ceramic capacitors from Murata suited for high frequency applications. Excellent Hi-Q and low ESR at VHF & UHF. Now offering low power consumption, which is ideal for mobile telecommunication. Terminations have a nickel barrier for improved solderability. Supplied taped and reeled.

- High performance & reliability
- Low power consumption
- **NP0 (C0G)** dielectric
- Rated **100V** or **50V**
- Values from **0.5pF to 100pF**
- Nickel barrier terminations
- Suitable for wave & reflow soldering
- Industry standard chip sizes : **0603 & 0805**
- Supplied taped & reeled

Dimensions (mm)



Chip Size	L	W	H max.	a	S
0603	1.6	0.8	0.9	0.2 min.	0.5 min.
0805	2.0	1.25	0.95	0.2 min.	0.7 min.

Specification	GQM
Working voltage	As listed
Capacitance tolerance	±5% (except C: ±0.25pF, D: ±0.5pF)
Temperature coefficient	±30ppm/°C
Operating temperature range	-55°C to +125°C
Insulation resistance	≥10,000MΩ

Marking & Packaging	
Marking	No marking appears on the product.
Tape	8mm width, 4mm pitch
Reel	178mm dia.

DIELECTRIC PERFORMANCE & APPLICATION

NP0 (C0G): Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. Used for precision timing, active and passive filtering, frequency setting and tuning circuits.

MURATA type GQM

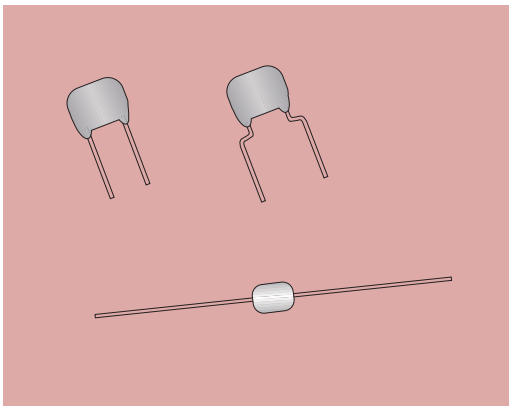
ORDER CODES

NP0 (C0G) dielectric (0603)

Value (pF)	Tolerance	Order Code
100 Volt		
0.5	0.25pF	GQM1885C2AR50CB01D
0.6	0.25pF	GQM1885C2AR60CB01D
0.7	0.25pF	GQM1885C2AR70CB01D
0.8	0.25pF	GQM1885C2AR80CB01D
0.9	0.25pF	GQM1885C2AR90CB01D
1.0	0.25pF	GQM1885C2A1R0CB01D
1.1	0.25pF	GQM1885C2A1R1CB01D
1.2	0.25pF	GQM1885C2A1R2CB01D
1.3	0.25pF	GQM1885C2A1R3CB01D
1.4	0.25pF	GQM1885C2A1R4BB01D
1.5	0.25pF	GQM1885C2A1R5CB01D
1.6	0.25pF	GQM1885C2A1R6CB01D
1.8	0.25pF	GQM1885C2A1R8CB01D
2.0	0.25pF	GQM1885C2A2R0CB01D
2.2	0.25pF	GQM1885C2A2R2CB01D
2.4	0.25pF	GQM1885C2A2R4CB01D
2.7	0.25pF	GQM1885C2A2R7CB01D
3.0	0.25pF	GQM1885C2A3R0CB01D
3.3	0.25pF	GQM1885C2A3R3CB01D
3.6	0.25pF	GQM1885C2A3R6CB01D
3.9	0.25pF	GQM1885C2A3R9CB01D
4.0	0.25pF	GQM1885C2A4R0CB01D
4.3	0.25pF	GQM1885C2A4R3CB01D
4.7	0.25pF	GQM1885C2A4R7CB01D
5.0	0.25pF	GQM1885C2A5R0CB01D
5.1	0.5pF	GQM1885C2A5R1DB01D
5.6	0.5pF	GQM1885C2A5R6DB01D
6.0	0.5pF	GQM1885C2A6R0DB01D
6.2	0.5pF	GQM1885C2A6R2DB01D
6.8	0.5pF	GQM1885C2A6R8DB01D
50 Volt		
7.0	0.5pF	GQM1885C1H7R0DB01D
7.5	0.5pF	GQM1885C1H7R5DB01D
8.0	0.5pF	GQM1885C1H8R0DB01D
8.2	0.5pF	GQM1885C1H8R2DB01D
9.0	0.5pF	GQM1885C1H9R0DB01D
9.1	0.5pF	GQM1885C1H9R1DB01D
10	5%	GQM1885C1H100JB01D
11	5%	GQM1885C1H110JB01D
12	5%	GQM1885C1H120JB01D
13	5%	GQM1885C1H130JB01D
15	5%	GQM1885C1H150JB01D
16	5%	GQM1885C1H160JB01D
18	5%	GQM1885C1H180JB01D
20	5%	GQM1885C1H200JB01D
22	5%	GQM1885C1H220JB01D
24	5%	GQM1885C1H240JB01D
27	5%	GQM1885C1H270JB01D
30	5%	GQM1885C1H300JB01D
33	5%	GQM1885C1H330JB01D
36	5%	GQM1885C1H360JB01D
39	5%	GQM1885C1H390JB01D
43	5%	GQM1885C1H430JB01D
47	5%	GQM1885C1H470JB01D
51	5%	GQM1885C1H510JB01D
56	5%	GQM1885C1H560JB01D
62	5%	GQM1885C1H620JB01D
68	5%	GQM1885C1H680JB01D
75	5%	GQM1885C1H750JB01D
82	5%	GQM1885C1H820JB01D
91	5%	GQM1885C1H910JB01D
100	5%	GQM1885C1H101JB01D

NP0 (C0G) dielectric (0805)

Value (pF)	Tolerance	Order Code
100 Volt		
0.5	0.25pF	GQM2195C2AR50CB01D
0.6	0.25pF	GQM2195C2AR60CB01D
0.7	0.25pF	GQM2195C2AR70CB01D
0.8	0.25pF	GQM2195C2AR80CB01D
0.9	0.25pF	GQM2195C2AR90CB01D
1.0	0.25pF	GQM2195C2A1R0CB01D
1.1	0.25pF	GQM2195C2A1R1CB01D
1.2	0.25pF	GQM2195C2A1R2CB01D
1.3	0.25pF	GQM2195C2A1R3CB01D
1.5	0.25pF	GQM2195C2A1R5CB01D
1.6	0.25pF	GQM2195C2A1R6CB01D
1.8	0.25pF	GQM2195C2A1R8CB01D
2.0	0.25pF	GQM2195C2A2R0CB01D
2.2	0.25pF	GQM2195C2A2R2CB01D
2.4	0.25pF	GQM2195C2A2R4CB01D
2.7	0.25pF	GQM2195C2A2R7CB01D
3.0	0.25pF	GQM2195C2A3R0CB01D
3.3	0.25pF	GQM2195C2A3R3CB01D
3.6	0.25pF	GQM2195C2A3R6CB01D
3.9	0.25pF	GQM2195C2A3R9CB01D
4.0	0.25pF	GQM2195C2A4R0CB01D
4.3	0.25pF	GQM2195C2A4R3CB01D
4.7	0.25pF	GQM2195C2A4R7CB01D
5.0	0.25pF	GQM2195C2A5R0CB01D
5.1	0.5pF	GQM2195C2A5R1DB01D
5.6	0.5pF	GQM2195C2A5R6DB01D
6	0.5pF	GQM2195C2A6R0DB01D
6.2	0.5pF	GQM2195C2A6R2DB01D
6.8	0.5pF	GQM2195C2A6R8DB01D
7.0	0.5pF	GQM2195C2A7R0DB01D
7.5	0.5pF	GQM2195C2A7R5DB01D
8.0	0.5pF	GQM2195C2A8R0DB01D
8.2	0.5pF	GQM2195C2A8R2DB01D
9.0	0.5pF	GQM2195C2A9R0DB01D
9.1	0.5pF	GQM2195C2A9R1DB01D
10	5%	GQM2195C2A100JB01D
11	5%	GQM2195C2A110JB01D
12	5%	GQM2195C2A120JB01D
13	5%	GQM2195C2A130JB01D
15	5%	GQM2195C2A150JB01D
16	5%	GQM2195C2A160JB01D
18	5%	GQM2195C2A180JB01D
50 Volt		
20	5%	GQM2195C1H200JB01D
22	5%	GQM2195C1H220JB01D
24	5%	GQM2195C1H240JB01D
27	5%	GQM2195C1H270JB01D
30	5%	GQM2195C1H300JB01D
33	5%	GQM2195C1H330JB01D
36	5%	GQM2195C1H360JB01D
39	5%	GQM2195C1H390JB01D
43	5%	GQM2195C1H430JB01D
47	5%	GQM2195C1H470JB01D
51	5%	GQM2195C1H510JB01D
56	5%	GQM2195C1H560JB01D
62	5%	GQM2195C1H620JB01D
68	5%	GQM2195C1H680JB01D
75	5%	GQM2195C1H750JB01D
82	5%	GQM2195C1H820JB01D
91	5%	GQM2195C1H910JB01D
100	5%	GQM2195C1H101JB01D



CTC type MDR & MDA

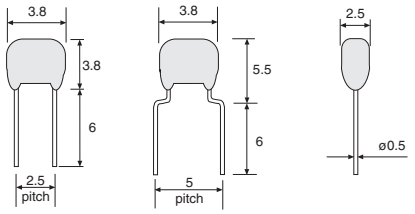
A very wide range of high quality, epoxy coated, multilayer ceramic capacitors available in radial and axial lead. Each lead form offers a choice of dielectric with radial providing an additional option of lead pitch.
N.B. Radial lead value 0.1µF (X7R, Z5U & Y5V) is also available taped and reeled, whereas all axial parts are supplied taped.

- High quality
- Epoxy coated
- Option of radial or axial lead
- Choice of dielectric & radial lead pitch
- Values from **10pF to 1µF**
- Radial, 0.1µF (X7R, Z5U & Y5V) available taped & reeled
- Axial parts supplied taped
- Body colour **Yellow**

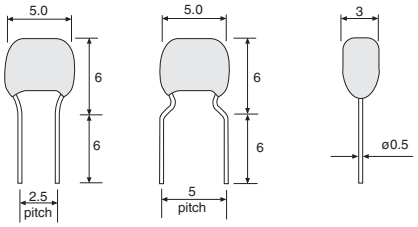
Dimensions (mm)

Radial (MDR)

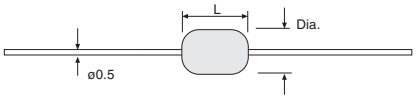
NP0 (all values), **X7R** (up to 0.1µF)
Z5U/Y5V (up to 0.47µF)



X7R (0.22 - 0.47µF)
Z5U/Y5V (1.0µF)



Axial (MDA)
NP0/X7R/Z5U/Y5V (all values)



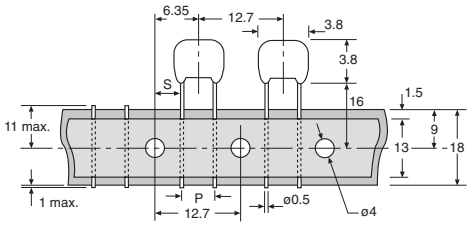
L & Dia. listed on following page

Specification

Specification	MDR & MDA
Working voltage	As listed
Capacitance tolerance	NP0 ±5% X7R ±10% Z5U ±20% Y5V -20,+80%
Temperature coefficient	NP0 ±30ppm/°C over -55°C to +125°C X7R ±15% over -55°C to +125°C Z5U +22%, -56% over -10°C to +85°C Y5V +22%, -82% over -30°C to +85°C
Operating temperature range	NP0/X7R -55°C to +125°C Z5U/Y5V -25°C to +85°C
Insulation resistance	NP0/X7R ≥100,000MΩ or 1000MΩ/µF Z5U/Y5V ≥10,000MΩ or 1000MΩ/µF whichever is less
Dissipation factor	NP0 0.1% max. at 1MHz, 1.2Vrms X7R 2.5% max. at 1kHz, 0.2Vrms Z5U/Y5V 4% max. at 1kHz, 0.1Vrms
Dielectric strength	NP0/X7R 250% rated voltage Z5U/Y5V 200% rated voltage 50mA max. charging current

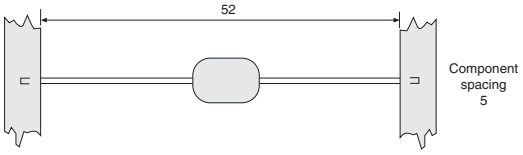
Taping Details

Radial (value 0.1µF, X7R/Z5U/Y5V, optional)



P = Pitch
S = 5.1 (2.5mm pitch)
3.85 (5mm pitch)

Axial (all parts, as supplied)



DIELECTRIC PERFORMANCE & APPLICATION

NP0 (C0G): Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. Used for precision timing, active and passive filtering, frequency setting and tuning circuits.

X7R: Medium K semi-stable type offering greater volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

Z5U/Y5V: High K general purpose types for by-pass and decoupling applications where temperature stability is not of major importance. Offer highest volumetric efficiency.

RADIAL LEAD

ORDER CODES

NP0 (C0G) dielectric: 5% tol.

Value (pF)	2.5mm Pitch Order Code	5mm Pitch Order Code
100 Volt		
10	096301	096301A
15	096302	096302A
22	096303	096303A
27	096315	096315A
33	096304	096304A
47	096305	096305A
68	096306	096306A
100	096307	096307A
150	096308	096308A
220	096309	096309A
330	096310	096310A
470	096311	096311A
680	096312	096312A
1000	096313	096313A

X7R dielectric: 10% tol.

Value (pF)	2.5mm Pitch Order Code	5mm Pitch Order Code
100 Volt		
220	096509	096509A
330	096510	096510A
470	096511	096511A
680	096512	096512A
1000	096513	096513A
1500	096514	096514A
2200	096515	096515A
3300	096516	096516A
4700	096517	096517A
(µF)		
0.01	096519	096519A
0.015	096520	096520A
0.022	096521	096521A
0.033	096522	096522A
0.047	096523	096523A
0.1	096525	096525A
0.1 (50V) available taped & reeled - see adjacent column		
50 Volt		
0.22	096541	096541A
25 Volt		
0.33	096542	096542A
0.47	096543	096543A

Z5U dielectric: 20% tol.

Value (µF)	2.5mm Pitch Order Code	5mm Pitch Order Code
100 Volt		
0.01	096719	096719A
0.015	096720	096720A
0.022	096721	096721A
0.033	096722	096722A
0.047	096723	096723A
0.1	096725	096725A
0.1 also available taped & reeled - see below		
0.22	096727	096727A
0.33	096728	096728A
0.47	096729	096729A
1.0	096731	096731A

Y5V dielectric: -20,+80% tol.

Value (µF)	2.5mm Pitch Order Code	5mm Pitch Order Code
100 Volt		
0.01	096919	096919A
0.015	096920	096920A
0.022	096921	096921A
0.033	096922	096922A
0.047	096923	096923A
0.1	096925	096925A
0.1 (50V) available taped & reeled - see below		
0.22	096927	096927A
0.33	096928	096928A
0.47	096929	096929A
1.0	096931	096931A

TAPED & REELED PRODUCT

Radial lead value 0.1µF (X7R, Z5U & Y5V) is also available taped and reeled, as follows :

Value (µF)	2.5mm Pitch Order Code	5mm Pitch Order Code
100 Volt **Z5U dielectric: 20% tol.**		
0.1	–	096725AT
50 Volt **X7R dielectric: 10% tol.**		
0.1	–	096525AT
Y5V dielectric: -20,+80% tol.		
0.1	096825T	096825AT

AXIAL LEAD

ORDER CODES

NP0 (C0G) dielectric: 5% tol.

Value (pF)	Body Size (mm) L x Dia.	Order Code
100 Volt		
10	3.5 x 2.5	096050
15	3.5 x 2.5	096020
22	3.5 x 2.5	096051
27	3.5 x 2.5	096021
33	3.5 x 2.5	096022
47	3.5 x 2.5	096053
68	3.5 x 2.5	096054
100	3.5 x 2.5	096055
150	3.5 x 2.5	096052
220	3.5 x 2.5	096056
330	3.5 x 2.5	096057
470	3.5 x 2.5	096058
680	3.5 x 2.5	096025
1000	3.5 x 2.5	096059

X7R dielectric: 10% tol.

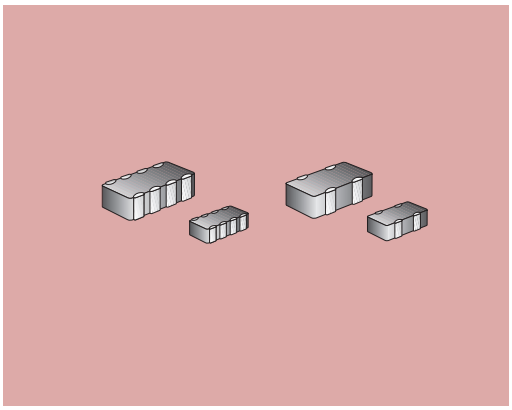
Value (pF)	Body Size (mm) L x Dia.	Order Code
100 Volt		
220	3.5 x 2.5	096080
330	3.5 x 2.5	096081
470	3.5 x 2.5	096082
680	3.5 x 2.5	096083
1000	3.5 x 2.5	096060
1500	3.5 x 2.5	096084
2200	3.5 x 2.5	096061
3300	3.5 x 2.5	096062
4700	3.5 x 2.5	096063
(µF)		
0.01	3.5 x 2.5	096064
0.015	3.5 x 2.5	096065
0.022	3.5 x 2.5	096066
0.033	3.5 x 2.5	096067
0.047	3.5 x 2.5	096068
0.1	3.5 x 2.5	096070
50 Volt		
0.22	5.0 x 3.0	096071
25 Volt		
0.33	5.0 x 3.0	096072
0.47	5.0 x 3.0	096073

Z5U dielectric: 20% tol.

Value (µF)	Body Size (mm) L x Dia.	Order Code
100 Volt		
0.01	3.5 x 2.5	096120
0.015	3.5 x 2.5	096121
0.022	3.5 x 2.5	096122
0.033	3.5 x 2.5	096124
0.047	3.5 x 2.5	096123
0.1	3.5 x 2.5	096125
0.22	5.0 x 3.0	096126
0.33	5.0 x 3.0	096127
0.47	5.0 x 3.0	096148
1.0	5.0 x 3.0	096150

Y5V dielectric: -20,+80% tol.

Value (µF)	Body Size (mm) L x Dia.	Order Code
100 Volt		
0.01	3.5 x 2.5	096039
0.1	3.5 x 2.5	096145
1.0	5.0 x 3.0	096170



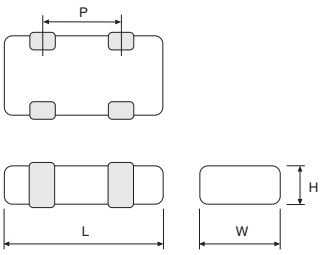
MURATA type GNM

A selection of capacitor values in various voltages and chip sizes, which provide two or four capacitors inside one monolithic structure. Board space and inventory space are saved as well as placement time becoming considerably lower. Ideal for general application use. Supplied taped and reeled.

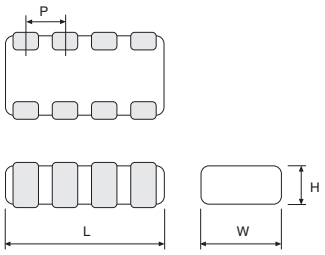
- High density mounting
- Cost saving
- Choice of **2** or **4 element**
- Values from **10pF to 2.2µF**
- Choice of chip size, voltage & dielectric on numerous values
- 4 element type available in 0805 package
- Supplied taped & reeled

Dimensions (mm)

GNM0M2/1M2/212



GNM214/314



Series	Chip Size	L	W	H max.	P
GNM0M2	0302	0.9	0.6	0.5	0.45
GNM1M2	0504	1.37	1.0	0.8	0.64
GNM212	0805	2.0	1.25	0.95	1.0
GNM214	0805	2.0	1.25	0.95	0.5
GNM314	1206	3.2	1.6	1.25	0.8

Specification

	GNM
Voltage Rating	As listed
Capacitance tolerance	NP0 (C0G) ±10% X7R ±20% X7S ±20% X5R ±20%
Temperature coefficient	NP0 (C0G) ±30ppm/°C X7R ±15% over -55°C to +125°C X7S ±22% over -55°C to +125°C X5R ±15% over -55°C to +85°C
Operating temperature range	NP0/X7R/X7S -55°C to +125°C X5R -55°C to +85°C
Insulation resistance (whichever is less)	≥10,000MΩ or 500MΩ/µF

Marking and Packaging

Marking	No marking appears on the product
Tape	
GNM0M	8mm width, 2mm pitch
GNM1M, GNM21 & GNM31	8mm width, 4mm pitch
Reel	178mm dia.

MURATA type GNM 4 Element

ORDER CODES

0805

Value (pF)	Dielectric	Order Code
50 Volt		
10	NP0	***GNM2145C1H100KD01D***
15	NP0	***GNM2145C1H150KD01D***
22	NP0	***GNM2145C1H220KD01D***
33	NP0	***GNM2145C1H330KD01D***
47	NP0	***GNM2145C1H470KD01D***
68	NP0	***GNM2145C1H680KD01D***
100	NP0	***GNM2145C1H101KD01D***
150	NP0	***GNM2145C1H151KD01D***
220	NP0	***GNM2145C1H221KD01D***
470	X7R	***GNM214R71H471MA01D***
1000	X7R	***GNM214R71H102MA01D***

0805 (continued)

Value (pF)	Dielectric	Order Code
25 Volt		
2200	X7R	***GNM214R71E222MA01D***
4700	X7R	***GNM214R71E472MA01D***
(µF)		
0.01	X7R	***GNM214R71E103MA01D***
16 Volt		
0.022	X7R	***GNM214R71C223MA01D***
0.047	X7R	***GNM214R71C473MA01D***
0.1	X7R	***GNM214R71C104MA01D***
10 Volt		
1.0	X5R	***GNM214R61A105ME17D***
6.3 Volt		
1.0	X5R	***GNM214R60J105ME17D***

MURATA type GNM 4 Element continued

ORDER CODES

1206

Value (pF)	Dielectric	Order Code
100 Volt		
10	NP0	*GNM3145C2A100KD01D*
15	NP0	*GNM3145C2A150KD01D*
22	NP0	*GNM3145C2A220KD01D*
33	NP0	*GNM3145C2A330KD01D*
47	NP0	*GNM3145C2A470KD01D*
68	NP0	*GNM3145C2A680KD01D*
100	NP0	*GNM3145C2A101KD01D*
50 Volt		
10	NP0	*GNM3145C1H100KD01D*
15	NP0	*GNM3145C1H150KD01D*
22	NP0	*GNM3145C1H220KD01D*
33	NP0	*GNM3145C1H330KD01D*
47	NP0	*GNM3145C1H470KD01D*
68	NP0	*GNM3145C1H680KD01D*
100	NP0	*GNM3145C1H101KD01D*
150	NP0	*GNM3145C1H151KD01D*
220	NP0	*GNM3145C1H221KD01D*
330	NP0	*GNM3145C1H331KD01D*

1206 (continued)

Value (µF)	Dielectric	Order Code
50 Volt (continued)		
0.047	X7R	*GNM314R71H473MA11D*
0.1	X7R	*GNM314R71H104MA11D*
25 Volt		
0.1	X7R	*GNM314R71E104MA11D*
16 Volt		
0.047	X7R	*GNM314R71C473MA01L*
0.1	X7R	*GNM314R71C104MA01L*
1.0	X5R	*GNM314R61C105MA15D*
10 Volt		
1.0	X5R	*GNM314R61A105MA13D*
6.3 Volt		
1.0	X7R	*GNM314R70J105MA01L*

MURATA type GNM 2 Element

0302

Value (µF)	Dielectric	Order Code
16 Volt		
0.01	X5R	*GNM0M2R61C103ME18D*
0.022	X5R	*GNM0M2R61C223ME18D*
0.047	X5R	*GNM0M2R61C473ME18D*
0.1	X5R	*GNM0M2R61C104ME18D*
10 Volt		
0.01	X5R	*GNM0M2R61A103ME17D*
0.022	X5R	*GNM0M2R61A223ME17D*
0.047	X5R	*GNM0M2R61A473ME17D*
0.1	X5R	*GNM0M2R61A104ME17D*
6.3 Volt		
0.01	X5R	*GNM0M2R60J103ME17D*
0.022	X5R	*GNM0M2R60J223ME17D*
0.047	X5R	*GNM0M2R60J473ME17D*
0.1	X5R	*GNM0M2R60J104ME17D*

0504

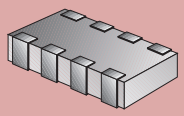
(pF)		
50 Volt		
10	NP0	*GNM1M25C1H100KD01D*
15	NP0	*GNM1M25C1H150KD01D*
22	NP0	*GNM1M25C1H220KD01D*
33	NP0	*GNM1M25C1H330KD01D*
47	NP0	*GNM1M25C1H470KD01D*
68	NP0	*GNM1M25C1H680KD01D*
100	NP0	*GNM1M25C1H101KD01D*
150	NP0	*GNM1M25C1H151KD01D*
220	NP0	*GNM1M25C1H221KD01D*
1000	X5R	*GNM1M2R61H102MA01D*
1000	X7R	*GNM1M2R71H102MA01D*
25 Volt		
2200	X5R	*GNM1M2R61E222MA01D*
2200	X7R	*GNM1M2R71E222MA01D*
4700	X5R	*GNM1M2R61E472MA01D*
4700	X7R	*GNM1M2R71E472MA01D*
(µF)		
0.01	X5R	*GNM1M2R61E103MA01D*
0.01	X7R	*GNM1M2R71E103MA01D*

0504 (continued)

Value (µF)	Dielectric	Order Code
16 Volt		
0.022	X5R	*GNM1M2R61C223MA01D*
0.022	X7R	*GNM1M2R71C223MA01D*
0.047	X5R	*GNM1M2R61C473MA01D*
0.047	X7R	*GNM1M2R71C473MA01D*
0.1	X7R	*GNM1M2R71C104MA01D*
0.22	X5R	*GNM1M2R61C224ME18D*
1.0	X5R	*GNM1M2R61C105ME18D*
10 Volt		
0.022	X5R	*GNM1M2R61A223MA01D*
0.022	X7R	*GNM1M2R71A223MA01D*
0.047	X5R	*GNM1M2R61A473MA01D*
0.047	X7R	*GNM1M2R71A473MA01D*
0.1	X5R	*GNM1M2R61A104MA01D*
0.1	X7S	*GNM1M2C71A104MA01D*
1.0	X5R	*GNM1M2R61A105ME17D*
2.2	X5R	*GNM1M2R61A225ME18D*
6.3 Volt		
1.0	X5R	*GNM1M2R60J105ME12D*
2.2	X5R	*GNM1M2R60J225ME18D*

0805

16 Volt		
0.47	X5R	*GNM212R61C474MA16D*
1.0	X5R	*GNM212R61C105MA16D*
10 Volt		
1.0	X5R	*GNM212R61A105MA13D*
2.2	X5R	*GNM212R61A225ME16D*
6.3 Volt		
2.2	X5R	*GNM212R60J225ME16D*

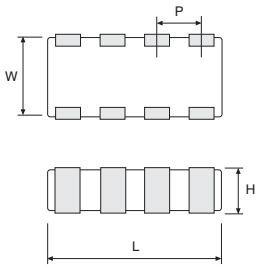


KEMET type C1632

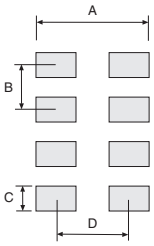
A wide selection of capacitor values and voltages which provide four capacitors inside one 1206 monolithic structure. Board space and inventry space are saved as well as placement time becoming considerably lower. Ideal for general application use.
Supplied taped and reeled.

- High performance & reliability
- Saves board space and inventory
- Industry standard chip size **1206**
- Choice of dielelectric : **NP0 (C0G)** or **X7R**
- Values from **10pF to 0.1µF**
- Capacitance tolerance **10%**
- Nickel barrier terminations
- Suitable for wave & reflow soldering
- Supplied taped & reeled

Dimensions (mm)



Pad Pattern



Chip Size	L	W	H max.	P
1206	3.2	1.6	0.7 - 1.35	0.8

Pad Pattern

A	B	C	D
2.8	0.8	0.52	1.6

Specification — C1632

Working voltage	As listed
Capacitance tolerance	±10%
Temperature coefficient	NP0 ±30ppm/°C X7R ±15% over -55°C to +125°C
Operating temperature range	-55°C to +125°C
Insulation resistance (whichever is less)	≥100,000MΩ or 1000MΩ/µF

Marking and Packaging

Marking	No marking appears on the product
Tape	8mm width, 4mm pitch
Reel	178mm dia.

The range of values listed are 10% tolerance. 20% tolerance is also available to order. Please contact our Sales Desk to discuss your requirements.

DIELECTRIC PERFORMANCE & APPLICATION

NP0 (C0G): Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. Used for precision timing, active and passive filtering, frequency setting and tuning circuits.

X7R: Medium K semi-stable type offering greater volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

KEMET type C1632

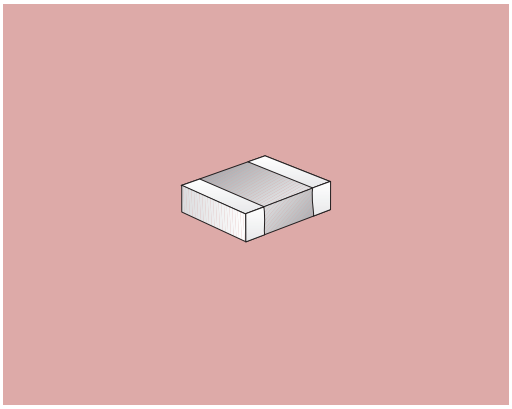
ORDER CODES

NP0 (C0G) dielectric

Value (pF)	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
10	C1632C100K8GAC	C1632C100K4GAC	C1632C100K3GAC	C1632C100K5GAC	C1632C100K1GAC	C1632C100K2GAC
12	C1632C120K8GAC	C1632C120K4GAC	C1632C120K3GAC	C1632C120K5GAC	C1632C120K1GAC	C1632C120K2GAC
15	C1632C150K8GAC	C1632C150K4GAC	C1632C150K3GAC	C1632C150K5GAC	C1632C150K1GAC	C1632C150K2GAC
18	C1632C180K8GAC	C1632C180K4GAC	C1632C180K3GAC	C1632C180K5GAC	C1632C180K1GAC	C1632C180K2GAC
22	C1632C220K8GAC	C1632C220K4GAC	C1632C220K3GAC	C1632C220K5GAC	C1632C220K1GAC	C1632C220K2GAC
27	C1632C270K8GAC	C1632C270K4GAC	C1632C270K3GAC	C1632C270K5GAC	C1632C270K1GAC	C1632C270K2GAC
33	C1632C330K8GAC	C1632C330K4GAC	C1632C330K3GAC	C1632C330K5GAC	C1632C330K1GAC	C1632C330K2GAC
39	C1632C390K8GAC	C1632C390K4GAC	C1632C390K3GAC	C1632C390K5GAC	C1632C390K1GAC	C1632C390K2GAC
47	C1632C470K8GAC	C1632C470K4GAC	C1632C470K3GAC	C1632C470K5GAC	C1632C470K1GAC	C1632C470K2GAC
56	C1632C560K8GAC	C1632C560K4GAC	C1632C560K3GAC	C1632C560K5GAC	C1632C560K1GAC	C1632C560K2GAC
68	C1632C680K8GAC	C1632C680K4GAC	C1632C680K3GAC	C1632C680K5GAC	C1632C680K1GAC	C1632C680K2GAC
82	C1632C820K8GAC	C1632C820K4GAC	C1632C820K3GAC	C1632C820K5GAC	C1632C820K1GAC	C1632C820K2GAC
100	C1632C101K8GAC	C1632C101K4GAC	C1632C101K3GAC	C1632C101K5GAC	C1632C101K1GAC	–
120	C1632C121K8GAC	C1632C121K4GAC	C1632C121K3GAC	C1632C121K5GAC	C1632C121K1GAC	–
150	C1632C151K8GAC	C1632C151K4GAC	C1632C151K3GAC	C1632C151K5GAC	C1632C151K1GAC	–
180	C1632C181K8GAC	C1632C181K4GAC	C1632C181K3GAC	C1632C181K5GAC	C1632C181K1GAC	–
220	C1632C221K8GAC	C1632C221K4GAC	C1632C221K3GAC	C1632C221K5GAC	–	–
270	C1632C271K8GAC	C1632C271K4GAC	C1632C271K3GAC	C1632C271K5GAC	–	–
330	C1632C331K8GAC	C1632C331K4GAC	C1632C331K3GAC	C1632C331K5GAC	–	–
390	C1632C391K8GAC	C1632C391K4GAC	C1632C391K3GAC	C1632C391K5GAC	–	–
470	C1632C471K8GAC	C1632C471K4GAC	C1632C471K3GAC	C1632C471K5GAC	–	–

X7R dielectric

Value (pF)	10 Volt	16 Volt	25 Volt	50 Volt	100 Volt	200 Volt
330	C1632C331K8RAC	C1632C331K4RAC	C1632C331K3RAC	C1632C331K5RAC	C1632C331K1RAC	C1632C331K2RAC
390	C1632C391K8RAC	C1632C391K4RAC	C1632C391K3RAC	C1632C391K5RAC	C1632C391K1RAC	C1632C391K2RAC
470	C1632C471K8RAC	C1632C471K4RAC	C1632C471K3RAC	C1632C471K5RAC	C1632C471K1RAC	C1632C471K2RAC
560	C1632C561K8RAC	C1632C561K4RAC	C1632C561K3RAC	C1632C561K5RAC	C1632C561K1RAC	C1632C561K2RAC
680	C1632C681K8RAC	C1632C681K4RAC	C1632C681K3RAC	C1632C681K5RAC	C1632C681K1RAC	–
820	C1632C821K8RAC	C1632C821K4RAC	C1632C821K3RAC	C1632C821K5RAC	C1632C821K1RAC	–
1000	C1632C102K8RAC	C1632C102K4RAC	C1632C102K3RAC	C1632C102K5RAC	C1632C102K1RAC	–
1200	C1632C122K8RAC	C1632C122K4RAC	C1632C122K3RAC	C1632C122K5RAC	C1632C122K1RAC	–
1500	C1632C152K8RAC	C1632C152K4RAC	C1632C152K3RAC	C1632C152K5RAC	C1632C152K1RAC	–
1800	C1632C182K8RAC	C1632C182K4RAC	C1632C182K3RAC	C1632C182K5RAC	C1632C182K1RAC	–
2200	C1632C222K8RAC	C1632C222K4RAC	C1632C222K3RAC	C1632C222K5RAC	C1632C222K1RAC	–
2700	C1632C272K8RAC	C1632C272K4RAC	C1632C272K3RAC	C1632C272K5RAC	C1632C272K1RAC	–
3300	C1632C332K8RAC	C1632C332K4RAC	C1632C332K3RAC	C1632C332K5RAC	C1632C332K1RAC	–
3900	C1632C392K8RAC	C1632C392K4RAC	C1632C392K3RAC	C1632C392K5RAC	C1632C392K1RAC	–
4700	C1632C472K8RAC	C1632C472K4RAC	C1632C472K3RAC	C1632C472K5RAC	C1632C472K1RAC	–
5600	C1632C562K8RAC	C1632C562K4RAC	C1632C562K3RAC	C1632C562K5RAC	–	–
6800	C1632C682K8RAC	C1632C682K4RAC	C1632C682K3RAC	C1632C682K5RAC	–	–
8200	C1632C822K8RAC	C1632C822K4RAC	C1632C822K3RAC	C1632C822K5RAC	–	–
(µF)						
0.01	C1632C103K8RAC	C1632C103K4RAC	C1632C103K3RAC	C1632C103K5RAC	–	–
0.012	C1632C123K8RAC	C1632C123K4RAC	C1632C123K3RAC	C1632C123K5RAC	–	–
0.015	C1632C153K8RAC	C1632C153K4RAC	C1632C153K3RAC	C1632C153K5RAC	–	–
0.018	C1632C183K8RAC	C1632C183K4RAC	C1632C183K3RAC	C1632C183K5RAC	–	–
0.022	C1632C223K8RAC	C1632C223K4RAC	C1632C223K3RAC	C1632C223K5RAC	–	–
0.027	C1632C273K8RAC	C1632C273K4RAC	–	–	–	–
0.033	C1632C333K8RAC	C1632C333K4RAC	–	–	–	–
0.039	C1632C393K8RAC	C1632C393K4RAC	–	–	–	–
0.047	C1632C473K8RAC	C1632C473K4RAC	–	–	–	–
0.056	C1632C563K8RAC	C1632C563K4RAC	–	–	–	–
0.068	C1632C683K8RAC	C1632C683K4RAC	–	–	–	–
0.082	C1632C823K8RAC	C1632C823K4RAC	–	–	–	–
0.1	C1632C104K8RAC	C1632C104K4RAC	–	–	–	–

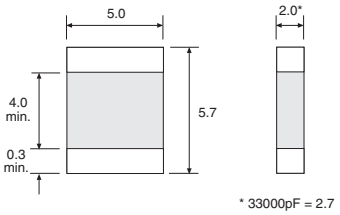


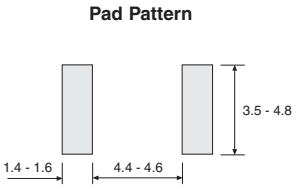
MURATA type GA355D/X/Q- GB, GC & GF

Surface mount X2 and Y2/X1 ceramic chip capacitors designed for mains interference suppression. Featuring X7R dielectric, the capacitors meet IEC60384-14.
The chips offer high capacitance for a small size, have tin plated terminals and are suitable for reflow soldering processes. Supplied taped and reeled.

- Mains rated **X2** & **Y2/X1** class
- Meet IEC60384-14
- **2220** chip size
- **X7R** dielectric
- Suitable for reflow soldering
- Temperature range up to **125°C**
- Supplied taped & reeled

Dimensions (mm)





Specification Meets IEC60384-14	GA355D/X/Q- GB, GC & GF
Voltage rating	250Vac
Capacitance tolerance	±10%
Test voltage	GB 1075Vdc GC, GF 1500Vac
Operating temperature range	-25°C to +125°C

Packaging	
Tape	12mm width, 8mm pitch
Reel	178mm dia.

X2 Class MURATA type GA355D/X- GB

ORDER CODES

Value (pF)	Value (µF)	Order Code
10000	0.01	*GA355DR7GB103KY02L*
15000	0.015	*GA355DR7GB153KY02L*
22000	0.022	*GA355DR7GB223KY02L*
33000	0.033	*GA355XR7GB333KY06L*

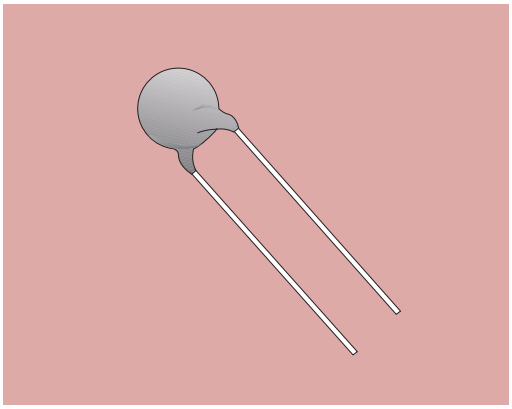
Y2/X1 Class MURATA type GA355D/Q- GC/GF

ORDER CODES

Value (pF)	Value (µF)	Order Code
100	0.0001	*GA355DR7GC101KY02L*
150	0.00015	*GA355DR7GC151KY02L*
220	0.00022	*GA355DR7GC221KY02L*
330	0.00033	*GA355DR7GC331KY02L*
1000	0.001	*GA355DR7GC102KY02L*
1800	0.0018	*GA355QR7GF182KW01L*
2200	0.0022	*GA355QR7GF222KW01L*
3300	0.0033	*GA355QR7GF332KW01L*
4700	0.0047	*GA355DR7GF472KW01L*

* UL approval for line bypass applications only

† BSI/VDE/ESTI approvals applicable to GC types only

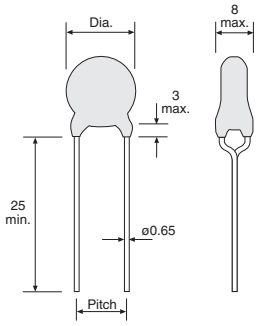


JYA-NAY type JY

A range of radial lead Y2 class capacitors, with extensive approvals, designed for mains interference suppression. Meets EN132400 (IEC60384-14), the unified European safety standard. Rated 400Vac and suitable for X1, across the line, applications. Coated with flame retardant epoxy resin.

- Mains rated **Y2/X1** class
- Meets the unified European safety standard EN132400
- 400Vac rating
- Flame retardant coating to UL94V-0
- Body colour **Blue**

Dimensions (mm)



Dia. & pitch listed below

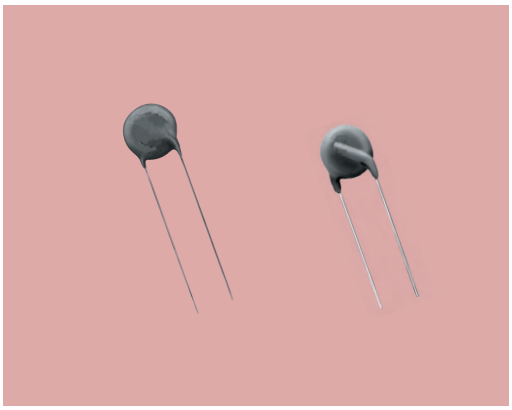
Specification Meets EN132400 (IEC60384-14)	JY
Voltage rating	400Vac
Capacitance tolerance	±10%(Y5P), ±20%(Y5V)
Temperature coefficient	±10%(Y5P), +30 to -80%(Y5V) over -25°C to +85°C
Test voltage	2600Vac for 60 seconds
Operating temperature range	-25°C to +85°C
Insulation resistance	≥10,000MΩ
Dissipation factor	≤2.5%(Y5P), ≤5%(Y5V) at 1kHz

Y2/X1 Class JYA-NAY type JY

ORDER CODES

Value (pF)	(µF)	Tolerance	Dimensions (mm) Dia. max.	Pitch	Order Code
Y5P dielectric					
100	0.0001	10%	8	7.5	***098420***
150	0.00015	10%	8	7.5	***098421***
220	0.00022	10%	8	7.5	***098422***
330	0.00033	10%	8	7.5	***098423***
470	0.00047	10%	8	7.5	***098424***
560	0.00056	10%	9	7.5	***098425***
680	0.00068	10%	9	7.5	***098426***
1000	0.001	10%	10	7.5	***098427***
Y5V dielectric					
1000	0.001	20%	8	7.5	***098430***
1500	0.0015	20%	9	7.5	***098431***
2200	0.0022	20%	9	7.5	***098432***
3300	0.0033	20%	10	10	***098433***
3900	0.0039	20%	11	10	***098434***
4700	0.0047	20%	12	7.5	***098435***
4700	0.0047	20%	12	10	***098436***
10000	0.01	20%	16	10	***098437***

TAPED PRODUCT (Boxed or Reeled) also available to order



MURATA type DE- KX, KH & KY

A range of radial lead Y1 and Y2 class capacitors, with extensive approvals, designed for mains interference suppression. Meets IEC60384-14 and suitable for X1, across the line, applications. Coated with flame retardant epoxy resin. An option of loose or taped and boxed product is provided throughout.

- Mains rated **Y1/X1** & **Y2/X1** class
- Meet IEC60384-14
- Flame retardant coating to UL94V-0
- Option of loose or taped & boxed
- Body colour **Blue**

Dimensions (mm)

Fig. 1

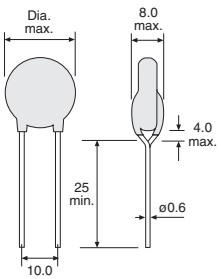


Fig. 2

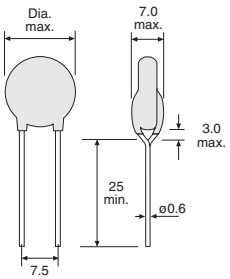
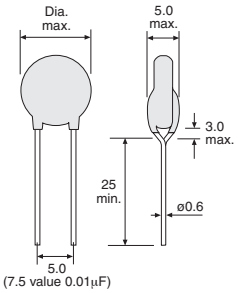


Fig. 3



Dia. listed on following page

Specification Meets IEC60384-14

	DE- KX, KH & KY
Voltage rating	250Vac
Capacitance tolerance	B ±10% E, F ±20%
Temperature coefficient	B ±10% over -25°C to +85°C E +20%, -55% over -25°C to +85°C F +30%, -80% over -25°C to +85°C
Test voltage	KX 4000Vac KH 2600Vac KY 2000Vac (5mm pitch) 2600Vac (7.5mm pitch)
Operating temperature range	-25°C to +85°C

Packaging

TAPED & BOXED

Fig. 4

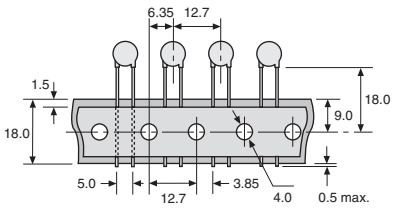


Fig. 5

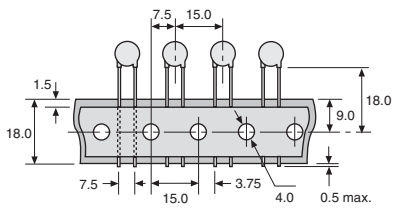


Fig. 6

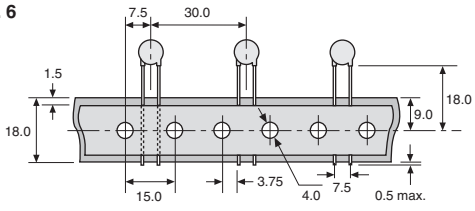
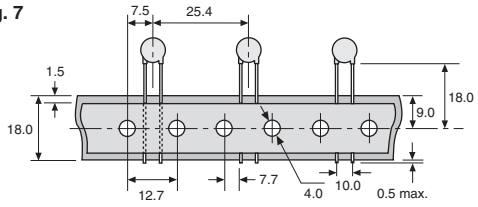


Fig. 7



ORDER CODES

Y1/X1 Class MURATA type DE- KX

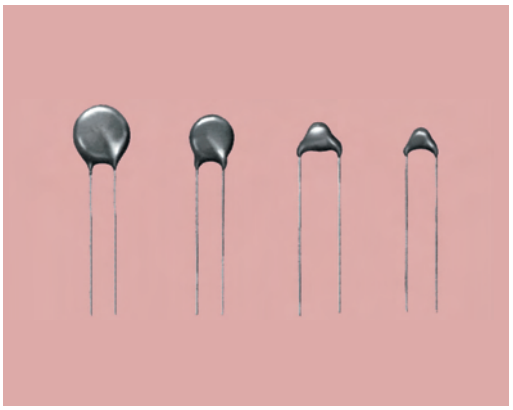
Value (pF)	(µF)	Dielectric	Tolerance	Dimensions (mm) Dia. max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
100	0.0001	B	10%	9	10	1	DE1B3KX101KA5B	1 + 7	DE1B3KX101KN5A
150	0.00015	B	10%	9	10	1	DE1B3KX151KA5B	1 + 7	DE1B3KX151KN5A
220	0.00022	B	10%	9	10	1	DE1B3KX221KA5B	1 + 7	DE1B3KX221KN5A
330	0.00033	B	10%	9	10	1	DE1B3KX331KA5B	1 + 7	DE1B3KX331KN5A
470	0.00047	B	10%	9	10	1	DE1B3KX471KA5B	1 + 7	DE1B3KX471KN5A
680	0.00068	B	10%	10	10	1	DE1B3KX681KA5B	1 + 7	DE1B3KX681KN5A
1000	0.001	E	20%	8	10	1	DE1E3KX102MA5BA01	1 + 7	DE1E3KX102MN5AA01
1500	0.0015	E	20%	9	10	1	DE1E3KX152MA5BA01	1 + 7	DE1E3KX152MN5AA01
2200	0.0022	E	20%	10	10	1	DE1E3KX222MA5BA01	1 + 7	DE1E3KX222MN5AA01
3300	0.0033	E	20%	12	10	1	DE1E3KX332MA5BA01	1 + 7	DE1E3KX332MN5AA01
3900	0.0039	E	20%	13	10	1	DE1E3KX392MA5BA01	1 + 7	DE1E3KX392MN5AA01
4700	0.0047	E	20%	15	10	1	DE1E3KX472MA5BA01	1 + 7	DE1E3KX472MN5AA01

Y2/X1 Class MURATA type DE- KH

Value (pF)	(µF)	Dielectric	Tolerance	Dimensions (mm) Dia. max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
100	0.0001	B	10%	8	7.5	2	DE2B3KH101KA3B	2 + 5	DE2B3KH101KN3A
150	0.00015	B	10%	8	7.5	2	DE2B3KH151KA3B	2 + 5	DE2B3KH151KN3A
220	0.00022	B	10%	8	7.5	2	DE2B3KH221KA3B	2 + 5	DE2B3KH221KN3A
330	0.00033	B	10%	8	7.5	2	DE2B3KH331KA3B	2 + 5	DE2B3KH331KN3A
470	0.00047	B	10%	8	7.5	2	DE2B3KH471KA3B	2 + 5	DE2B3KH471KN3A
680	0.00068	B	10%	9	7.5	2	DE2B3KH681KA3B	2 + 5	DE2B3KH681KN3A
1000	0.001	E	20%	8	7.5	2	DE2E3KH102MA3B	2 + 5	DE2E3KH102MN3A
1500	0.0015	E	20%	9	7.5	2	DE2E3KH152MA3B	2 + 5	DE2E3KH152MN3A
2200	0.0022	E	20%	10	7.5	2	DE2E3KH222MA3B	2 + 5	DE2E3KH222MN3A
3300	0.0033	E	20%	12	7.5	2	DE2E3KH332MA3B	2 + 5	DE2E3KH332MN3A
4700	0.0047	E	20%	13	7.5	2	DE2E3KH472MA3B	2 + 5	DE2E3KH472MN3A
10000	0.01	F	20%	16	7.5	2	DE2F3KH103MA3B	2 + 6	DE2F3KH103MN7A

Y2/X1 Class MURATA type DE- KY

Value (pF)	(µF)	Dielectric	Tolerance	Dimensions (mm) Dia. max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
100	0.0001	B	10%	8	5	3	DE2B3KY101KA2BM01	3 + 4	DE2B3KY101KN2AM01
150	0.00015	B	10%	8	5	3	DE2B3KY151KA2BM01	3 + 4	DE2B3KY151KN2AM01
220	0.00022	B	10%	8	5	3	DE2B3KY221KA2BM01	3 + 4	DE2B3KY221KN2AM01
330	0.00033	B	10%	8	5	3	DE2B3KY331KA2BM01	3 + 4	DE2B3KY331KN2AM01
470	0.00047	B	10%	8	5	3	DE2B3KY471KA2BM01	3 + 4	DE2B3KY471KN2AM01
680	0.00068	B	10%	8	5	3	DE2B3KY681KA2BM01	3 + 4	DE2B3KY681KN2AM01
1000	0.001	E	20%	8	5	3	DE2E3KY102MA2BM01	3 + 4	DE2E3KY102MN2AM01
1500	0.0015	E	20%	8	5	3	DE2E3KY152MA2BM01	3 + 4	DE2E3KY152MN2AM01
2200	0.0022	E	20%	9	5	3	DE2E3KY222MA2BM01	3 + 4	DE2E3KY222MN2AM01
3300	0.0033	E	20%	10	5	3	DE2E3KY332MA2BM01	3 + 4	DE2E3KY332MN2AM01
4700	0.0047	E	20%	11	5	3	DE2E3KY472MA2BM01	3 + 4	DE2E3KY472MN2AM01
10000	0.01	F	20%	14	7.5	3	DE2F3KY103MA3B	3 + 6	DE2F3KY103MN7A



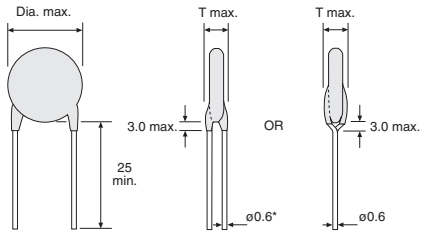
MURATA type DE

A wide range of resin coated, miniature disc ceramic capacitors for high voltage applications. Offers a choice of maximum operating voltage, from 1kV to 6.3kV, in a variety of popular values. The range includes the HR series of 1kV capacitors with an extended temperature range, which are ideally suited for snubber circuits. An option of loose or taped and boxed product is provided on most values.
Note that these devices are not suitable for mains suppression use.

- Miniature disc sizes
- Ratings from **1kV to 6.3kV**
- Flame retardant epoxy resin coating
- Suitable for high density mounting
- Option of loose or taped & boxed
- Body colour **Blue**

Dimensions (mm)

LOOSE



Dia, T & pitch listed on following page.

*Lead dia. 0.5 when body dia. ≤5 (loose parts only)

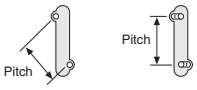


Fig. 1 **Fig. 2**

Specification

Specification	DE
Working voltage	DC (as listed)
Capacitance tolerance	] see Dielectric Classifications below
Temperature coefficient	
Operating temperature range	-25°C to +85°C HR series -25°C to +125°C
Insulation resistance	≥10,000MΩ
Dielectric factor	B & E dielectric ≤2.5% at 1kHz, 5Vrms F dielectric ≤5.0% at 1kHz, 5Vrms R dielectric ≤0.2% at 1kHz, 5Vrms SL dielectric C <22pF :Q ≥400 +20C C ≥47pF :Q ≥1000
Dielectric strength	2 x working voltage (5 sec)

Dielectric Classifications

CODE	TYPE	TOLERANCE	TEMP. COEFF.
B	MED K	±10%	±10% over -25°C to +85°C
E	HIGH K	-20,+80%	+20%, -55% over -25°C to +85°C
F	HIGH K	-20,+80%	+30%, -80% over -25°C to +85°C
R	MED K	±10%	±15% over -25°C to +85°C, +15%, -30% over +85°C to +125°C
SL	LOW K	±5%	+350 to 1000ppm°C

Other capacitor values and tolerances are also available to order. Please contact our Sales Desk to discuss your requirements.

Packaging

TAPED & BOXED

Fig. 3

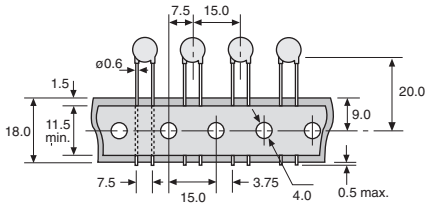


Fig. 4

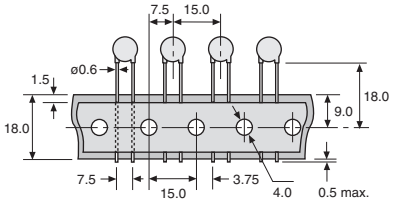


Fig. 5

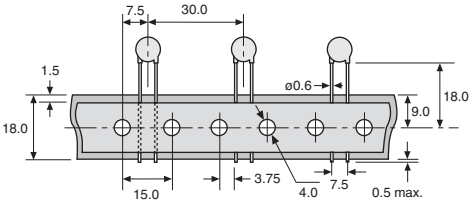
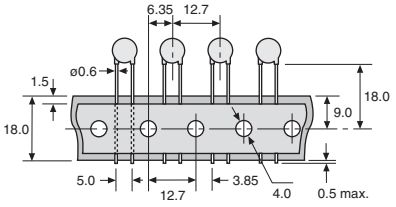


Fig. 6



ORDER CODES

1kV *For general purpose use*

Value (pF)	Dielectric	Dia. max.	Dimensions (mm) T max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
100	B	4.5	4.0	5.0	1	DEBB33A101KC1B	1 + 6	DEBB33A101KP2A
150	B	4.5	4.0	5.0	1	DEBB33A151KC1B	1 + 6	DEBB33A151KP2A
220	B	4.5	4.0	5.0	1	DEBB33A221KC1B	1 + 6	DEBB33A221KP2A
330	B	4.5	4.0	5.0	1	DEBB33A331KC1B	1 + 6	DEBB33A331KP2A
470	B	5.0	4.0	5.0	1	DEBB33A471KC1B	1 + 6	DEBB33A471KP2A
680	B	6.0	4.0	5.0	2	DEBB33A681KA2B	2 + 6	DEBB33A681KN2A
1000	B	6.0	4.0	5.0	2	DEBB33A102KA2B	2 + 6	DEBB33A102KN2A
1000	E	5.0	4.0	5.0	1	DEBE33A102ZC1B	1 + 6	DEBE33A102ZP2A
1500	B	8.0	4.0	5.0	2	DEBB33A152KA2B	2 + 6	DEBB33A152KN2A
2200	F	6.0	4.0	5.0	2	DEBF33A222ZA2B	2 + 6	DEBF33A222ZN2A
3300	B	10.0	4.0	5.0	2	DEBB33A332KA2B	2 + 6	DEBB33A332KN2A
4700	F	7.0	4.0	5.0	2	DEBF33A472ZA2B	2 + 6	DEBF33A472ZN2A
4700	B	12.0	4.0	7.5	2	DEBB33A472KA3B	2 + 4	DEBB33A472KN3A
6800	B	15.0	4.0	7.5	2	DEBB33A682KA3B	2 + 5	DEBB33A682KN7A
(µF)								
0.01	F	10.0	4.0	5.0	2	DEBF33A103ZA2B	2 + 6	DEBF33A103ZN2A
0.01	E	13.0	4.0	7.5	2	DEBE33A103ZA3B	2 + 4	DEBE33A103ZN3A

1kV (HR) *For switching power supply snubber circuits*

Value (pF)	Dielectric	Dia. max.	Dimensions (mm) T max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
47	SL	4.5	4.0	5.0	1	DEA1X3A470JC1B	1 + 6	DEA1X3A470JP2A
100	SL	6.0	4.0	5.0	2	DEA1X3A101JA2B	2 + 6	DEA1X3A101JN2A
150	SL	7.0	4.5	5.0	2	DEA1X3A151JA2B	2 + 6	DEA1X3A151JN2A
220	SL	8.0	4.5	5.0	2	DEA1X3A221JA2B	2 + 6	DEA1X3A221JN2A
330	R	7.0	4.5	5.0	2	DEHR33A331KA2B	2 + 6	DEHR33A331KN2A
470	R	7.0	4.5	5.0	2	DEHR33A471KA2B	2 + 6	DEHR33A471KN2A
680	R	8.0	4.5	5.0	2	DEHR33A681KA2B	2 + 6	DEHR33A681KN2A
1000	R	9.0	4.5	5.0	2	DEHR33A102KA2B	2 + 6	DEHR33A102KN2A
1500	R	11.0	4.5	5.0	2	DEHR33A152KA2B	2 + 6	DEHR33A152KN2A
2200	R	13.0	4.5	7.5	2	DEHR33A222KA3B	2 + 4	DEHR33A222KN3A
3300	R	15.0	4.5	7.5	2	DEHR33A332KA3B	2 + 5	DEHR33A332KN7A
4700	R	17.0	4.5	7.5	2	DEHR33A472KA3B	2 + 5	DEHR33A472KN7A

2kV *For general purpose use*

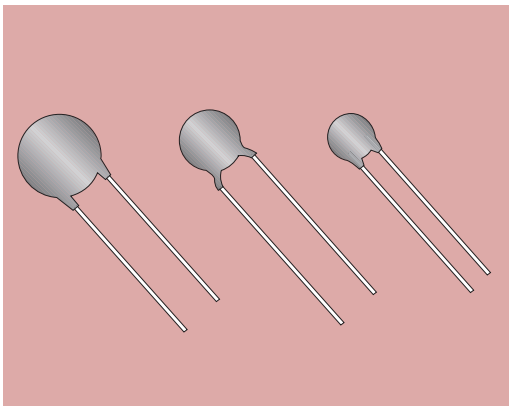
Value (pF)	Dielectric	Dia. max.	Dimensions (mm) T max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
100	B	4.5	5.0	5.0	1	DEBB33D101KC1B	1 + 6	DEBB33D101KP2A
150	B	4.5	5.0	5.0	1	DEBB33D151KC1B	1 + 6	DEBB33D151KP2A
220	B	4.5	5.0	5.0	1	DEBB33D221KC1B	1 + 6	DEBB33D221KP2A
330	B	5.0	5.0	5.0	1	DEBB33D331KC1B	1 + 6	DEBB33D331KP2A
470	B	6.0	5.0	5.0	2	DEBB33D471KA2B	2 + 6	DEBB33D471KN2A
680	B	7.0	5.0	5.0	2	DEBB33D681KA2B	2 + 6	DEBB33D681KN2A
1000	B	8.0	5.0	5.0	2	DEBB33D102KA2B	2 + 6	DEBB33D102KN2A
2200	E	8.0	5.0	5.0	2	DEBE33D222ZA2B	2 + 6	DEBE33D222ZN2A
2200	F	9.0	5.0	5.0	2	DEBF33D222ZA2B	2 + 6	DEBF33D222ZN2A
3300	B	12.0	5.0	7.5	2	DEBB33D332KA3B	2 + 4	DEBB33D332KN3A
4700	F	9.0	5.0	5.0	2	DEBF33D472ZA2B	2 + 6	DEBF33D472ZN2A
4700	B	15.0	5.0	7.5	2	DEBB33D472KA3B	2 + 5	DEBB33D472KN7A
(µF)								
0.01	F	12.0	5.0	5.0	2	DEBF33D103ZA2B	2 + 6	DEBF33D103ZN2A
0.01	F	12.0	5.0	7.5	2	DEBF33D103ZA3B	2 + 4	DEBF33D103ZN3A

3.15kV *For general purpose use*

Value (pF)	Dielectric	Dia. max.	Dimensions (mm) T max.	Pitch	Fig.	Order Code Loose	Fig.	Order Code Taped & Boxed
100	B	5.0	6.0	7.5	1	DEBB33F101KCDB	1 + 3	DEBB33F101KP3A
220	B	5.0	6.0	7.5	1	DEBB33F221KCDB	1 + 3	DEBB33F221KP3A
470	B	7.0	6.0	7.5	1	DEBB33F471KC3B	1 + 4	DEBB33F471KP3A
680	B	8.0	6.0	7.5	2	DEBB33F681KA3B	2 + 4	DEBB33F681KN3A
1000	E	7.0	6.0	7.5	1	DEBE33F102ZC3B	1 + 4	DEBE33F102ZP3A
1500	B	11.0	6.0	7.5	2	DEBB33F152KA3B	2 + 4	DEBB33F152KN3A
2200	E	10.0	6.0	7.5	2	DEBE33F222ZA3B	2 + 4	DEBE33F222ZN3A
3300	B	15.0	6.0	7.5	2	DEBB33F332KA3B	2 + 5	DEBB33F332KN7A
4700	E	13.0	6.0	7.5	2	DEBE33F472ZA3B	2 + 4	DEBE33F472ZN3A

6.3kV *For general purpose use*

Value (pF)	Dielectric	Dia. max	Dimensions (mm) T max.	Pitch	Fig.	Order Code Loose
22	SL	9.0	7.0	10.0	1	DEC1X3J220JC4B
33	SL	9.0	7.0	10.0	1	DEC1X3J330JC4B
47	SL	9.0	7.0	10.0	1	DEC1X3J470JC4B
68	SL	12.0	7.0	10.0	1	DEC1X3J680JC4B
82	SL	12.0	7.0	10.0	1	DEC1X3J820JC4B
100	SL	13.0	7.0	10.0	1	DEC1X3J101JC4B
120	SL	14.0	7.0	10.0	1	DEC1X3J121JC4B
150	SL	15.0	7.0	10.0	1	DEC1X3J151JC4B
220	B	9.0	7.0	10.0	1	DECB33J221KC4B
330	B	9.0	7.0	10.0	1	DECB33J331KC4B
470	B	10.0	7.0	10.0	1	DECB33J471KC4B
680	B	11.0	7.0	10.0	1	DECB33J681KC4B
1000	E	11.0	7.0	10.0	1	DECE33J102ZC4B
2200	E	15.0	7.0	10.0	1	DECE33J222ZC4B

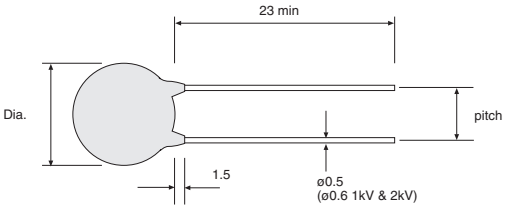


CTC type DC3

Two ranges of miniature disc ceramic capacitors offering a choice of dielectric stability and permittivity. Whilst most values are rated 100V, the Coupling and By-pass range extends to cover the industry standard 0.1µF at 25V and 50V together with two high voltage series rated 1kV and 2kV. A pitch and packaging option is provided on many of the values.

- Miniature disc sizes
- Choice of dielectric & pitch
- Values from **1.0pF to 0.1µF**
- Industry standard 0.1µF at 25V & 50V
- High voltage (1kV & 2kV) types available
- Option of loose or taped & boxed
- Body colour **Orange - Brown** (2kV types **Blue** epoxy)

Dimensions (mm)



Thickness 2.5 (3.5 1kV & 2kV)

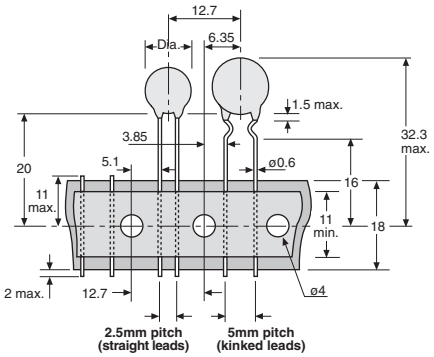
Dia. & pitch listed on following page

Specification

	DC3
Working voltage	DC (as listed)
Operating temperature range	-25°C to +85°C
Insulation resistance	≥10,000MΩ (≤7,500MΩ C≥0.022µF)
Dielectric strength	2 x working voltage (5 sec)

Packaging

TAPED & BOXED



N.B. 5mm pitch taped parts have kinked leads as shown.

Taped & reeled product and 5mm pitch taped parts with straight leads are also available to order.
Please contact our Sales Desk to discuss your requirements.

Temperature Compensating Range

Low loss, close tolerance, high stability capacitors for use where a controlled change in capacitance with temperature is required. Choice of pitch with option of loose or taped & boxed where indicated.

ORDER CODES

LOW K Dielectric NP0 (C)

Value (pF)	Tolerance	Dia. max (mm)	2.5mm PITCH Order Code Loose	2.5mm PITCH Order Code Taped & Boxed	5mm PITCH Order Code Loose	5mm PITCH Order Code Taped & Boxed
100 Volt						
1.0	0.25pF	5	***099101***	***099101T***	***099101A***	***099101AT***
1.2	0.25pF	5	***099102***	***099102T***	–	–
1.5	0.25pF	5	***099103***	***099103T***	***099103A***	***099103AT***
1.8	0.25pF	5	***099104***	***099104T***	–	–
2.2	0.25pF	5	***099105***	***099105T***	***099105A***	***099105AT***
2.7	0.25pF	5	***099106***	***099106T***	–	–
3.3	0.25pF	5	***099107***	***099107T***	***099107A***	***099107AT***
3.9	0.25pF	5	***099108***	***099108T***	–	–
4.7	0.5pF	5	***099109***	***099109T***	***099109A***	***099109AT***
5.6	0.5pF	5	***099110***	***099110T***	–	–
6.8	0.5pF	5	***099111***	***099111T***	***099111A***	***099111AT***
8.2	0.5pF	5	***099112***	***099112T***	–	–
10	5%	5	***099113***	***099113T***	***099113A***	***099113AT***
12	5%	5	***099114***	***099114T***	–	–
15	5%	5	***099115***	***099115T***	***099115A***	***099115AT***
18	5%	5	***099116***	***099116T***	–	–
22	5%	5	***099117***	***099117T***	***099117A***	***099117AT***
27	5%	5	***099118***	***099118T***	–	–
33	5%	5	***099119***	***099119T***	***099119A***	***099119AT***
36	5%	5	***099126***	***099126T***	***099126A***	***099126AT***
39	5%	5	***099120***	***099120T***	–	–
47	5%	5	***099121***	***099121T***	***099121A***	***099121AT***
56	5%	6	***099122***	***099122T***	–	–
68	5%	6	***099123***	***099123T***	***099123A***	***099123AT***
82	5%	7	–	–	***099124A***	***099124AT***
100	5%	7	–	–	***099125A***	***099125AT***

LOW K Dielectric N150 (P)

100 Volt						
22	5%	5	***099217***		***099217A***	
27	5%	5	***099218***		–	
33	5%	5	***099219***		***099219A***	
39	5%	5	***099220***		–	
47	5%	6	***099221***		***099221A***	
56	5%	6	***099222***		–	
68	5%	7	***099223***		***099223A***	
82	5%	8	***099224***		–	
100	5%	8	***099225***		***099225A***	
120	5%	8	***099226***		–	
150	5%	9	***099227***		***099227A***	
180	5%	11	***099228***		–	

LOW K Dielectric N750 (UJ)

100 Volt						
82	5%	7	***099324***	***099324T***	–	–
100	5%	7	***099325***	***099325T***	***099325A***	***099325AT***

Tip colour indicates dielectric:
Black - NPO Orange - N150 Violet - N750

Coupling and By-pass Range

High permittivity capacitors for coupling and by-pass applications or frequency discriminating circuits where low losses and high stability are not of major importance. Choice of pitch with option of loose or taped & boxed where indicated.

ORDER CODES

MEDIUM K Dielectric Y5P (B)

Value (pF)	Tolerance	Dia. max (mm)	2.5mm PITCH Order Code Loose	2.5mm PITCH Order Code Taped & Boxed	5mm PITCH Order Code Loose	5mm PITCH Order Code Taped & Boxed
100 Volt						
100	10%	5	***099525***	***099525T***	***099525A***	***099525AT***
120	10%	5	***099526***	***099526T***	–	–
150	10%	5	***099527***	***099527T***	***099527A***	***099527AT***
180	10%	5	***099528***	***099528T***	–	–
220	10%	5	***099529***	***099529T***	***099529A***	***099529AT***
270	10%	5	***099530***	***099530T***	–	–
330	10%	5	***099531***	***099531T***	***099531A***	***099531AT***
390	10%	5	***099532***	***099532T***	***099532A***	***099532AT***
470	10%	5	***099533***	***099533T***	***099533A***	***099533AT***
560	10%	5	***099534***	***099534T***	***099534A***	***099534AT***
680	10%	5	***099535***	***099535T***	***099535A***	***099535AT***
820	10%	5	***099536***	***099536T***	–	–
1000	10%	5	***099537***	***099537T***	***099537A***	***099537AT***
1200	10%	5	***099538***	***099538T***	–	–
1500	10%	5	***099539***	***099539T***	***099539A***	***099539AT***
1800	10%	5	***099540***	***099540T***	–	–
2200	10%	6	***099541***	***099541T***	***099541A***	***099541AT***
2700	10%	6	***099542***	***099542T***	–	–
3300	10%	7	***099543***	***099543T***	***099543A***	***099543AT***
3900	10%	7	***099544***	***099544T***	–	–
4700	10%	8	***099545***	***099545T***	***099545A***	***099545AT***

HIGH K Dielectric Z5V (F)

(µF)						
100 Volt						
0.01	-20+80%	6	***099649***	***099649T***	***099649A***	***099649AT***
0.022	-20+80%	8.5	***099653***	***099653T***	***099653A***	***099653AT***
0.047	-20+80%	11	–	–	***099657A***	–

HIGH K Semi-conductor Dielectric Y5V (F)

50 Volt				
0.047	-20+80%	6	***099035A***	***099035AT***

Industry standard decoupling capacitors :

25 Volt				
0.1	-20+80%	6	***099000A***	***099000AT***
50 Volt				
0.1	-20+80%	6	***099761A***	***099761AT***

HIGH VOLTAGE *Supplied loose only.*

MEDIUM K Dielectric Y5P (B)

(pF)			5mm PITCH
2000 Volt			
220	10%	7	***099829A***
470	10%	9	***099833A***
1000	10%	9	***099837A***

HIGH K Dielectric Z5U (E)

(µF)			6.5mm PITCH	5mm PITCH
1000 Volt				
0.001	20%	6	***099001***	***099001A***
			10mm PITCH	5mm PITCH
0.01	20%	12	***099002***	***099002A***

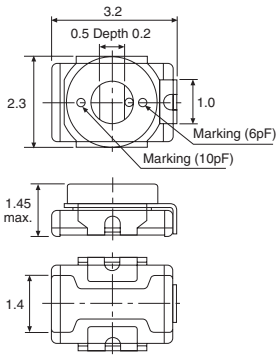


MURATA type TZV2

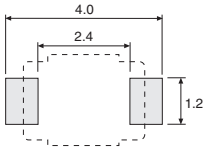
A range of surface mount, ceramic trimmer capacitors with a funnel shaped metal case to enable in-process automatic adjustment. Unique construction with no plastic material provides superior soldering heat resistance to maintain excellent characteristic performance after reflow soldering. Supplied taped and reeled.

- Very small size
- Ceramic plate construction
- Very stable characteristics
- Wide range of applications
- Funnel shaped metal case enables in-process automatic adjustment
- Designed for automatic placement
- Supplied taped & reeled

Dimensions (mm)



Pad Pattern



Specification	TZV2
Working voltage	25Vdc
Capacitance tolerance	+100/-0%
Temperature coefficient	NP0: 0±300ppm/°C N750: -750 ±500ppm/°C
Operating temperature range	-25°C to +85°C
Insulation resistance	≥10,000MΩ
Withstand voltage	55Vdc

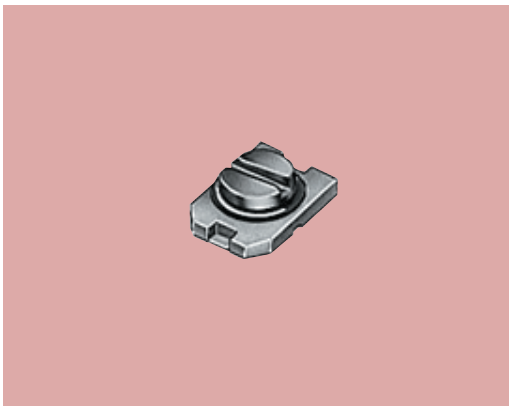
Packaging	
Tape	8mm width, 4mm pitch
Reel	178mm dia.

ORDER CODES

Capacitance (pF)

25 Volt

Min.	Max	Temperature Coefficient	Order Code
0.65	2.5	NP0	***TZV2Z2R5A110R00***
1.5	3.0	NP0	***TZV2Z030A110R00***
2.5	6.0	NP0	***TZV2Z060A110R00***
3.0	10.0	NP0	***TZV2Z100A110R00***
4.5	20.0	N750	***TZV2R200A110R00***

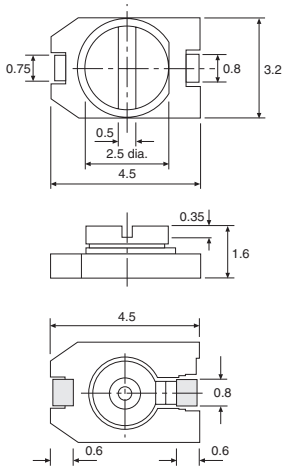


MURATA type TZC3

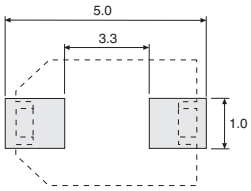
A range of surface mount, ceramic trimmer capacitors with slot head adjustment. Each has a colour coded stator to permit easy identification of capacitance and reduce mounting errors. Supplied taped and reeled.

- Small size
- Very stable characteristics
- Colour coded for easier identification
- Wide range of applications
- Conventional tool adjustment
- Heat resistant resin to withstand reflow
- Supplied taped & reeled

Dimensions (mm)



Pad Pattern



Specification	TZC3
Working voltage	100Vdc
Capacitance tolerance	Min. (+0%), Max. (+50,-0%)
Temperature coefficient	NP0 : 0 ±200ppm/°C (3-10pF 0 ±300ppm/°C) N750 : -750 ±300ppm/°C N1200 : -1200 ±500ppm/°C
Operating temperature range	-25°C to +85°C
Insulation resistance	≥10,000MΩ
Withstand voltage	220Vdc

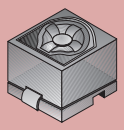
Packaging	
Tape	12mm width, 8mm pitch
Reel	178mm dia.

ORDER CODES

Capacitance (pF)

100 Volt

Min.	Max	Temperature Coefficient	Case Colour	Order Code
1.4	3.0	NP0	Brown	***TZC3Z030A110R00***
2.0	6.0	NP0	Blue	***TZC3Z060A110R00***
3.0	10.0	N750	White	***TZC3R100A110R00***
5.0	20.0	N1200	Red	***TZC3P200A110R00***
6.5	30.0	N1200	Green	***TZC3P300A110R00***

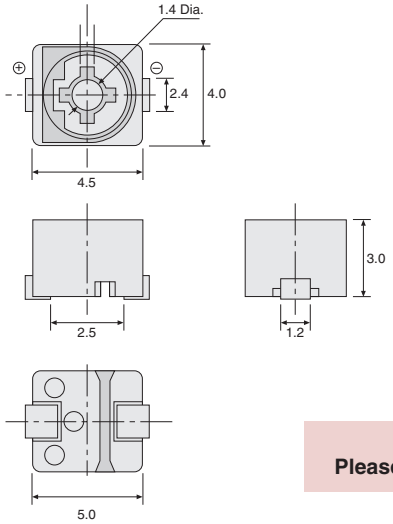


MURATA type TZB4

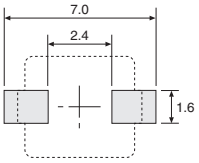
A range of washable, surface mount, ceramic trimmer capacitors protected by a thermosetting resin case. Consists of single and monolithic plate types. Cross shaped slot for easier adjustment. Supplied taped and reeled.

- Washable
- Ceramic plate construction
- Very stable characteristics
- Colour coded for easier identification
- Cross shaped slot for easy adjustment
- Complete with cover film for solder bath
- Supplied taped & reeled

Dimensions (mm)



Pad Pattern



Other terminal styles are also available to order.
Please contact our Sales Desk to discuss your requirements.

Specification

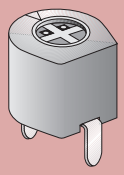
Specification	TZB4
Working voltage	As listed
Capacitance tolerance	100V types: Min. (+0%), Max. (+50,-0%) 50V types: Min. (+0%), Max. (+100,-0%)
Temperature coefficient	NP0 : 0 ±200ppm/°C (3-10pF 0 ±300ppm/°C) N750 : -750 ±300ppm/°C N1200 : -1200 ±500ppm/°C
Operating temperature range	-25°C to +85°C
Insulation resistance	≥10,000MΩ
Withstand voltage	100V types: 220Vdc 50V types: 110Vdc

Packaging

Tape	12mm width, 8mm pitch
Reel	178mm dia.

Capacitance (pF) Min.	Max.	Temperature Coefficient	Case Colour	Order Code
SINGLE PLATE ***100 Volt***				
1.4	3.0	NP0	Brown	***TZB4Z030AB10R00***
2.0	6.0	NP0	Blue	***TZB4Z060AB10R00***
3.0	10.0	NP0	White	***TZB4Z100AB10R00***
4.5	20.0	N750	Red	***TZB4R200AB10R00***
6.5	30.0	N1200	Green	***TZB4P300AB10R00***
8.5	40.0	N1200	Yellow	***TZB4P400AB10R00***
MONOLITHIC PLATE ***50 Volt***				
4.0	25.0	NP0	Black*	***TZB4Z250AB10R00***
7.0	50.0	N750	Black*	***TZB4R500AB10R00***

*Black + markings

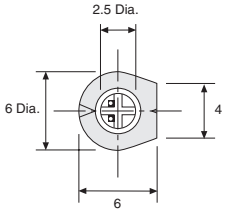


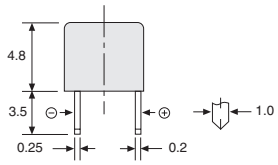
MURATA type TZ03

A popular range of single and monolithic plate trimmer capacitors constructed with a stationary ceramic dielectric to give a linear and stable temperature coefficient. Housed in a sealed body to prevent the penetration of flux and dust.

- Ceramic plate construction
- Colour coded for easier identification
- Cross shaped slot for easy adjustment
- Sealed body

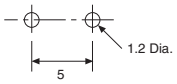
Dimensions (mm)





Note the polarity of the trimmer capacitor to minimise influence by stray capacitance.

Footprint



Specification	TZ03
Working voltage	As listed
Capacitance tolerance	100V types: Min. (+0%), Max. (+50,-0%) 50V types: Min. (+0%), Max. (+100,-0%)
Temperature coefficient	NP0 : 0 ±200ppm/°C N450 : -450 ±300ppm/°C N750 : -750 ±300ppm/°C N1200 : -1200 ±500ppm/°C
Operating temperature range	-25°C to +85°C
Insulation resistance	≥10,000MΩ
Withstand voltage	100V types : 220Vdc 50V types : 110Vdc

Other terminal styles are also available to order.
Please contact our Sales Desk to discuss your requirements.

ORDER CODES

Capacitance (pF) Min.	Max.	Temperature Coefficient	Case Colour	Order Code
SINGLE PLATE ***100 Volt***				
1.25	2.3	NP0	Black	***TZ03Z2R3E169B00***
1.5	5.0	NP0	Blue	***TZ03Z050E169B00***
2.0	7.0	NP0	Blue	***TZ03Z070E169B00***
2.7	10.0	NP0	Blue	***TZ03Z100E169B00***
3.0	11.0	N450	White	***TZ03T110E169B00***
4.2	20.0	N750	Red	***TZ03R200E169B00***
5.2	30.0	N750	Green	***TZ03R300E169B00***
6.8	45.0	N1200	Yellow	***TZ03P450E169B00***
9.8	60.0	N1200	Brown	***TZ03P600E169B00***
MONOLITHIC PLATE ***50 Volt***				
6.0	50.0	NP0	Orange	***TZ03Z500E169B00***
9.0	90.0	N750	Black*	***TZ03R900E169B00***
10.0	120.0	N750	Black	***TZ03R121E169B00***

* Black + markings