■ ORDERING INFORMATION

Please note the order quantity must be in multiples of the minimum quantity.

CONDUCTIVE POLYMER ALUMINUM SOLID ELECTROLYTIC CAPACITORS

Size of product			Bulk minimum quantity		Taping minimum quantity
			Long lead	Lead forming	
Chip Type	φ5	6L	—		1,000
	φ6.3	5.5L 6L	—		1,000
		8L	—		900
		10L	—		600
	φ8	7L	—		1,000
		8L	—		900
		10L 10.5L	—		500
		12L	—		400
	φ10	8L 10L 10.5L	—		500
		12.7L 13.2L	—		400
Radial Lead Type	φ6.3	6L	4,000	4,000	2,000
		9L 10.5L	3,000	3,000	
	φ8	7L 8L 9L	2,000	3,000	1,000
		12L		2,000	
	φ10	8L 10L 13L	1,000	2,000	500

CONDUCTIVE POLYMER ALUMINUM SOLID ELECTROLYTIC CAPACITORS(FPCAP)

Size of product			Bulk minimum quantity		Taping minimum quantity
			Long lead	Lead forming	
Chip Type	φ4	5.2L	—		2,000
	φ5	5.7L	—		1,000
	φ6.3	4.2L	—		1,000
		5.7L	—		1,000
		7.7L	—		900
	φ8	6.7L	—		1,000
		7.7L	—		900
		8.7L	—		500
		11.7L	—		500
	φ10	7.7L	—		500
		12.4L	—		400
Radial Lead Type	φ4	5L	8,000		—
	φ5	8L 10L	3,200	4,000	2,000
	φ6.3	5L 6L 7L	4,000		2,000
		8L 10L	3,200	4,000	
	φ8	6L 8L 9L	3,200	4,000	1,000
		11.5L	2,000	2,400	
		16L	1,600	2,000	
		20L	1,200	1,600	
	φ10	12.5L	1,600	2,000	500
		16L	1,200	1,600	
		20L	800	1,200	

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

Size of product			Taping minimum quantity
Chip Type	φ6.3	5.8L	1,000
		7.7L	900
	φ8	10L	500
	φ10	10L	500
	φ10	12.5L	400

ALUMINUM ELECTROLYTIC CAPACITORS

Size of product			Taping minimum quantity
Chip Type	φ4		2,000 (1,500 : 7L product)
	φ5		1,000
	φ6.3		1,000 (900 : 7.7L product, 800 : 8.7L, 600 : 10L product)
	φ8	5.4 L 6.2 L	1,000
		10 L	500
	φ10	7.7L 10 L	500
		13.5 L	400
	φ12.5	13.5 L	200
		16 L	150
		21 L	125
	φ16	16.5 L	125
		21.5 L	75
	φ18	16.5 L	125
		21.5 L	75

ALUMINUM ELECTROLYTIC CAPACITORS

Size of product			Bulk minimum quantity		Taping minimum quantity
			Long lead	Lead forming	
Radial Lead Type	φ8	11.5L	3,000	4,000	1,000
		15L	2,000	3,600	
		20L	2,000	2,200	
	φ10	12.5L	2,000	2,800	500
		15L 16L	1,800	2,000	
		20L	1,400	1,600	
		25L	1,200	1,600	
		30.5L	1,000	1,200	—
		40L	500	—	
		50L	300	—	
	φ12.5	12.5L	1,500	1,800	500
		15L	1,200	1,400	
		20L	1,000	1,000 (1330)*	
		25L	800	900 (1000)*	
		30.5L	600	800 (650)*	—
		35.5L	500	700 (650)*	
		40L	400	600 (650)*	
		50L	400	—	
	φ16	15L	700	900 (1050)*	250
		20L	600	700 (840)*	
		25L	400	400 (630)*	
		30.5L	300	400 (630)*	—
		35.5L	300	300 (400)*	
		40L	300	400	
	φ18	15L	400	500 (750)*	250
		20L	400	400 (600)*	
		25L	300	400 (450)*	
		30.5L	300	450	—
		35.5L	250	300	
		40L 46L	200	300	
692 Type	φ20 to φ25		250		—
	φ30 to φ35		200		—

( )* : Export packaging The minimum packing unit of lead cut product code SZ, may differ from the above. Please confirm before you order.

Eco-Products “GeoCap”

Nichicon promotes environmentally conscious practices.

Nichicon offers “GeoCap”,which has completely lead free terminals and contains no polyvinyl chloride in the sleeve.

■ Conductive Polymer Aluminum Solid Electrolytic Capacitors

Type・Classification	Type・Series	Lead-Free Compliance	Anti Polyvinyl Chloride Compliance	Page
Surface Mount type	PCF, PCJ, PCK*, PCG, PCS*, PCL, PCW, PCV, PCX*, PCR, PCM, PCH, PCZ	Complied	Complied	40 ~
Radial Lead type	PLF, PLG, PLS, PLX			WEB

■ Conductive Polymer Aluminum Solid Electrolytic Capacitors(FPCAP)

Type・Classification	Type・Series	Lead-Free Compliance	Anti Polyvinyl Chloride Compliance	Page
Surface Mount type	RPS, RPA, RHS, RHA, RSS, RSA, RSB, RFS, RFA, RSL*, RDS, RKS	Complied	Complied	62 ~
Radial Lead type	RNS*, RR7*, RR5*, RL8, RE5*, RS8, RF8*, RNU, RNE, RNL, RS6, RHT			79 ~

■ Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

Type・Classification	Type・Series	Lead-Free Compliance	Anti Polyvinyl Chloride Compliance	Page
Surface Mount type	GYA, GYB, GYC, GYD, GYE, GYF	Complied	Complied	96 ~

■ Aluminum Electrolytic Capacitors

Type・Classification		Type・Series	Lead-Free Compliance	Anti Polyvinyl Chloride Compliance	Page
Surface Mount type		UZG, UZT, UCW, UCD, UCL, UCM, UCV, UUD, UWD, UCJ, UCZ, UYA, UCH, UCX, UUJ, UUE, UBC, UBH	Complied	Complied	109 ~
		UWP, UWT, UWZ, UWG, UUP, UUA, UUL, UCB, UUB, UWH, ULT, ULH, UUX, ULR, ULV, UUQ, UCQ, UUG, UUN			WEB
Radial Lead type	Standard type	UVK*, UVR, UVC*, UVY, UVZ*, URS*, URZ, UVP*, UEP			152 ~
	High Reliability type	UPM*, UPW, UPA*, UHV, UHD*, UHE*, UHW, UPJ*, UPS, UPV*, UPT, UPZ, UPH, UCP, ULD, UCS, UCY, UBT, UBW, UBY, UXY, UBX			166 ~
	For special Circuits	UKL*, UAQ*, UAS			216 ~
	For Audio Equipment	UKA, UKT*, UKW*,UFW*, UES*, UDB*			218 ~
Snap-in Terminal type	Standard type	LLS, LLG			221 ~
	High Reliability type	LGU, LGN, LGG, LGL, LGM, LGJ, LGJ (15), LGY, LGR, LGZ, LGX, LGC, LGW, LHT			229 ~
	For special circuits	LAK*, LAQ*, LAS*, LAR*, LQS			261 ~
Screw Terminnal type		LNR, LNX, LNK*, LNC, LQR*, LNY, LNT, LNU		Available upon request	263 ~
For Audio Equipment		LKX		Complied	WEB

Please refer to our website for the details of the series described as “WEB” or ＊mark

Corresponding to RoHS Directive

		Conductive Polymer Aluminum Solid Electrolytic Capacitors				Conductive Polymer Aluminum Solid Electrolytic Capacitors(FPCAP)		Conductive Polymer Hybrid Aluminum Electrolytic Capacitors
		SMD type (PCV, PCX, PCR, PCM, PCH, PCZ)	Lead wire terminal type (PLX)	SMD type (PCF, PCJ, PCK, PCG, PCS, PCL, PCW)	Lead wire terminal type (except PLX)	SMD type	Lead wire terminal type	SMD type
Corresponding to RoHS Directive		Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).						
Material	The portion of the components							
Lead (Pb)	Plating on terminals	Sn plating		Ag plating		Sn plating	Sn plating	Sn plating
	Insulating Sleeves	Does not contain				Does not contain		Does not contain
	Construction of terminals	Fe/Cu/Sn		Fe/Cu/Ag or Cu/Ag		Cu/Sn	Cu/Sn or Fe/Cu/Sn	Fe/Cu/Sn
	Resistance to soldering heat	Please refer to page 19 for the recommendation reflow condition.	Correspondence to 265°C flow soldering condition	Please refer to page 19 for the recommendation reflow condition.	Correspondence to 265°C flow soldering condition	Please refer to page 25 for the recommendation reflow condition(FPCAP).	Correspondence to 260°C flow soldering condition	Please refer to page 19 for the recommendation reflow condition.
	Solderability Tensile strength	No significant solderability difference between Sn-Ag-Cu and Sn-Pb solder.				No significant solderability difference between Sn-Ag-Cu and Sn-Pb solder.		No significant solderability difference between Sn-Ag-Cu and Sn-Pb solder.
Chromium (VI)	Plating material	Does not contain				Does not contain		Does not contain
Mercury Cadmium PBB, PBDE DIBP, DBP, BBP, DEHP		Does not contain				Does not contain		Does not contain
Identification for RoHS compliance parts		Add "Pb free" marking on outer carton label				Add "Pb free" marking on outer carton label		Add "Pb free" marking on inner and outer carton label
MSL (IPC/JEDEC J-STD-020)		Not Applicable				Not Applicable		Not Applicable

		Aluminum Electrolytic Capacitors			
		SMD type	Lead wire terminal type	Snap-in terminal type	Screw terminal type
Corresponding to RoHS Directive		Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).			
Material	The portion of the components				
Lead (Pb)	Plating on terminals	(< or=Dia.10mm) Change plating from Sn-Pb toSn-Bi (> or=Dia.12.5mm) Change plating from Sn-Pb to Sn	Change plating from Sn-Pb to Sn		Al
	Insulating Sleeves	No used	Replaced with PET		—
	Construction of terminals	Fe/Cu/Sn-1.5Bi (<or=Dia 10mm) Fe/Cu/Sn (>or=Dia 12.5mm)	Fe/Cu/Sn		Al
			Cu/Sn (UES, UDB)	—	
		Plating thickness 12μm Plating type matte No heat treatment after plating		Plating thickness 10μm Plating type matte No heat treatment after plating	—
	Resistance to soldering heat	Please refer to page 19 for the recommendation reflow condition.	Correspondence to 260°C flow soldering condition		Not Applicable
	Solderability Tensile strength	No significant solderability difference between Sn-Ag-Cu and Sn-Pb solder.			—
Chromium (VI)	Plating material	Does not contain			Available (Chromium(VI) contained in the plating of fixtures)
Mercury Cadmium PBB, PBDE DIBP, DBP, BBP, DEHP		Does not contain			
Identification for RoHS compliance parts		Part numbers are changed Add "Pb-free" marking on inner and outer carton label.	Part numbers are changed Add "Pb-free" and "PVCless" marking on inner and outer carton label.		Part numbers are changed Add "RoHS" marking on outer carton label.
MSL (IPC/JEDEC J-STD-020)		Not Applicable			

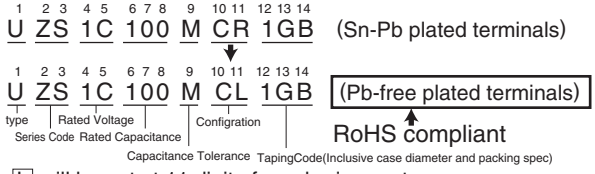
Part Numbering for Pb-free Aluminum Electrolytic Capacitors

SMD type

Part Numbers for Pb-free SMD type capacitors represent as follows:

(1) When certain part numbers are changed because of replacement with Pb-free plated terminals, their 11 digit shows the distinction.

(Example)



L will be put at 11 digit of numbering system

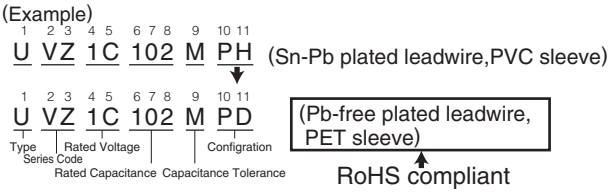
Exception : ※**10th digit** of the part number also need to be changed for the following type・series and case size.
8X6.2 case size of UUX : **BR** to **CL**
※UUE, UBC (Vibration Resistance) is only Pb-free and 11th digit the part number change to "S".
※UCD is only Pb-free. In case of φ12.5 or more: 11th digit the part number change to "J".

Lead wire terminal type

Part Numbers for Pb-free type capacitors represent as follows:

(1) When certain part numbers are changed because of replacement with Pb-free plated leadwire and PVC less , sleeves the **11th digit** of the part number represents the distinction.

(Example)

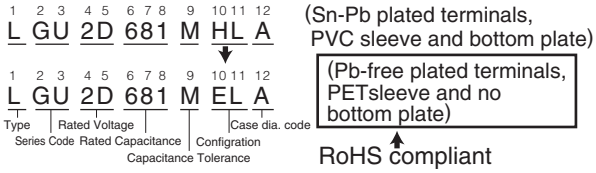


D will be put at 11 digit of numbering system

*Configuration code is subject to change by series of case diameter.

Snap-in terminal type

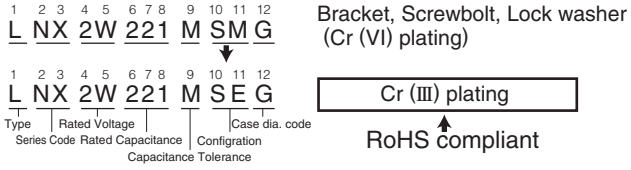
(Example)



E will be put at 10 digit of numbering system

Screw terminal type

(Example)



E will be put at 11 digit of numbering system

Information about "China RoHS 2"

CONDUCTIVE POLYMER ALUMINUM SOLID ELECTROLYTIC CAPACITORS,CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS ALUMINUM ELECTROLYTIC CAPACITORS

Type	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr VI)	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
P, R, G, U, L	○	○	○	○	○	○

This table is prepared in accordance with the provision of SJ/T 11364.
○ : the amount of the hazardous substance indicated inside the homogeneous materials used for this part is below the limit requirement of GB/T 26572
× : the amount of the hazardous substance indicated inside at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572

ALUMINIUM ELECTROLYTIC CAPACITORS

Standardization

Some of the series listed below have been removed from the catalog.
On designing, please select from the new series for your applications.

Type	Contents	Obsoleted Type • Series	New Type • Series	Page
Chip Type	• 3.95mmL max. Bi-Polarized	UZE →	UWP	WEB
	• 4.5mmL, Bi-Polarized	UZP →	UWP	WEB
	• Long Life Assurance	UUV →	UUL	WEB
	• Low Impedance(Low ESR)	UUU →	PCF(Polymer)	40
	• For Audio Equipment	UUK →	UUQ	WEB
	• High Reliability, Higher Capacitance Range	UUH →	UUE	147
Miniature Type	• 5mmL, Long Life Assurance	UMQ →	UMV	—
	• 7mmL, Long Life Assurance	USQ • USV →	UUL(Chip)	WEB
	• Standard type	UVX →	UVR	152
	• Compact & Standard For General Purposes	UVS →	URS	WEB
	• Low profile Sized, Wide Temperature Range	URT →	URZ	160
	• 12.5mmL height	URU →	URZ	160
	• 12.5mmL, Low profile Sized, Wide Temperature Range	URY →	※1	—
	• Bi-Polarized, Wide Temperature Range	UET →	UEP	163
	• Miniature Sized, High Ripple Current, High Reliability(105°C 5000h)	UPB →	※1	—
	• Low Impedance, For Switching Power Supplies	UPD →	UPM	WEB
	• Miniature Sized,Low Impedance, For Switching Power Supplies	UPE →	UPW	166
	• Low Impedance, High Reliability	UPF →	UPJ	WEB
	• Standard, For Switching Power Supplies	UPR →	UPS	181
	• Low Impedance, High Reliability	UPY →	UPW	166
	• Extremely Low Impedance, High Reliability	UPL →	UPM	WEB
	• Miniature Sized, Low Impedance, High Reliability	UTT →	※1	—
	• Miniature Sized, Low Impedance, High Reliability	UPQ →	UPV	WEB
	• Miniature Sized, For Switching Power Supplies	UTS • UTT →	UCW(Chip)	113
	• High Temperature Range, For +125°C use	UBD →	UBT	203
	• Timer Circuit Use	UTM →	※1	—
	• Memory Back-Up Use	UJB →	※1	—
	• For General Audio Equipment	UFM • UFX →	UFW	WEB
	• For Speaker Network	UGB →	※1	—
	• 5mmL, For Audio Equipment	UMC • UMW →	UUQ(Chip)	WEB
	• 7mmL, For Audio Equipment	USK • USW →	UUQ(Chip)	WEB
Large Can Type	• Snap-in Terminal Type, Standard	LLQ • LLU →	LLS	221
	• Snap-in Terminal Type, Miniature Sized	LLN →	LLG	226
	• Horizontal Mounting Type	LDM →	※2	—
	• Snap-in Terminal Type, Wide Temperature Range	LGQ →	LGU	229
	• Snap-in Terminal Type, Low-Profile Sized, Wide Temperature Range	LGE →	LGJ,LGJ (15)	244,246
	• Snap-in Terminal Type, Long Life, Wide Temperature Range	LGY(160 to 450V) →	LGR,LGZ	251,253
	• Wide Temperature Range, Horizontal Mounting Type	LDQ →	※2	—
	• Wide Temperature Range, High CV	LGK-HH →	※3	—
	• Screw Terminal Type, Standard	LNR (350 to 450V) →	LNX	267
	• Screw Terminal Type, 85°C High Voltage, For General Inverter	LNW →	LNY	272

Please refer to our website for the details of the series described as "WEB".

※1 Please contact us for details.
※2 Please contact us if you need horizontal mounting type. (Refer to the Guidelines for Aluminum Electrolytic Capacitors) Please have schematic of dimensions for lead bend.
※3 Please contact us if you need multi-terminal-shape. (Refer to the Guidelines for Aluminum Electrolytic Capacitors) Please have schematic of dimensions for lead bend.

Matrix for major series

Conductive Polymer Aluminum Solid Electrolytic Capacitors※ (Type:P)

Configuration \ Feature	Standard	Low ESR	High Capacitance	Long Life / High Reliability	High Voltage / LongLife	High Voltage / High Reliability	High Capacitance Long Life
Chip type	**PCF**	**PCJ, PCK**	**PCG**	**PCS, PCL, PCW**	**PCV**	**PCX**	**PCR, PCM, PCH, PCZ**
Radial Lead type	**PLF**	—	**PLG**	**PLS**	—	**PLX**	—

※ Please contact us about the FPCAP.

Miniature Aluminium Electrolytic Capacitors (Type:U)

Configuration \ Feature	Standard (High C / V)	Bi-polarized	Low leakage current	Wide temperature range	For Audio equipment	Low impedance	Long life
Standard type	**UVR • UVK**	**UVP**	**UKL**	**UVZ • UVY**	**UFW**	**UPA • UPW**	**ULD**
Low Profile	**URS**	—	—	**URZ**	—	—	—
Chip type	**UUG**	**UWP, UUN**	—	**UZT, UWT**	**UUQ, UCQ**	**UUD, UCD**	**UUL, UUJ**

Large Can Aluminum Electrolytic Capacitors (Type:L)

Configuration \ Feature	85°C Product		105°C Product			125°C Product
	Standard type	Miniature type	Standard type	Miniature type	Long Life	Standard type
Standard type	**LLS**	**LLG**	**LGU • LGN**	**LGG • LGL • LGM**	LGY•LGX•LGC•LGR•LGZ	**LHT**
Low Profile	—	—	**LGJ**	**LGJ (15)**	—	—
Permissible abnormal voltage type	—	—	**LAK**	**LAQ • LAS**	—	—

Application Guidelines for Aluminum Electrolytic Capacitors

1. Circuit Design

(1) Make sure the application and mounting conditions are within the conditions specified in the catalog or alternate product specification (Referred to as specification hereafter) The capacitor may be damaged, catch fire, or vent if it is used beyond the specified conditions in the catalog or alternate product specification.

(2) Operating temperature and applied ripple current shall be within specification.

① The capacitor shall not be used in an ambient temperature which exceeds the operating temperature specified.

② Do not apply ripple current which exceeds the allowable ripple current.

(3) Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.

(4) Aluminum electrolytic capacitors are polarized. Make sure no reverse voltage or AC voltage is applied to the capacitors. Please use bi-polar capacitors in a circuit that can possibly see reversed polarity.
Note: Even bi-polar capacitors cannot be used for AC voltage application.

(5) For a circuit that repeats rapid charging/discharging, a capacitor that is capable of enduring such conditions must be used. Welding machines and photo flash are a few examples of products that contain such a circuit. In addition, rapid charging/discharging may be repeated in control circuits for servomotors, in which the circuit voltage fluctuates substantially.
Selecting capacitors for circuits that have repeated rapid charging/discharging, please consult Nichicon.
If excess a rush current due to drastic charge/dis-charge was applied to conductive polymer aluminum solid electrolytic capacitors, and conductive polymer hybrid aluminum electrolytic capacitors, it may cause a short circuit or an increase in leakage current. Therefore, please do not apply a rush current that is larger than 10A.

(6) Make sure no voltage (higher than the rated voltage) is applied to the capacitor.

① The peak voltage, which is the DC voltage overlapped by ripple current, does not exceed the rated voltage.

② Where more than 2 aluminum electrolytic capacitors are used in series, make sure the applied voltage will be lower than rated voltage and voltage will be applied to each capacitor equally using a balancing resistor in parallel with the capacitors.
Please do not use conductive polymer alminum solid electrolytic capacitors, and conductive polymer hybrid aluminum electrolytic capacitors for the application listed below, since the solid organic polymer aluminum electrolytic capacitor cannot reach it's maximum performance.
1) Coupling circuits
2) R-C timing circuit
3) High impedance voltage retention circuit
4) Circuits, which extremely low voltage in compared to the rated voltage is only applie
5) Circuits, which are greatly affected by leakage currents for special use such as multiple parts used in a series, please contact us for recommendations

(7) Aluminum electrolytic capacitors must be electrically isolated as follows:
(The aluminum case and the cathode foil are connected by the unstable resistance of a naturally formed oxide layer inside the aluminum case and the electrolyte.)

① (a) Case and negative terminal (except axisl leaded part such as JIS configuration 02 type)
(b) Case and positive terminal
(c) Case and circuit pattern

② Auxiliary terminal of can type such as JIS style symbol 693, 694 or 695 and negative and positive terminal, including the circuit pattern.

③ Case and both terminals of a bi-polarized capacitor.

(8) Outer sleeve of the capacitor is not guaranteed as an electrical insulator. Do not use a standard sleeve on a capacitor in applications that require the electrical insulation. When the application requires special insulation, please contact our sales office for details.

(9) Capacitors may fail if they are used under the following conditions:

① Environmental (climatic) conditions
(a) Being exposed to water, high temperature & high humidity atmosphere, or condensation of moisture.
(b) Being exposed to oil or an atmosphere that is filled with particles of oil.
(c) Being exposed to salty water or an atmosphere that is filled with particles of salt.
(d) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonia, etc.)
(e) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation
(f) Being exposed to acidic or alkaline solutions

② Under severe conditions where vibration and/or mechanical shock exceed the applicable ranges of the specifications.

(10) When designing a P.C. board, please pay attention to the following:

① Have the hole spacing on the P.C. board match the lead spacing of the capacitor.

② There should not be any circuit pattern or circuit wire above the capacitor pressure relief vent.

③ Unless otherwise specified, following clearance should be made above the pressure relief vent.

Case Diameter	Clearance Required
ϕ 8 to 16mm	2mm or more
ϕ 18 to 35mm	3mm or more
ϕ 40mm or more	5mm or more

④ In case the vent side is placed toward P.C. board (such as end seal vented parts), make a corresponding hole on the P.C. board to release the gas when vent is operated. The hole should be made to match the capacitor vent position.

⑤ Screw terminal capacitors must be installed with their end seal side facing up. When you install a screw terminal capacitor in a horizontal position, the positive terminal must be in the upright position.

(11) The electrolyte is conductive. When it comes in contact with the P.C. board, there is a possibility of pattern corrosion. Smoking or a short circuit can occur when a circuit pattern is underneath the end seal. Do not locate any circuit pattern beneath the capacitor end seal.

(12) Do not design a circuit board so that heat generating components are placed near an aluminum electrolytic capacitor or reverse side of P.C. board (under the capacitor).

(13) Please refer to the pad size layout recommendations in our catalog when designing in surface mount capacitors.

(14) Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.

(15) When you mount capacitors on the double-sided P.C. boards, do not place capacitors on circuit patterns or over on unused holes.

(16) The torque for terminal screw or brackets screws shall be within the specified value on Nichicon's drawings.

(17) When you install more than 2 capacitors in parallel, consider the balance of current flowing though the capacitors. Especially, when a solid conductive polymer aluminum electrolytic capacitors, Conductive polymer hybrid aluminum electrolytic capacitors and a standard aluminum electrolytic capacitors are connected in parallel, special consideration must be given.

(18) If more than 2 aluminum electrolytic capacitors are used in series, make sure the applied voltage will be lower than the rated voltage and that voltage will be applied to each capacitor equally using a balancing resistor in parallel with each capacitor. If one side is shorted, the other side may be applied an overvoltage.

(19) When capacitors are connected in series or parallel, an imbalance current may cause to a short circuit on one side and an overvoltage on the other side.

2. Mounting

(1) Once a capacitor has been assembled in the set and power applied, Even if a capacitor is discharged, an electric potential(restriking voltage) may exist between the terminals.

(2) Electric potential between positive and negative terminal may exist as a result of returned electromotive force, so please discharge the capacitor using a 1kΩ resistor.

(3) Leakage current of the parts that have been stored for more than 2 years may increase. If leakage current has increased, please perform a voltage treatment using 1kΩ resistor.

(4) Please confirm ratings before installing capacitors on the P.C. board.

(5) Please confirm polarity before installing capacitors on the P.C. board.

(6) Do not drop capacitors on the floor, nor use a capacitor that was dropped.

(7) Do not damage the capacitor while installing.

(8) Please confirm that the lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.

(9) Snap-in can type capacitor such as JIS style symbol 692, 693, 694 and 695 type should be installed tightly to the P.C. board (allow no gap between the P.C. board an bottom of the capacitor).

(10) Please pay attention that the clinch force is not applied on the main body of the capacitor when capacitors are placed and fixed by an automatic insertion machine.

(11) Please pay attention to that the mechanical shock to the capacitor by suction nozzle of the automatic insertion machine or automatic mounter, or by product checker,or by centering mechanism.

(12) Hand soldering.

① Soldering condition shall be confirmed to be within the specification.

② If it is necessary that the leads must be formed due to a mismatch of the lead space to hole space on the board, bend the lead prior to soldering without applying too much stress to the capacitor.

③ If you need to remove parts which were soldered, please melt the solder enough so that stress is not applied to lead.

④ Please pay attention so that solder iron does not touch any portion of capacitor body.

(13) Flow soldering (Wave solder)

① Aluminum capacitor body must not be submerged into the solder bath. Aluminum capacitors must be mounted on the "top side" of the P.C. board and only allow the bottom side of the P.C. board to come in contact with the solder.

② Soldering condition must be confirmed to be within Nichicon specification.
Solder temperature: 260±5°C Immersing lead time:10±1 second, Thickness of P.C. board : 1.6mm.

③ Please avoid having flux adhere to any portion except the terminal.

④ Please avoid contact between other components and the aluminum capacitor.

(14) Reflow soldering (SMD only)

① Soldering condition must be confirmed to be within Nichicon specification.

② When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared, will vary due to difference in the color of the capacitor body, material of the sleeve and capacitor size.

(15) Soldeing flux

There are non-halogen types of flux that do not contain ionic halides, but contain many non-ionic halides. When these non-ionic halides infiltrate the capacitor, they cause a chemical reaction that is just as harmful as the use of cleaning agents. Use soldering flux that dose not contain non-ionic halides.

(16) Shrinkage,bulging and/or cracking could be seen on the outer sleeve of the capacitor when capacitors are kept in for more than 2 minutes at 150°C ambient temperature during soldering at reflow process or resin curing process. Applying high temperature gas or heat ray to capacitor can cause the same phenomenon.

(17) Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the P.C. board.

(18) Do not carry the P.C. board by grasping the soldered capacitor.

(19) Please do not allow anything to touch the capacitor after soldering. If P.C. board are stored in a stack, please make sure P.C. board or the other components do not touch the capacitor.
The capacitors shall not be effected by any radiated heat from the soldered P.C. board or other components after soldering.

(20) Recommended Cleaning Condition
Applicable : Any type, any ratings.

Cleaning Agents

Based Alcohol solvent cleaning agent

Isopropyl Alcohol

Based water solvent cleaning agent

・Higher alcohol solvent type

Pine Alpha ST-100S

NEWPOLE B-12

・Surfactant type

Clean Through 750HS, 750HN, 750K, 750J

Cleaning Conditions :

Total cleaning time shall be no greater than 5 minutes by immersion, ultrasonic or other method.
(Temperature of the cleaning agent shall be 60°C maximum.)
After the board cleaning has been completed, the capacitors should be dried using hot air for a minimum of 10 minutes.
If the cleaning solution is infiltrated between the case and the sleeve, the sleeve might soften and swell when hot air temperature is too high. Therefore, hot air temperature should not exceed softening temperature(80°C) of the sleeve.
Insufficient dries after water rinse may cause appearance problems, such as sleeve shrinking, bottom-plate bulging.
In addition, a monitoring of the contamination of cleaning agents (electric conductivity, pH, specific gravity, water content, etc.) must be implemented.
After the cleaning, do not keep the capacitors in an atmosphere containing the cleaning agent or in an air tight container.
In addition regarding jet washing, please use caution since the sleeve may expand cause of the angle and / or the strength of the water jet. Depending on the cleaning method, the marking on a capacitor may be erased or blurred.
Consult Nichicon before using a cleaning method or a cleaning agent other than those recommended.

(21) Fixing Material and Coating Material

1) Do not use any fixing or coating materials, which contain halide substance.
2) Remove flux and any contamination, which remains in the gap between the end seal and PC board.
3) Please dry the cleaning agent on the PC board before using fixing or coating materials.
4) Please do not apply any material all around the end seal when using fixing or coating materials.

There are variations of cleaning agents, fixing and coating materials, so please contact those manufacture or our sales office to make sure that the material would not cause any problems.

(22) Others

When halogen contained in a fumigation agent enters the capacitors, it may chemically react with the electrolytic solution, electrode foil, etc. inside. (Some gases mainly permeate the sealing parts of the capacitors and they enter the capacitors.)
When this chemical reaction progresses further, the capacitors may cause a leakage current failure, opening failure, pressure valve operation, etc. due to the corrosion of the aluminum materials inside.
The capacitors may be fumigated by halogen compounds, such as methyl bromide, when they are exported or being used to protect them against pests.
When fumigating capacitors and devices embedded with capacitors and when using packing materials, such as a pallet, that have been fumigated, be very careful so that the capacitors are not exposed to the halogen atmosphere.

3. In the equipment

(1) Do not directly touch terminal by hand.

(2) Do not short between terminals with conductor, nor spill conductible liquid such as alkaline or acidic solution on or near the capacitor.

(3) Please make sure that the ambient conditions where the set is installed not have any of the following conditions:

① Being exposed to water, high temperature & high humidity atmosphere, or condensation of moisture.

② Being exposed to oil or an atmosphere that is filled with particles of oil.

③ Being exposed to salty water or an atmosphere that is filled with particles of salt.

④ In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonia, etc.).

⑤ Being exposed to acidic or alkaline solutions.

⑥ Since shrinkage, bulging and/or crack could be seen on outer sleeve of capacitor when capacitors are used in atmosphere where condensation of moisture occures, please confirm their adaptation before the use.
The condensation of moisture could occure when temperature cycling test /Rapid change of temperature test is performed, in this case, aforementioned sleeve problem could be seen.

4. Maintenance Inspection

(1) Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked:

① Appearance : Remarkable abnormality such as vent operation, leaking electrolyte etc.

② Electrical characteristic: Capacitance, dielectric loss tangent, leakage current, and items specified in the specification.

5. In an Emergency

(1) If you see smoke due to operation of safety vent, turn off the main switch or pull out the plug from the outlet.

(2) Do not bring your face near the capacitor when the pressure relief vent operates. The gasses emitted from that are over 100°C.
If the gas gets into your eyes, please flush your eyes immediately in pure water.
If you breathe the gas, immediately wash out your mouth and throat with water.
Do not ingest electrolyte. If your skin is exposed to electrolyte, please wash it away using soap and water.

6. Storage

(1) It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
(2) Please make sure the ambient storage conditions will be free from the conditions that are listed in clause 1. "Circuit Design" at (9).

In order to maintain the satisfactory soldering condition for conductive polymer aluminum solid electrolytic capacitors, the following items must be strictly adhered to.
1) Parts should be stored sealed in a bag until they are actually used.
2) Once the sealed bag is cut open, all the parts should be used at one time. If not, then the remaining parts should be places in a bag and sealed with tape.
3) The storage period of products that can maintain good solderability should be within one year (in unopened package).

7. Disposal

(1) Take either of the following methods in disposing of capacitors.

① Make a hole in the capacitor body or crush capacitors and incinerate them.

② If incineration is not applicable, hand them over to a waste disposal agent and have them buried in a landfill.

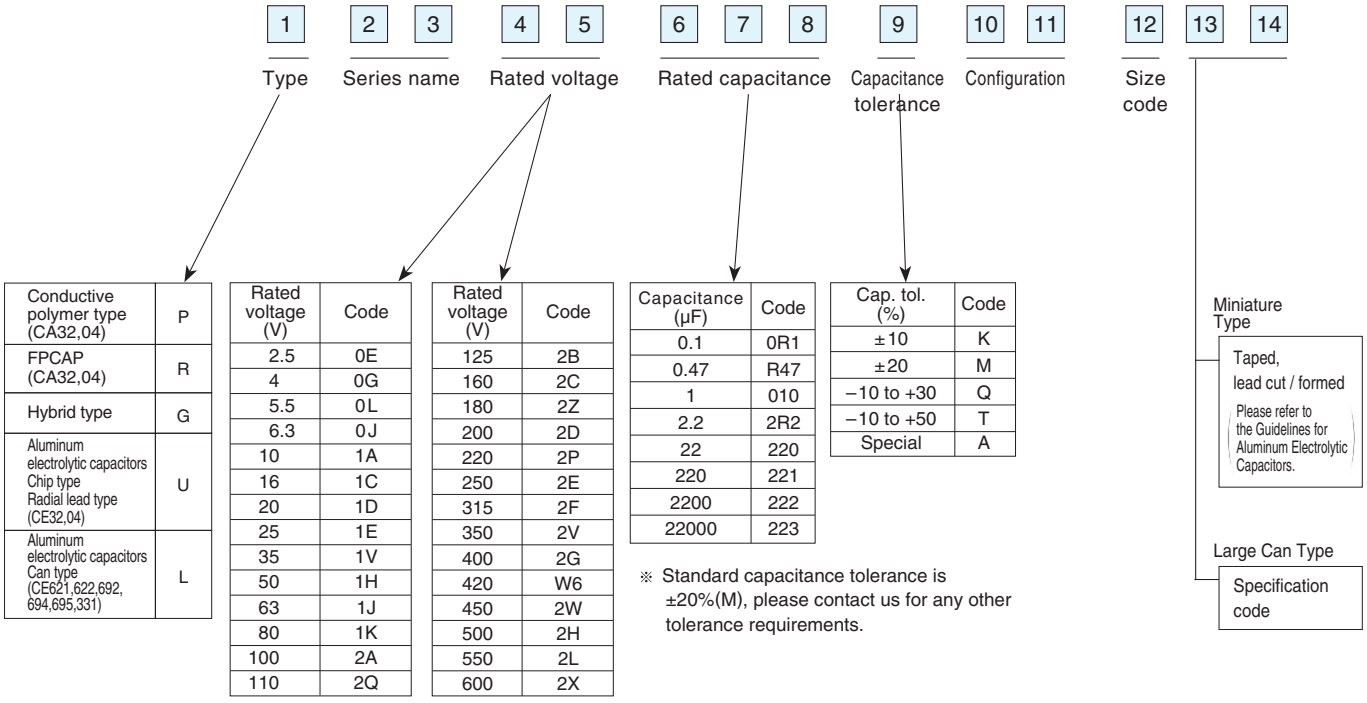
(2) When removing a capacitor from the circuit board or when disposing of capacitor please ensure that the capacitor is properly discharged.

8. AEC-Q200 Qualified

The Automotive Electronics Council (AEC) is an organization created by U.S. automakers and electronic component manufacturers for the standardization of reliability and certification criteria for automotive electronic components. AEC-Q200 is a certification reliability test standard for passive components widely adopted as the standard for electronic components for automotive use in Europe and the United States.
Nichicon provides products that conform to AEC-Q200 requirements. Please contact us for details.

The above mentioned material according to JEITA RCR - 2367D (issued in March, 2019), titled "Safety Application Guide for fixed aluminium electrolytic capacitors for use in electronic equipment".
Please refer to the book for details.

Type numbering system ※1



Conductive polymer type (CA32,04)	P
FPCAP (CA32,04)	R
Hybrid type	G
Aluminum electrolytic capacitors Chip type Radial lead type (CE32,04)	U
Aluminum electrolytic capacitors Can type (CE621,622,692, 694,695,331)	L

Rated voltage (V)	Code
2.5	0E
4	0G
5.5	0L
6.3	0J
10	1A
16	1C
20	1D
25	1E
35	1V
50	1H
63	1J
80	1K
100	2A
110	2Q

Rated voltage (V)	Code
125	2B
160	2C
180	2Z
200	2D
220	2P
250	2E
315	2F
350	2V
400	2G
420	W6
450	2W
500	2H
550	2L
600	2X

Capacitance (μF)	Code
0.1	0R1
0.47	R47
1	010
2.2	2R2
22	220
220	221
2200	222
22000	223

※ Standard capacitance tolerance is ±20%(M), please contact us for any other tolerance requirements.

Cap. tol. (%)	Code
±10	K
±20	M
−10 to +30	Q
−10 to +50	T
Special	A

※1 Please contact us about the FPCAP part number.

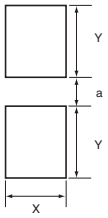
Product type and series names are listed on the top left of the individual specification pages.

Surface Mount Type

■ Recommended Land Size

(mm)

● Chip type aluminum electrolytic capacitors Standard type



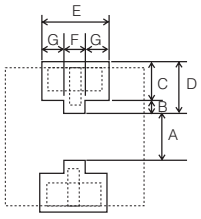
Size	X	Y	a
φ4	1.6	2.6	1.0
φ5	1.6	3.0	1.4
φ6.3	1.6	3.5	1.9
φ8×5.4L, φ8×6.2L	2.5	4.0	2.1
φ8 × 10L	2.5	3.5	3.0
φ10	2.5	4.0	4.0
φ12.5	2.0	7.3	3.0
φ16	2.0	7.9	5.3
φ18	2.0	8.9	5.3

● Chip type aluminum electrolytic capacitors Vibration Resistance Type (UCD, UCM, UCZ, UCH, UCX, UUE, UBC, UBH)

① φ6.3 to 10

Size	X	Y	a
φ6.3× 7.7L	3.0	4.0	1.6
φ6.3×10 L	3.0	4.0	1.6
φ8 ×10 L	4.3	5.3	2.0
φ10 ×10 L	4.3	5.6	3.3

② φ12.5 to 18



Size	A	B	C	D	E	F	G
φ12.5	3.0	2.3	5.0	7.3	7.0	2.0	2.5
φ16	5.3	2.9	5.0	7.9	7.0	2.0	2.5
φ18	5.3	3.1	5.8	8.9	11.0	2.0	4.5

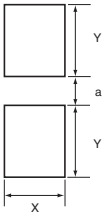
● Conductive polymer aluminum solid electrolytic capacitors

Size	X	Y	a
φ5	1.6	3.0	1.4
φ6.3	1.6	3.5	2.1
φ8	2.0	3.5	3.0
φ10	2.0	4.0	4.0

● Conductive polymer aluminum solid electrolytic capacitors Vibration Resistance Type (PCX, PCR, PCM, PCH ,PCZ)

Size	X	Y	a
φ6.3 × 8L	3.0	4.0	1.6
φ8 × 10.5L	4.3	5.3	2.0
φ10 × 10.5L	4.3	5.6	3.3
φ10 × 13.2L	4.3	5.6	3.3

● Conductive polymer aluminum solid electrolytic capacitors (RPS,RPA,RHS,RHA,RSS,RSA,RSB,RFS,RFA,RSL, RDS,RKS)



Size		X	Y	a
FPCAP	φ4	1.6	2.6	1.0
	φ5	1.6	3.0	1.4
	φ6.3	1.6	3.5	2.1
	φ8	1.9	4.2	2.8
	φ10	1.9	4.4	4.3

● Conductive polymer hybrid aluminum electrolytic capacitors (GYA,GYB,GYC,GYD,GYE,GYF)

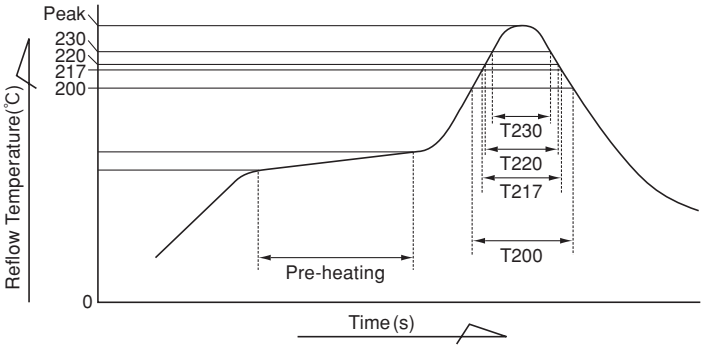
Size	X	Y	a
φ6.3	1.6	3.5	1.9
φ8	2.5	3.5	3.0
φ10	2.5	4.0	4.0

● Conductive polymer hybrid aluminum electrolytic capacitors Vibration Resistance Type

Size	X	Y	a
φ6.3× 7.7L	3.0	4.0	1.6
φ8 ×10 L	4.3	5.3	2.0
φ10	4.3	5.6	3.3

〈Chip Type〉

■ Recommended conditions of Soldering by Reflow



T200 : Duration for over +200℃ at capacitor surface.
T217 : Duration for over +217℃ at capacitor surface.
T220 : Duration for over +220℃ at capacitor surface.
T230 : Duration for over +230℃ at capacitor surface.

The temperature measuring point is at the case top.

Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

No.	Type・Series	Size	Pre-heating	Peak temperature	Duration over 230℃	Duration over 220℃	Duration over 217℃	Duration over 200℃	Reflow cycle
1	Chip Type Conductive Polymer Aluminum Solid Electrolytic Capacitors (PCF, PCJ, PCK, PCG, PCS, PCL, PCW, PCV, PCX, PCR, PCM, PCH, PCZ)	—	+150°C to 200°C from 60 to 180s	260°C Max.	within 60s	—	within 70s	—	1cycle only (within 2 cycles※5 for series※4)
		—		250°C Max.	within 60s	—	within 70s	—	within 2 cycles※5
2	Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (GYA, GYB, GYC, GYD, GYE, GYF)	—	+150°C to 180°C within 120s	260°C Max.	within 40s	—	within 50s	—	1cycle only
		—		250°C Max.	within 30s	—	within 40s	—	within 2 cycles※5
3	Chip Type Aluminum Electrolytic Capacitors (UZT, UWP※1, UWT※1, UWG, UUP, UUA, UUL, UCB, UCW, UCD※2, UCL, UCM※2, UCV, UUD, UUB※3, UCJ, UCZ※2, UCH, UCX※2, UUX※3, UUQ, UCQ, UUE※2, UBC※2, UBH)	～φ10		250°C Max.	within 30s	—	within 40s	—	within 2 cycles※5
4	Chip Type Aluminum Electrolytic Capacitors (UWP, UWT)	φ8×5.4L		245°C Max.	—	within 30s	within 30s	—	within 2 cycles※5
5	Chip Type Aluminum Electrolytic Capacitors (UZG)	3.9L		240°C Max.	—	within 30s	within 30s	—	within 2 cycles※5 (φ6.3:1 cycle only)
6	Chip Type Aluminum Electrolytic Capacitors (UUX(160-400V), UUB(160-400V), ULT, ULH, ULR, ULV)	～φ10		240°C Max.	—	within 30s	within 30s	—	within 2 cycles※5
7	Chip Type Aluminum Electrolytic Capacitors (UCD, UCM, UCZ, UYA, UCX, UUG, UUJ, UUN, UUE, UBC)	φ12.5～		240°C Max.	—	—	within 30s	within 60s	within 2 cycles※5
8	Chip Type Aluminum Electrolytic Capacitors※6 (UWZ, UWD, UWH)	—		260°C Max.	within 60s	—	within 70s	—	within 2 cycles※5 (φ8×6.2L and φ10×10L: 1 cycle only)

s=seconds

※1: For φ8×5.4L, please refer to the No.4.
※2: For φ12.5 or greater, please refer to the No.7.
※3: For 160～400V, please refer to the No.6.
※4: Including PCR, PCM, PCH and PCZ.
※5: Please make sure the parts have enough cooling down time between the first and second soldering process.
※6: For High Temp. Reflow.

ESR. Impedance Measuring Point

Radial lead type
ESR should be measured at both of the terminal ends closest to the capacitor body.

Chip type
ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.

■ Taping Specifications for Chip Type Capacitors

※ Please refer to FPCAP Taping Specifications for Chip Type about the FPCAP product spec.

● Carrier tape (mm)

Fig.1 For φ10 or less

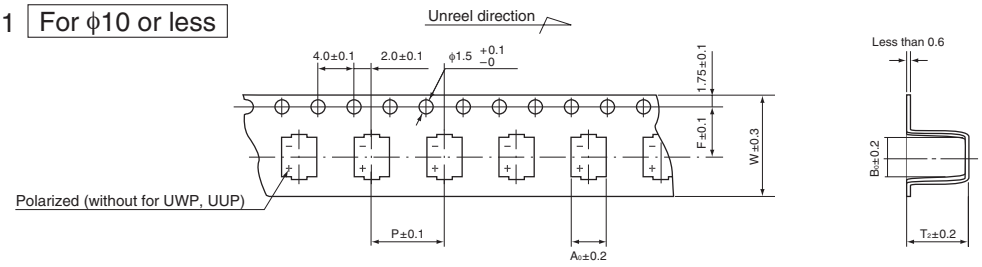
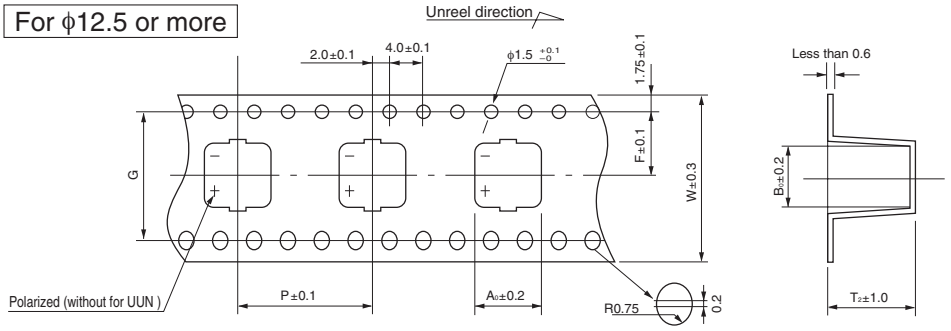
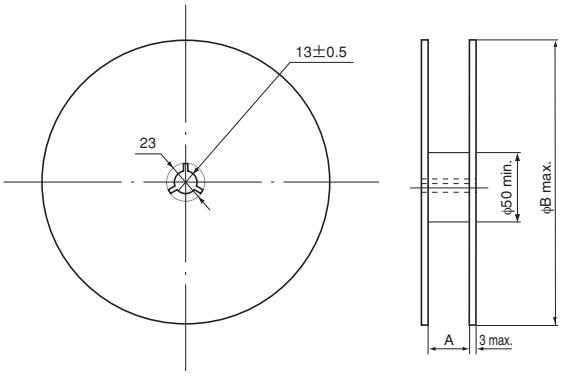


Fig.2 For φ12.5 or more



Size	Item							fig.	Type · Series
	W	P	F	A0	B0	T2	G		
φ5 × 6 L	12.0	12.0	5.5	5.7	5.7	6.3			
φ6.3 × 5.5 L	16.0	12.0	7.5	7.0	7.0	5.7			
φ6.3 × 6 L	16.0	12.0	7.5	7.0	7.0	6.3			
φ6.3 × 8 L	16.0	12.0	7.5	7.0	7.0	8.2			
φ8 × 7 L	24.0	12.0	11.5	8.7	8.7	7.3			
φ8 × 8 L	24.0	12.0	11.5	8.7	8.7	8.3			
φ8 × 10 L	24.0	16.0	11.5	8.7	8.7	11.0	—	1	PCF, PCJ, PCK, PCG, PCS, PCL, PCW, PCV, PCX, PCR, PCM, PCH, PCZ (Conductive Polymer Aluminum Solid Electrolytic Capacitors)
φ8 × 10.5 L	24.0	16.0	11.5	8.7	8.7	11.0			
φ8 × 12 L	24.0	16.0	11.5	8.7	8.7	12.3			
φ10 × 8 L	24.0	16.0	11.5	10.7	10.7	8.3			
φ10 × 10 L	24.0	16.0	11.5	10.7	10.7	11.0			
φ10 × 10.5 L	24.0	16.0	11.5	10.7	10.7	11.0			
φ10 × 12.7 L	24.0	16.0	11.5	10.7	10.7	12.8			
φ10 × 13.2 L	24.0	16.0	11.5	10.7	10.7	13.5			
φ6.3 × 5.8 L	16.0	12.0	7.5	7.0	7.0	6.3			
φ6.3 × 7.7 L	16.0	12.0	7.5	7.0	7.0	8.0			
φ8 × 10 L	24.0	16.0	11.5	8.7	8.7	11.0	—	1	GYA, GYB, GYC, GYD, GYE, GYF (Conductive Polymer Hybrid Aluminum Electrolytic Capacitors)
φ10 × 10 L	24.0	16.0	11.5	10.7	10.7	11.0			
φ10 × 12.5 L	24.0	16.0	11.5	10.7	10.7	14.1			
φ4 × 3.9 L	12.0	8.0	5.5	4.7	4.7	4.3			
φ5 × 3.9 L	12.0	12.0	5.5	5.7	5.7	4.3	—	1	UZG
φ6.3 × 3.9 L	16.0	12.0	7.5	7.0	7.0	4.4			
φ4 × 4.5 L	12.0	8.0	5.5	4.7	4.7	4.9			
φ5 × 4.5 L	12.0	12.0	5.5	5.7	5.7	4.9	—	1	UZT, UCQ
φ6.3 × 4.5 L	16.0	12.0	7.5	7.0	7.0	5.0			
φ4 × 5.4 L	12.0	8.0	5.5	4.7	4.7	5.8			
φ5 × 5.4 L	12.0	12.0	5.5	5.7	5.7	5.8	—	1	UWP, UWT, UWZ, UWG, UUQ
φ6.3 × 5.4 L	16.0	12.0	7.5	7.0	7.0	5.8			
φ8 × 5.4 L	16.0	12.0	7.5	8.7	8.7	5.8			
φ4 × 5.8 L	12.0	8.0	5.5	4.7	4.7	6.3			
φ5 × 5.8 L	12.0	12.0	5.5	5.7	5.7	6.3	—	1	UWT, UWZ, UUP, UCD, UCL, UCM, UUD, UWD, UCZ, UUA, UUL, UCQ
φ6.3 × 5.8 L	16.0	12.0	7.5	7.0	7.0	6.3			
φ4 × 7 L	12.0	8.0	5.5	4.7	4.7	7.5			
φ5 × 7 L	16.0	12.0	7.5	5.7	5.7	7.5			
φ6.3 × 7 L	16.0	12.0	7.5	7.0	7.0	7.5			
φ6.3 × 7.7 L	16.0	12.0	7.5	7.0	7.0	8.0			
φ6.3 × 8.7 L	16.0	12.0	7.5	7.0	7.0	9.1			
φ6.3 × 10 L	16.0	12.0	7.5	7.0	7.0	11.4	—	1	UWT, UWZ, UWG, UUA, UUL, UCB, UCW, UCD, UCL, UCM, UCV, UUD, UWD, UUB, UWH, ULT, ULH, UCJ, UCZ, UYA, UCH, UCX, UUR, UUX, ULR, ULV, UUQ, UCQ,UUE, UBC, UBH
φ8 × 6.2 L	16.0	12.0	7.5	8.7	8.7	6.8			
φ8 × 10 L	24.0	16.0	11.5	8.7	8.7	11.0			
φ10 × 7.7 L	24.0	16.0	11.5	10.7	10.7	8.4			
φ10 × 10 L	24.0	16.0	11.5	10.7	10.7	11.0			
φ10 × 13.5 L	24.0	16.0	11.5	10.7	10.7	14.1			
φ12.5 × 13.5 L	32.0	24.0	14.2	14.0	14.0	14.0	28.4		
φ12.5 × 16 L	32.0	24.0	14.2	14.0	14.0	16.3	28.4		
φ12.5 × 21 L	32.0	24.0	14.2	14.0	14.0	21.3	28.4		
φ16 × 16.5 L	44.0	28.0	20.2	17.5	17.5	16.8	40.4	2	UCD, UCM, UCZ, UCX, UUG, UUJ, UUN, UUE, UBC
φ16 × 21.5 L	44.0	28.0	20.2	17.5	17.5	21.8	40.4		
φ18 × 16.5 L	44.0	32.0	20.2	19.5	19.5	16.8	40.4		
φ18 × 21.5 L	44.0	32.0	20.2	19.5	19.5	21.8	40.4		

● Reel ※Please refer to FPCAP Taping Specifications for Chip Type about the FPCAP product spec. (mm)



Package quantity

ϕD, ϕD × L	Q'ty / reel
4	2,000pcs.
4 × 7	1,500pcs.
5, 6.3	1,000pcs.
6.3 × 7.7, 6.3 × 8, 8 × 8	900pcs.
6.3 × 8.7	800pcs.
6.3 × 10	600pcs.
8 × 5.4, 8 × 6.2, 8 × 7	1,000pcs.
8 × 10 , 8 × 10.5, 10 × 7.7, 10 × 8 ,10 × 10 ,10 × 10.5	500pcs.
8 × 12, 10 × 12.5, 10 × 12.7, 10 × 13.2, 10 × 13.5	400pcs.
12.5 × 13.5	200pcs.
12.5 × 16	150pcs.
12.5 × 21, 16 × 16.5, 18 × 16.5	125pcs.
16 × 21.5, 18 × 21.5	75pcs.

Conductive Polymer Aluminum Solid Electrolytic Capacitors

ϕD	5	6.3	8	10
A	14	18	26	
B	382			

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

ϕD	6.3	8	10
A	18	26	
B	382		

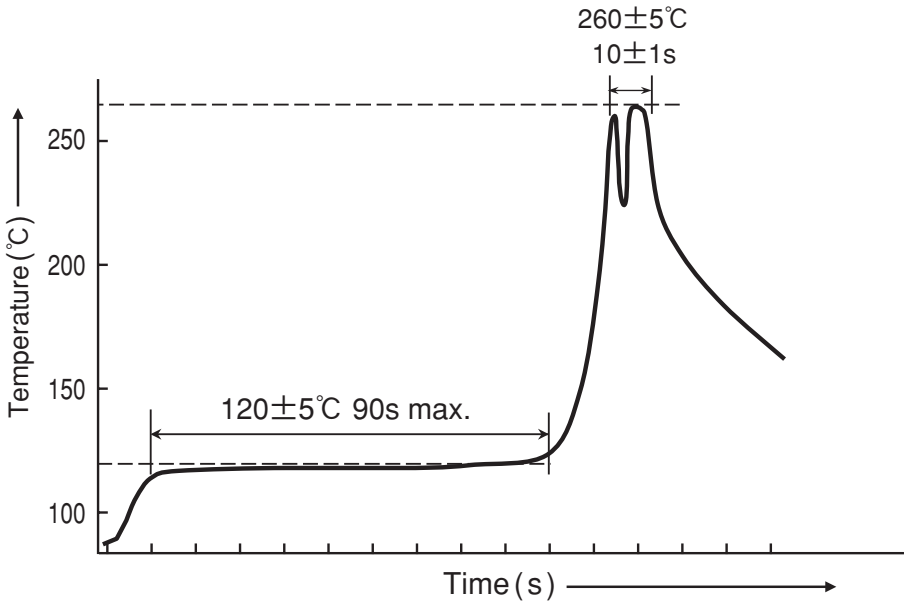
Aluminum Electrolytic Capacitors

ϕD	4	5×3, 5×3.9, 5×4.5, 5×5.4, 5×5.8	5×7	6.3	8×5.4, 8×6.2	8×7, 8 ×10, 10 ×7.7, 10 ×8, 10 ×10, 10 ×13.5	12.5	16, 18
A	14	14	18	18	18	26	34	46
B	382	382	382	382	382	382	332	332

Optional tray packaging for chip type (ϕ12.5 to ϕ18) available upon request, please ask for details.

Lead type aluminum electrolytic capacitors

Recommended conditions for flow soldering



Recommended flow soldering conditions
Preheat : 120±5℃ 90s max.
Flow : 260±5℃ 10±1s

Temperature measurement position
A lead on the back of the board
(See the figure on the right)

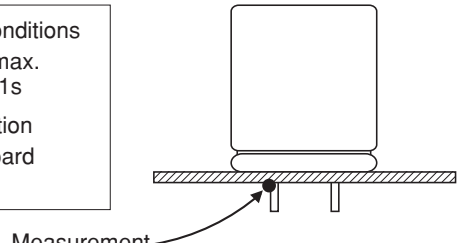


Figure :
Temperature measurement point

Recommended conditions for soldering irons

Temperature at the tip of the soldering iron. :
350±10℃ 3+1/−0s

※ Conductive polymer aluminum solid electrolytic capacitors are not covered so please inquire separately.

※Trimmed (Cut) or Formed Leads ※Please refer to FPCAP Lead Forming about the FPCAP product spec.

● Radial lead type
In order to identify correct part number for the processed lead product, cut/formed lead code must be added to bulk part number.

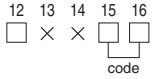
● If the bulk part number is up to 11th digit, processed lead coding shall be as follows:



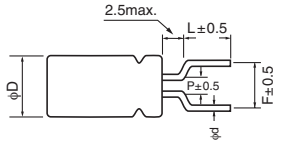
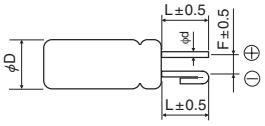
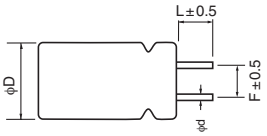
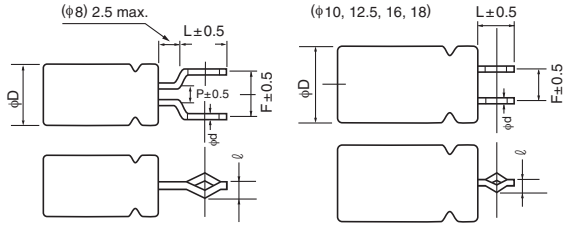
● In case 12th digit is numeral, it shall be:



● In case 12th digit is alphabet, it shall be:



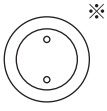
(mm)

Configurations	Cut / Formed lead code	Dimensions (mm)				Lead configurations
	Code	ϕD	F	L	ℓ	
Forming and cutting	FA	8	5	5.0	—	
	FV	8	5	3.5	—	
Forming and cutting	SZ	10	5	3.2	—	 ※Please contact your local Nichicon sales office for the following sizes. —10mm Diameter parts with 25mm length or larger —12.5 to18mm Diameter parts with 12.5mm length or less, and 46mm or larger ※This operation is available on product made in Japan.
		12.5			—	
		16	7.5		—	
		18			—	
Cutting	CA	8	3.5	5.0	—	
		10	5		—	
		12.5			—	
		16	7.5		—	
		18			—	
	CP	Same as above.		4.5	—	
	CC	Same as above.		4.0	—	
	CV	Same as above.		3.5	—	
	CT	Same as above.		3.2	—	
	CM	Same as above.		3.0	—	
Snap-in	AA	8	5	4.5	1.3	
		10				
		12.5				
		16	7.5			
		18				

● Conductive polymer aluminum solid electrolytic capacitors : Cutting configurations only

*Lead diameter (ϕd) and lead pitch (P) are subject to capacitor specifications.

End seal Configuration ※Please contact us about the FPCAP.

Configuration	 ※1		
ϕ(mm)	—	8 ・10	12.5 ・16 ・18

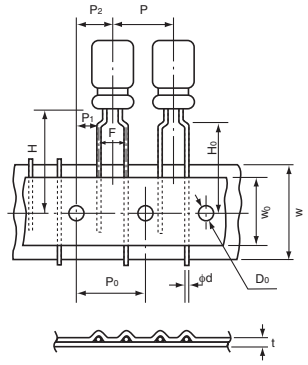
Exception : The followings refer to ※1.
- ϕ6.3 × 6mmL, ϕ6.3 × 9mmL, ϕ8 × 7mmL, ϕ8 × 9mmL, ϕ10 × 8mmL, ϕ10 × 10mmL size of PLF, PLG, PLS, PLX.
- UPV.
- UCS and UPZ with 9 in the 12th digit of the part number.

※Taped Leads for Automatic Insertion Systems

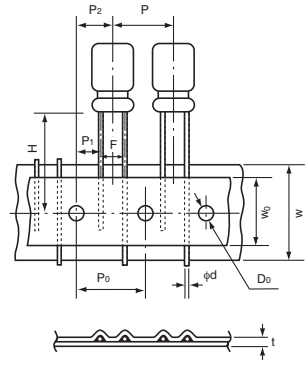
※Please refer to FPCAP Taped Leads for Automatic Insertion Systems about the FPCAP product spec.

- Radial lead type (Applicable standard JIS C0806-2)
  In order to identify correct part number for the taped product, taping code must be added.
- If the bulk part number is up to 11th digit, taping code shall be as follows: 12 13 14 — 1 □ □ code
- In case 12th digit is numeral, it shall be 12 13 14 — □ □ □ code
- In case 12th digit is alphabet, it shall be 12 13 14 15 16 — × × □ □ code

(Formed lead type)



(Straight lead type)



- Special taping specifications on H. F. and K. dimensions other than the above figures are available upon request.
- Conductive polymer aluminum solid electrolytic capacitors : Straight lead type only
- Only the above mentioned dimensions are specified.

(mm)

Specifications				Capacitor diameter (φ)	Taping code	
Packaging	Lead style	F	P0		Code	Applicable size
Ammo-pack	Formed lead	See Table 1	12.7	8	TA	φ8×11.5 to φ8×20
	Straight lead	See Table 2	12.7	6.3 to 10	TP TD	φ6.3×6※ φ6.3×9 or more, φ8×7 or more, φ10×8 to 25
		See Table 2	15.0	12.5	TO	φ12.5×12.5 to 25
		See Table 2	15.0	16, 18	TN	φ16 ×15 to 25, φ18×15 to 25

Notes: ※ Conductive polymer aluminum solid electrolytic capacitors

Table 1

(mm)

Item \ Case Size / Taping Code		Tolerance	Formed Lead Type Case dia (φ) × Length (L)
			φ8 × 11.5 φ8 × 15 φ8 × 20
			TA
φd	Lead-wire diameter	±0.05	0.6
P	Pitch of component	±1.0	12.7
P0	Feed hole pitch	±0.2	12.7
P1	Hole center to lead	±0.5	3.85
P2	Feed hole center to component center	±1.0	6.35
F	Lead-to-lead distance	+0.8 −0.2	5.0
H	Height of component from tape center	±0.75	20.0
H0	Lead-wire clinch height	±0.5	16.0
W	Tape Width	±0.5	18.0
W0	Hold down tape width	min.	7.0
φD0	Feed hole diameter	±0.2	4.0
t	Total tape thickness	±0.2	0.6

Table 2

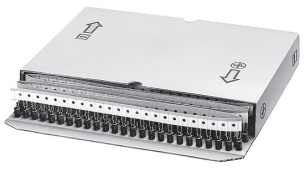
(mm)

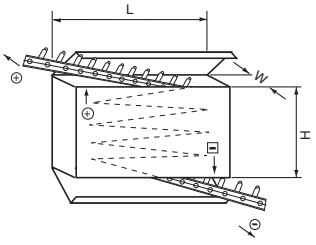
Item \ Case Size / Taping Code		Tolerance	Straight Lead Type Case dia (φ) × Length (L)				
			φ6.3	φ8	φ10	φ12.5	φ16 φ18
			TP, TD	TD	TD	TO	TN
φd	Lead-wire diameter	±0.05	0.45 0.5, 0.6	0.6	0.6	0.6	0.8
P	Pitch of component	±1.0	12.7	12.7	12.7	15.0	30.0
P0	Feed hole pitch	±0.2	12.7	12.7	12.7	15.0	15.0
P1	Hole center to lead	±0.5	5.1	4.6	3.85	5.0	3.75
P2	Feed hole center to component center	±1.0	6.35	6.35	6.35	7.5	7.5
F	Lead-to-lead distance	+0.8 −0.2	2.5	3.5	5.0	5.0	7.5※1
H	Height of component from tape center	±0.75	18.5	18.5	18.5	18.5	18.5
W	Tape Width	±0.5	18.0	18.0	18.0	18.0	18.0
W0	Hold down tape width	min.	7.0	7.0	7.0	12.5	12.5
φD0	Feed hole diameter	±0.2	4.0	4.0	4.0	4.0	4.0
t	Total tape thickness	±0.2	0.6	0.6	0.6	0.6	0.6

Notes: ※ 1 Tolerance on F for φ16 and φ18 units shall be ±0.8mm.

Packaging

- Ammo-pack (Flat box type)





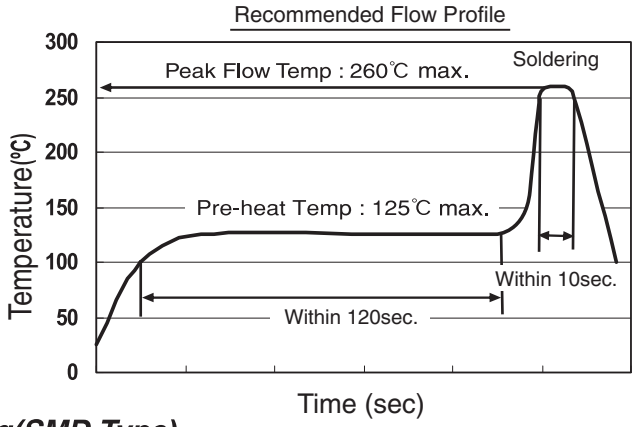
(mm)

L (mm)	H (mm)	W (mm)	Case Size (φD × L)	Q'ty / Box
340	250	50	8 × 7, 8 × 8	1,000
340	300	50	6.3 × 6	2,000
340	260	54	8 × 9, 8 × 10, 8 × 11.5, 8 × 12, 8 × 15	1,000
340	200	54	10×8, 10×9, 10×10, 10×12.5, 10×13, 10×15, 10×16	500
340	300	54	6.3 × 9, 6.3 × 10.5	2,000
340	260	62	8 × 20	1,000
340	200	62	10 × 20	500
340	200	65	10 × 25	500
330	290	65	12.5 × 12.5, 12.5 × 15, 12.5 × 20	500
			12.5 × 25	
			18 × 15, 18 × 20, 18 × 25	250
320	230	65	16 × 15, 16 × 20, 16 × 25	250

FPCAP Lead free and RoHS directive compliant soldering requirements

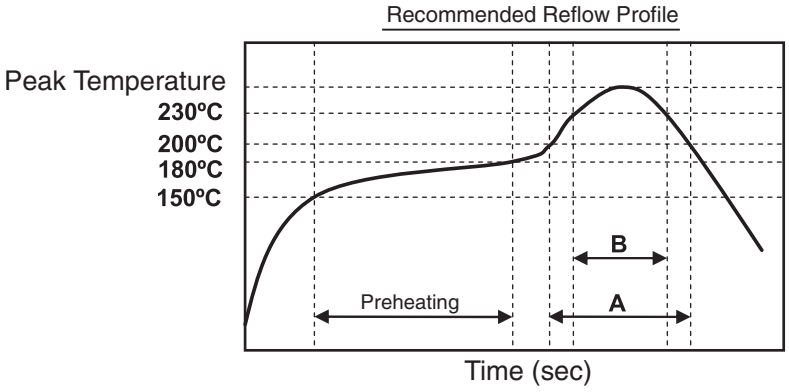
Flow Soldering(Radial Lead Type)

RNS, RR7, RR5, RL8, RE5, RS8, RF8, RNU, RNE, RNL, RS6, RHT



Reflow Soldering(SMD Type)

RPS, RPA, RHS, RHA, RSS, RSA, RSB, RFS, RFA, RSL, RDS, RKS



Item	Recommended Condition 1	Recommended Condition 2	Recommended Condition 3
Series	RPS, RPA, RHS, RHA, RSS, RSA, RSB, RFS, RFA, RSL		RDS, RKS
Peak Temperature	260°C max.	250°C max.	260°C max.
Preheating	150°C to 180°C within 90 seconds	150°C to 180°C within 90 seconds	150°C to 180°C within 90 seconds
A	200°C and higher within 60 seconds	200°C and higher within 60 seconds	200°C and higher within 60 seconds
B	230°C and higher within 40 seconds	230°C and higher within 40 seconds	230°C and higher within 40 seconds
The Number of Reflow	Only 1 Time	Twice or less	Twice or less

FPCAP Lead forming (Radial lead type)

RNS, RR7, RR5, RL8, RE5, RS8, RF8, RNU, RNE, RNL, RS6, RHT

Components are packaged as per following packing unit.

● Packing Quantity (Bulk)

Case Size φD × L (mm)	Long Lead		Cut Lead	
	Quantity vinyl bag (PCS)	Minimum quantity (PCS / Carton Box)	Quantity vinyl bag (PCS)	Minimum quantity (PCS / Carton Box)
φ4×5	200	8,000	200	8,000
φ5×8, φ5×10	200	3,200	200	4,000
φ6.3×5, φ6.3×6, φ6.3×7	200	4,000	200	4,000
φ6.3×8, φ6.3×10	200	3,200	200	4,000
φ8×6, φ8×8, φ8×9	200	3,200	200	4,000
φ8×11.5	100	2,000	200	2,400
φ8×16	100	1,600	100	2,000
φ8×20	100	1,200	100	1,600
φ10×12.5	100	1,600	100	2,000
φ10×16	100	1,200	100	1,600
φ10×20	100	800	100	1,200

● Bulk Long Lead Part Number

Nichicon P/N : R□□□□□□□ M□□□ ___

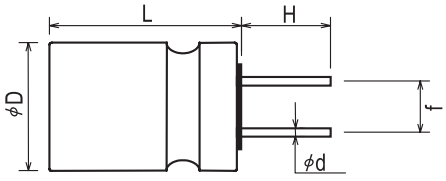
FPCAP P/N : FP- □□□RE□□□M- □□ R

● Cut Lead (Bulk) Dimensions

Lead Forming (Symbol:CG)

Nichicon P/N : R□□□□□□□ M□□□ CG

FPCAP P/N : FP- □□□RE□□□M- □□ CG



[Unit : mm]

Item \ φD×L	φ4×5	φ5×8, φ5×10	φ6.3×5, φ6.3×6, φ6.3×7, φ6.3×8, φ6.3×10	φ8×6, φ8×8, φ8×9, φ8×11.5, φ8×16, φ8×20	φ10×12.5, φ10×16, φ10×20
Lead Forming Symbol	CG	CG	CG	CG	CG
Lead Wire Diameter φd	0.45±0.05	0.5, 0.6±0.05	0.45, 0.5, 0.6±0.05	0.6±0.05	0.6±0.05
Lead Wire Length H	3.1±0.3	3.1±0.3	3.1±0.3	3.1±0.3	3.1±0.3
Lead Wire Interval f	1.5±0.5	2.0±0.5	2.5±0.5	3.5±0.5	5.0±0.5

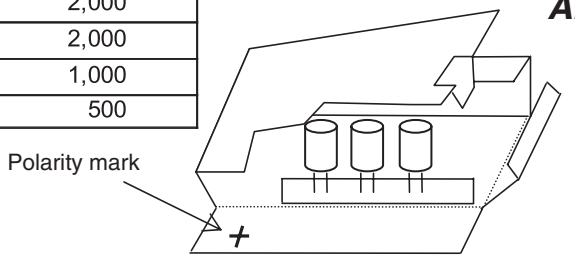
Note : Please inquire for FPCAP by Packing Unit as above.

FPCAP Taped Leads for Automatic Insertion Systems (Radial lead type)

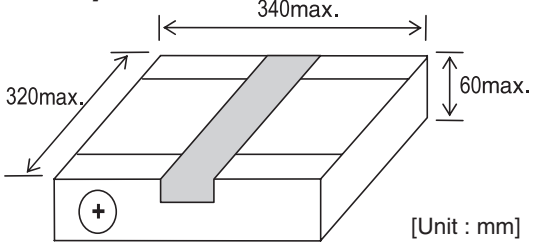
RNS, RR7, RR5, RL8, RE5, RS8, RF8, RNU, RNE, RNL, RS6, RHT

● Packing Quantity(Ammo Pack)

Size (dia)	Minimum quantity (pcs / Ammo Pack)
φ5	2,000
φ6.3	2,000
φ8	1,000
φ10	500



Ammo pack



[Unit : mm]

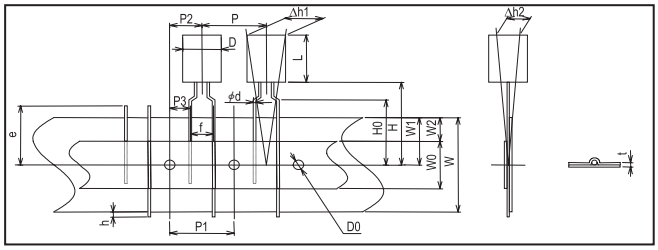
The lid of feeding side of the taping box shall be torn off at the perforation line.

● Taping Dimensions

Lead Forming (Symbol:Ex. PX) **Nichicon P/N Symbol : R□□□□□□□ M□□□PX**
FPCAP P/N Symbol : FP-□□□RE□□□M-□□ P

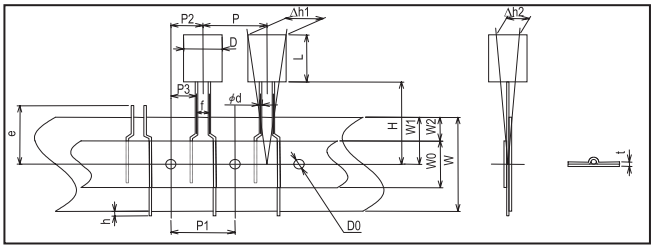
■ 2.5mm pitch taping
Taping Dimensions for φ5

Nichicon P/N Symbol : JT (φ5×8) , JX (φ5×10)
FPCAP P/N Symbol : JT (φ5×8) , J (φ5×10)



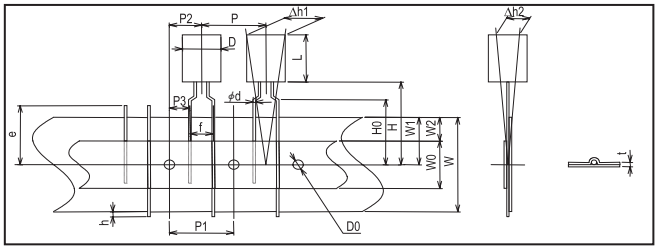
■ 2.5mm pitch taping
Taping Dimensions for φ6.3

Nichicon P/N Symbol : JT (φ6.3×5 to 8) , JX (φ6.3×10)
FPCAP P/N Symbol : JT (φ6.3×5 to 8) , J (φ6.3×10)



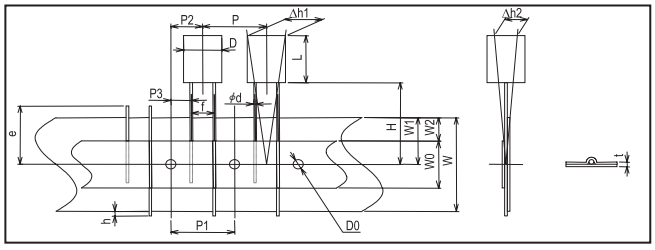
■ 5.0mm pitch taping
Taping Dimensions for φ5, φ6.3, φ8

Nichicon P/N Symbol : PX
FPCAP P/N Symbol : P



■ 2.0mm(φ5) or 3.5mm(φ8) or 5.0mm(φ10) pitch taping
Taping Dimensions for φ5, φ8, φ10

Nichicon P/N Symbol : TX (φ5), KX (φ8), PH (φ10)
FPCAP P/N Symbol : T (φ5), K (φ8), PH (φ10)



● Specification Table

[Unit : mm]

Item \ φDxL	φ6.3×6, φ6.3×7	φ5×8, φ6.3×8	φ6.3×5 φ5×8	φ5×10, φ6.3×10	φ6.3×6, φ6.3×7	φ5×8, φ6.3×8	φ5×10, φ6.3×5, φ6.3×10	φ8×6, φ8×8, φ8×9, φ8×11.5, φ8×16, φ8×20	φ5×8	φ8×6, φ8×8, φ8×9, φ8×11.5, φ8×16, φ8×20	φ10×12.5, φ10×16, φ10×20
Lead Forming Symbol (Nichicon P/N)	JT			JX	PX			PX	TX	KX	PH
Lead Forming Symbol (FPCAP P/N)	JT			J	P			P	T	K	PH
Lead Wire Diameter φd	0.45	0.6	0.5	0.5	0.45	0.6	0.5	0.6	0.6	0.6	0.6
Tolerance	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
Lead Wire Interval f	2.5 +0.8/-0.2 (φ6.3: 2.5±0.5)				5.0 +0.8/-0.2			5.0 +0.8/-0.2	2.0 +0.8/-0.2	3.5 +0.8/-0.2	5.0 +0.8/-0.2
Pitch Between Components P	12.7±1.0				12.7±1.0			12.7±1.0	12.7±1.0	12.7±1.0	12.7±1.0
Feed Holes Position Gap P1	12.7±0.3				12.7±0.3			12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
Feed Holes Position Gap P2	6.35±1.0				6.35±1.0			6.35±1.0	6.35±0.5	6.35±0.5	6.35±0.5
Lead Wire Clinch Height H0	—				16.0±0.5			16.0±0.5	—	—	—
Components Height H	18.5±0.5				17.5±0.5			20.0±0.75	18.5±0.5	20.0±0.5	18.5±0.5
Base Tape W	18.0 +1.0/-0.5				18.0 +1.0/-0.5			18.0 +1.0/-0.5	18.0 +1.0/-0.5	18.0 +1.0/-0.5	18.0 +1.0/-0.5
Feed Holes Position Gap W1	9.0±0.5				9.0±0.5			9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
Feed Holes Diameter D0	4.0±0.2				4.0±0.2			4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
Components Alignment Δh	2.0 max.				2.0 max.			2.0 max.	2.0 max.	2.0 max.	2.0 max.
Tape Thickness t	0.6±0.2				0.6±0.2			0.6±0.2	0.6±0.2	0.6±0.2	0.6±0.2

FPCAP Packing Unit Quantity for Reel (SMD Type)

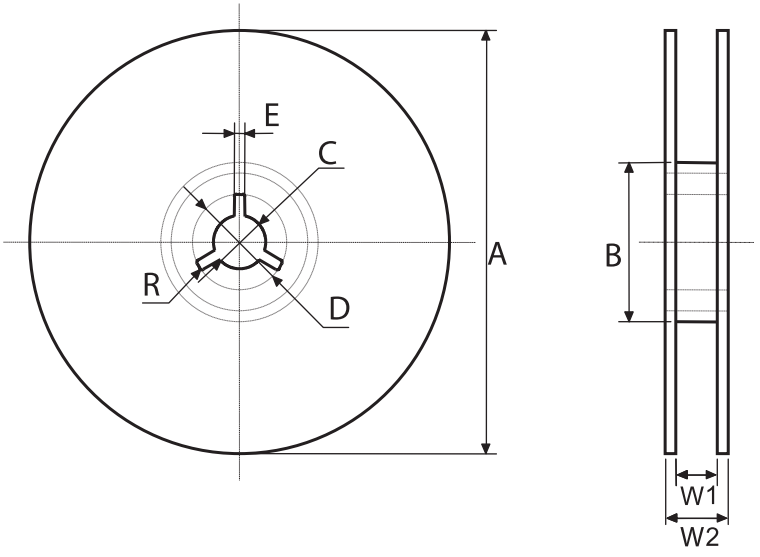
RPS, RPA, RHS, RHA, RSS, RSA, RSB, RFS, RFA, RSL, RDS, RKS

Components are packaged as per following packing unit.

● Packing Quantity (Reel)

Case Size φD×L (mm)	Packing Unit (pcs)
φ4×5.2	2,000
φ5×5.7	1,000
φ6.3×4.2	1,000
φ6.3×5.7	1,000
φ6.3×5.8	1,000
φ6.3×7.7	900
φ8×6.7	1,000
φ8×7.7	900
φ8×8.7	500
φ8×11.7	500
φ10×7.7	500
φ10×12.4	400

Note : Please inquire for FPCAP by Packing Unit as above.



[Unit : mm]

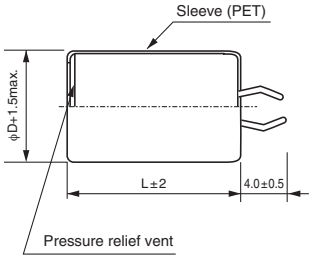
Size (dia)	A ±2.0	B ±1.0	C ±0.5	D ±1.0	E ±0.5	W1 ±1.0	W2 ±1.0	R
φ4, φ5	380	80	13.0	21	2.0	13.4	17.4	1.0
φ6.3	380	80	13.0	21	2.0	17.4	21.4	1.0
φ8, φ10	380	80	13.0	21	2.0	25.4	29.4	1.0

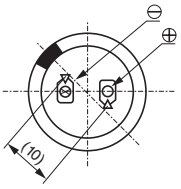
Snap-in Terminal Style

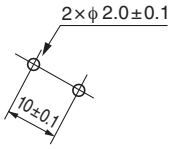
- Available terminal styles below.
- Not all terminal styles are available for all case sizes.
- Please contact us for the ordering part number.
- Custom terminal styles available, Contact Nichicon for more information.

EL-Terminal (2-pins type, Snap-in type)
(terminal length 4.0mm)

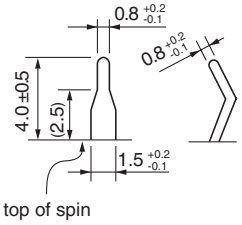
Applicable size : φ 20 to φ 35, Less than 50mmL
Pb-free terminal







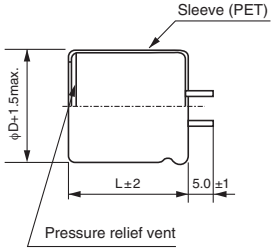
PC board hole dimensions

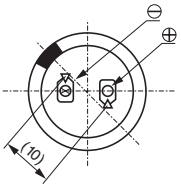


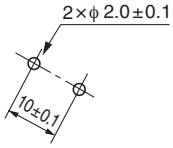
terminal dimensions

EK-Terminal (2-pins type, Straight type)

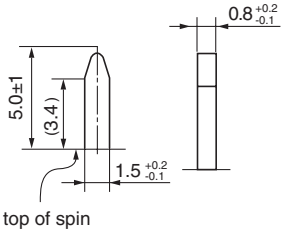
Applicable size : φ 20 to φ 35, Less than 50mmL
Pb-free terminal







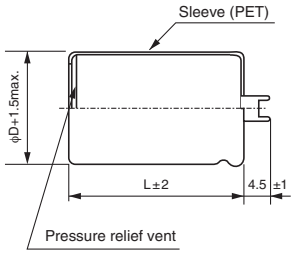
PC board hole dimensions

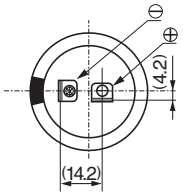


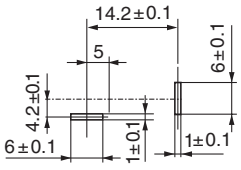
terminal dimensions

EU-Terminal (Vibration-resistant type)

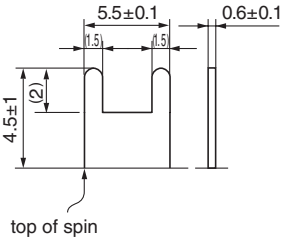
Applicable size : φ 30 to φ 40
Pb-free terminal







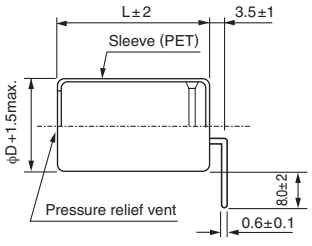
PC board hole dimensions



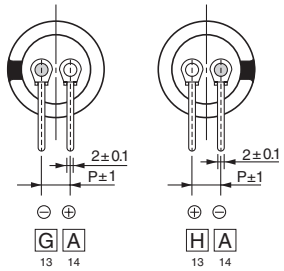
terminal dimensions

ER-Terminal (Horizontal mounting type)

Applicable size : φ 20 to φ 25
Pb-free terminal



Formed leads code



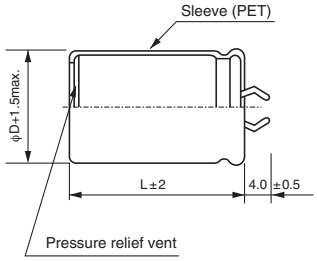
φ20 : P=7.5
φ22, φ25 : P=8.5

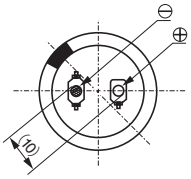
※ Negative terminal : Mesh marking

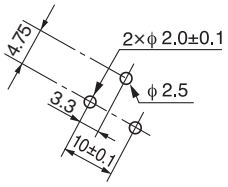
Snap-in Terminal Shape

ET-Terminal (3-pins type, Snap-in type)

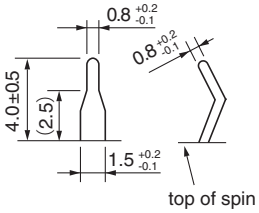
Applicable size : φ 22 to φ 35
Pb-free terminal







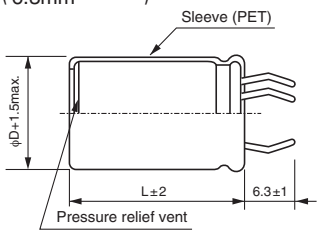
PC board hole dimensions

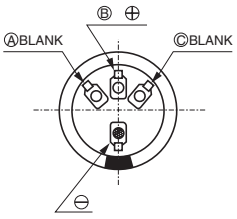


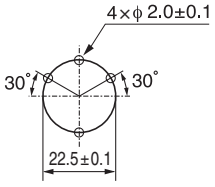
terminal dimensions

EF-Terminal (4-pins type, Snap-in type)

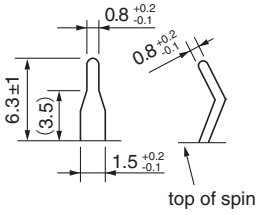
Applicable size : φ 35 , φ 40
Pb-free terminal
(terminal length 6.3mm)







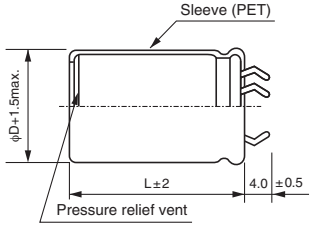
PC board hole dimensions

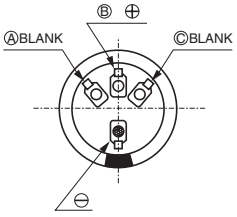


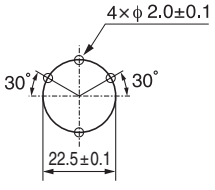
terminal dimensions

EG-Terminal (4-pins type, Snap-in type)

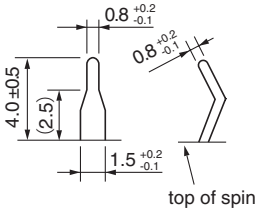
Applicable size : φ 35 , φ 40
Pb-free terminal
(terminal length 4.0mm)







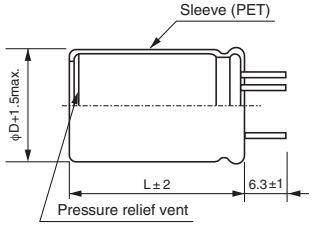
PC board hole dimensions

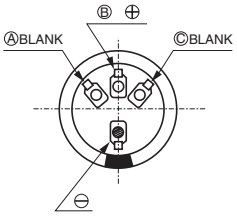


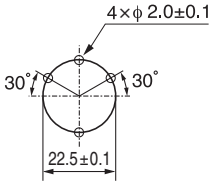
terminal dimensions

EH-Terminal (4-pins type, Straight type)

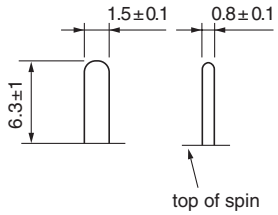
Applicable size : φ 35 , φ 40
Pb-free terminal







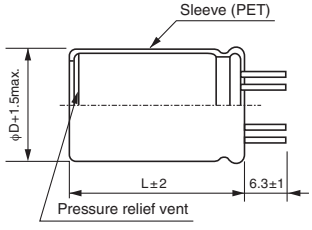
PC board hole dimensions

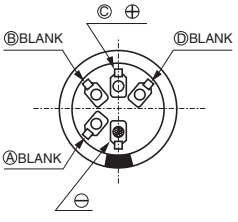


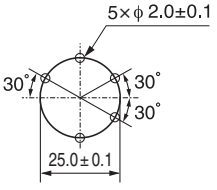
terminal dimensions

EJ-Terminal (5-pins type, Straight type)

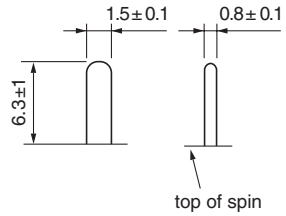
Applicable size : φ 40
Pb-free terminal







PC board hole dimensions



terminal dimensions

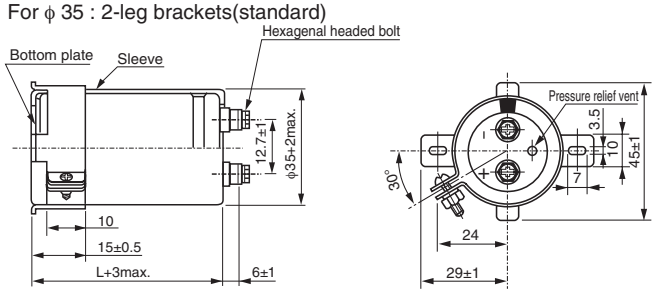
※ Negative terminal : Mesh marking

Dimension of bracket / bushing for screw terminal type

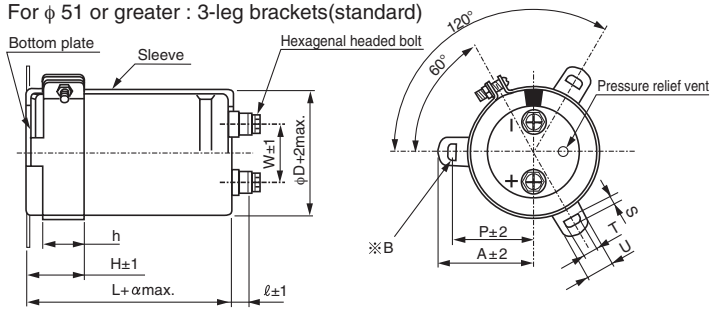
- Screw terminal type can be supplied with the following bracket and bushing.
- Here is standard position and angle of the bracket / bushing. Please contact us if you have specific requirement.
- There is a restriction for capacitors size.

■Method to mount with metal bracket

For ϕ 35 : 2-leg brackets(standard)



For ϕ 51 or greater : 3-leg brackets(standard)

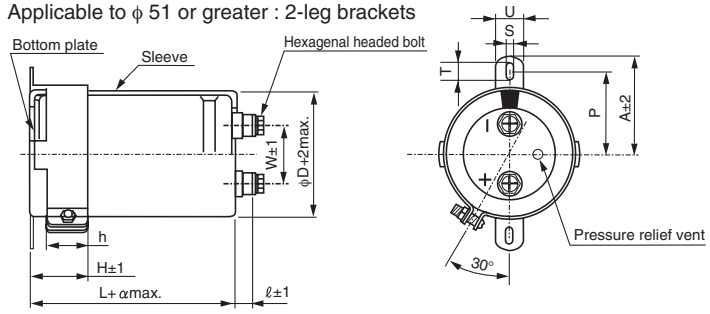


(mm)

Symbol \ ϕD	51	63.5	76.2	90	100
P	32.5	38.1	44.5	50.8	56.3
A	38.5	43	49.2	58.5	62
T	7.5	8	7	8	8
S	5	5	5	5	5
U	12	14	14	18	16
H	20	25	30	35	36
h	15	20	24	25	30
W	22	28.6	31.8	31.8	41.5
ℓ	6	6	6	6	10
α	3	3	3	3	4

※ Please consult us separately for the dimensional shape of the mounting hole(B) for ϕ90.

Applicable to ϕ 51 or greater : 2-leg brackets

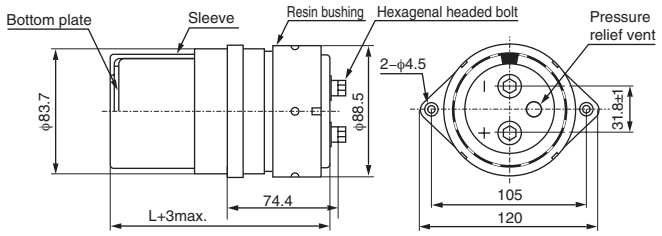


(mm)

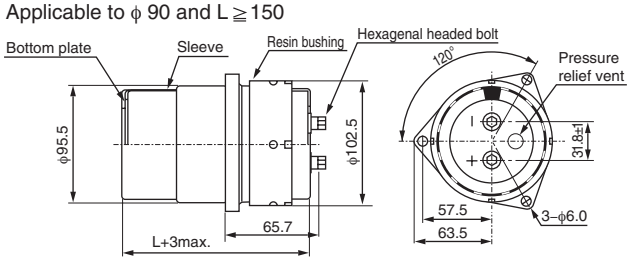
Symbol \ ϕD	51	63.5	76.2	90
P	33.2	40.5	46.5	53
A	40	46.5	53	59
T	6	7	6	6
S	4.5	4.5	4.5	4.5
U	14	14	14	14
H	25	35	35	35
h	15	20	20	20
W	22	28.6	31.8	31.8
ℓ	6	6	6	6
α	3	3	3	3

■Method to mount with resin bushing.

Applicable to ϕ 76.2 and L ≧ 150

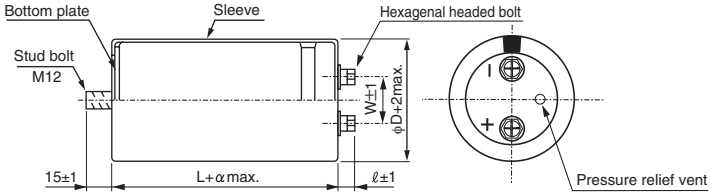


Applicable to ϕ 90 and L ≧ 150



■Method to mount with stud bolt.

Applicable to ϕ 51 to ϕ 90

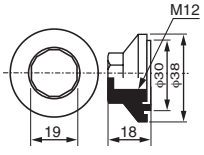


Stud bolt (mm)

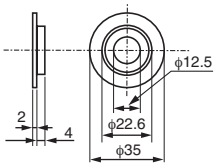
Symbol \ ϕD	51	63.5	76.2	90
W	22	28.6	31.8	31.8
ℓ	6	6	6	6
α	3	3	3	3

A nut for stud bolt. (option)

Plastic nut



Plastic washer



※ Bracket hole : ϕ30.5mm(min.)

PRODUCTION LOCATION BY SERIES OUTSIDE OF JAPAN

nichicon

Conductive Polymer Aluminum Solid Electrolytic Capacitors

Type	Classification	Type • Series	NICHICON ELECTRONICS (SUQIAN) CO., LTD.
Conductive Polymer Aluminum Solid Electrolytic Capacitors (FPCAP)	Surface Mount Type	RPS, RPA, RHS, RHA, RSS, RSA, RSB, RFS, RFA, RSL, RDS, RKS	○
	Radial Lead Type	RNS, RR7, RR5, RL8, RE5, RS8, RF8, RNU, RNE, RNL, RS6, RHT	○

Aluminum Electrolytic Capacitors

Type	Classification	Type • Series	NICHICON (MALAYSIA) SDN. BHD.	NICHICON ELECTRONICS (WUXI) CO., LTD.
Chip Aluminum Electrolytic Capacitors	Chip Type	UWT, UWZ, UWG, UUA, UUL, UCD, UUD, UWD, UUB, UWH, UUX, UCJ	○	○
		UCL, UCZ, UCM, UCB, UCW	○	—
Miniature Aluminum Electrolytic Capacitors	Standard Type	UVK, UVR, UVY, UVZ, URS, URZ, UVP	○	○
		UEP	○	—
	High Reliability Type	UPM, UPW, UHV, UHD, UHE, UHW, UPJ, UPS, UBT, UPT, UCY, UPZ, UCS, UPA	○	○
		UPV, ULD	○	—
	Special Equipment	UKL	○	○
		UAQ, UAS	—	○
	For Audio Equipment	UFW, UES, UKA, UKT, UKW	○	—
Large Can Aluminum Electrolytic Capacitors	Standard Type	LLS, LLG	○	○
	High Reliability Type	LGU, LGN, LGG, LGM, LGJ, LGY, LGZ, LGX, LAR, LGR, LGL, LGW, LAK, LAQ, LAS, LQS	○ (Excluding LAK, LAQ, LAS)	○
	For Audio Equipment	LKX	○	—
Screw Terminal Electrolytic Capacitors			—	applicable Size D=φ35 to 100 L= 80 to 220L Please contact us for details.

※However, please contact us because there may be a series, size that cannot be produced at a given factory.

Conductive Polymer Aluminum Solid Electrolytic Capacitors

Classification	Type · Series	Configuration	Applications	Category Temperature Range (°C)	Features: Standard type	Low ESR	High Capacitance	Long Life	High Voltage	High Reliability	AEC-Q200	Rated Voltage Range (V.D.C)	Rated Capacitance Range (μF)	Tolerance on Rated Capacitance (%)	Page
Chip type	PCF	32	Standard	−55 to +105	●						●	2.5 to 25	6.8 to 1500	±20	40
	PCJ	32	Low ESR, Higher Capacitance	−55 to +105		●	●				●	2.5 to 16	33 to 2700	±20	43
	PCK	32	Ultra-low ESR	−55 to +105		●					●	2.5 to 6.3	220 to 2200	±20	WEB
	PCG	32	Higher Capacitance	−55 to +105			●				●	2.5 to 16	47 to 4700	±20	45
	PCS	32	Long Life Assurance	−55 to +105				●		●	●	4 to 16	22 to 560	±20	WEB
	PCL	32	Higher Capacitance / Long Life Assurance	−55 to +105		●	●	●		●	●	2.5 to 25	12 to 3300	±20	47
	NEW PCW	32	Chip Type, High Temperature Range / High Reliability	−55 to +125		●				●	●	2.5 to 6.3	150 to 390	±20	49
	PCV	32	High Voltage / Long Life Assurance	−55 to +105				●	●		●	16 to 125	5.6 to 680	±20	51
	PCX	32	High Voltage / High Reliability	−55 to +125				●	●	●	●	16 to 50	5.6 to 390	±20	WEB
	PCR	32	Higher Capacitance / Long Life Assurance	−55 to +125			●	●	●	●	●	16 to 80	22 to 1000	±20	54
	PCM	32	Higher Capacitance / High Temperature Range	−55 to +125		●	●	●	●	●	●	16 to 80	12 to 1000	±20	56
	PCH	32	Higher Capacitance / High Temperature Range	−55 to +135		●	●	●	●	●	●	16 to 80	12 to 1000	±20	58
	PCZ	32	Higher Capacitance / High Temperature Range	−55 to +150		●	●	●	●	●	●	16 to 63	12 to 1000	±20	60
Radial Lead type	PLF	04	Standard	−55 to +105	●						●	2.5 to 25	6.8 to 1500	±20	WEB
	PLG	04	Higher Capacitance	−55 to +105			●					2.5 to 16	330 to 3900	±20	WEB
	PLS	04	Long Life Assurance	−55 to +105				●		●		2.5 to 16	100 to 1500	±20	WEB
	PLX	04	High Voltage / High Reliability	−55 to +125				●	●	●	●	16 to 50	22 to 390	±20	WEB

FPCAP Product List

Classification	Type · Series	Note	Rated Voltage Range (V.D.C)	Capacitance Range (μF)	Endurance	Page
SMD Type	RPS / RPA	Standard (φ6.3, φ8, φ10)	2.5 to 63	8.2 to 1500	105°C 2000 / 5000Hrs	62
	RHS / RHA	High Capacitance (φ8)	2.5 to 35	56 to 1500	105°C 2000 / 5000Hrs	64
	RSS/RSA/RSB	High Capacitance (φ6.3)	2.5 to 35	10 to 820	105°C 2000Hrs	66
	RFS / RFA	High Capacitance (φ4, φ5)	2.5 to 25	10 to 330	105°C 2000Hrs	68
	RSL	Low Profile (φ6.3)	2.5 to 25	15 to 330	105°C 2000Hrs	WEB
	NEW RDS	Load life of 3000 hours at 125°C	2.5 to 16	33 to 820	125°C 3000Hrs	70
	NEW RKS	Load life of 3000 hours at 125°C, 85°C 85% 1000Hrs	20 to 63	8.2 to 390	125°C 3000Hrs	73
Radial Lead Type	RNS	Standard	4.0 to 25	10 to 1200	105°C 2000Hrs	WEB
	RR7	Low ESR	2.5 to 16	68 to 1500	105°C 2000 / 5000Hrs	WEB
	RR5	Ultra-Low ESR	2.5 to 6.3	390 to 1500	105°C 2000Hrs	WEB
	Expanded RL8	Low ESR and Low Profile (φ8)	2.5 to 35	100 to 1500	105°C 2000 / 5000Hrs	79
	RE5	Ultra-Low ESR and Low Profile (φ8)	2.5 to 4.0	560 to 820	105°C 2000Hrs	WEB
	RS8	Low ESR / ESL and Low Profile (φ6.3)	2.5 to 25	56 to 1200	105°C 2000 / 5000Hrs	82
	RF8	Low ESR / ESL and Low Profile (φ5)	2.5 to 6.3	100 to 560	105°C 2000Hrs	WEB
	RNU	High Capacitance	2.5 to 63	10 to 2700	105°C 2000 / 5000Hrs	84
	RNE	High Capacitance	2.5 to 25	100 to 1500	105°C 2000 / 5000Hrs	87
	Expanded RNL	Large Sized High Capacitance	16 to 25	270 to 2400	105°C 2000 / 5000Hrs	89
	RS6	Miniature Sized High Capacitance	2.5 to 25	33 to 560	105°C 2000 / 5000Hrs	91
	RHT	High Temperature (125°C)	6.3 to 35	100 to 1000	125°C 1000Hrs	93

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

Classification	Type · Series	Configuration	Applications	Category Temperature Range (°C)	Features: Standard type	Low ESR	High Capacitance	Long Life	High Voltage	High Reliability	AEC-Q200	Rated Voltage Range (V.D.C)	Rated Capacitance Range (μF)	Tolerance on Rated Capacitance (%)	Page
Chip type	GYA	32	Chip type, 125°C High Reliability	−55 to +125		●		●		●	●	16 to 80	10 to 470	±20	96
	GYB	32	Chip type, 105°C High Reliability	−55 to +105		●		●		●	●	16 to 63	10 to 470	±20	98
	GYC	32	Chip type, 135°C High Reliability	−55 to +135		●		●		●	●	16 to 63	10 to 470	±20	100
	GYD	32	Chip type, 150°C High Reliability	−55 to +150		●		●		●	●	25 to 35	100 to 270	±20	102
	Expanded GYE	32	Chip type, 125°C High Reliability	−55 to +125		●	●	●		●	●	16 to 63	56 to 680	±20	104
	Expanded GYF	32	Chip type, 125°C High Reliability	−55 to +125		●	●	●		●	●	16 to 63	68 to 1000	±20	106

AEC-Q200 : AEC-Q200 Qualified. Please contact us for details.

Please refer to our website for the details of the series described as "WEB".

Chip Aluminum Electrolytic Capacitors

Classification	Type・Series	Configuration	Applications	Category Temperature Range (°C)	Features: Standard type	Features: Smaller-sized & low profile	Features: Low impedance	Features: Long life	Features: AEC-Q200	Rated Voltage Range (V.D.C)	Rated Capacitance Range (μF)	Tolerance on Rated Capacitance (%)	Page
Surface Mount type	UZG	32	3.95mmL max. Wide Temperature Range	−40 to +105		●			●	6.3 to 50	1 to 100	±20	109
	UZT	32	4.5mmL, Wide Temperature Range	−40 to +105		●			●	6.3 to 50	1 to 100	±20	111
	UWP※1	32	5.5mmL, Bi-Polarized	−40 to + 85		●			●	6.3 to 50	0.1 to 100	±20	WEB
	UWT※1	32	Wide Temperature Range	−55 to +105		●			●	4 to 50	1 to 1500	±20	WEB
	UWZ	32	Wide Temperature Range High Temperature Reflow	−55 to +105					●	6.3 to 50	1 to 1500	±20	WEB
	UWG	32	Low Impedance	−55 to +105			●		●	6.3 to 50	1 to 1500	±20	WEB
	UUP	32	6mmL, Bi-Polarized	−55 to +105	●				●	6.3 to 50	0.1 to 47	±20	WEB
	UUA	32	Long Life Assurance	−55 to +105				●	●	6.3 to 50	1 to 1000	±20	WEB
	UUL	32	Long Life Assurance (105°C 5,000h)	−40 to +105				●	●	6.3 to 50	1 to 1000	±20	WEB
	UCB※2	32	Long Life Assurance (105°C 7,000h)	−25 to +105				●	●	6.3 to 50	1 to 1000	±20	WEB
	UCW	32	Long Life Low Impedance (105°C 7,000h)	−25 to +105			●	●	●	6.3 to 50	10 to 470	±20	113
	UCD	32	Low Impedance	−55 to +105			●		●	6.3 to 100	1 to 3300	±20	115
	UCL	32	Low Impedance	−55 to +105			●		●	6.3 to 50	10 to 2200	±20	119
	UCM	32	Low Impedance	−55 to +105			●		●	6.3 to 100	10 to 5100	±20	122
	UCV	32	Low Impedance	−55 to +105			●		●	16 to 35	220 to 1500	±20	125
	UUD	32	Low Impedance	−55 to +105			●		●	6.3 to 50	1 to 1500	±20	127
	UWD	32	Low Impedance High Temperature Reflow	−55 to +105			●		●	6.3 to 50	1 to 1500	±20	130
	UUB	32	High Reliability, For +125°C Use	−40 to +125				●	●	10 to 400	1 to 330	±20	WEB
	UWH	32	High Reliability (For +125°C Use) High Temperature Reflow	−40 to +125				●	●	10 to 50	10 to 330	±20	WEB
	ULT	32	High Voltage, High Temperature Range(For +125°C Use)	−40 to +125		●		●	●	160 to 500	1.8 to 33	±20	WEB
	ULH	32	High Voltage, High Reliability (For +125°C 4000h)	−40 to +125				●	●	160 to 450	2.2 to 27	±20	WEB
	UCJ	32	High Reliability Low Temperature ESR specification	−40 to +125				●	●	10 to 50	10 to 470	±20	133
	UCZ	32	High Reliability Low Temperature ESR specification	−40 to +125				●	●	10 to 100	10 to 3300	±20	135
	UYA	32	Long Life Assurance	−40 to +125				●	●	63 to 100	90 to 880	±20	138
	UCH	32	High Reliability Low Temperature ESR specification	−40 to +125				●	●	25 to 63	33 to 560	±20	140
	UCX※1	32	High Reliability Low Temperature ESR specification	−40 to +135				●	●	10 to 50	47 to 3300	±20	142
	UUX	32	Wide Temperature Range	−55 (−40) to +105					●	6.3 to 400	1 to 1000	±20	WEB
	ULR	32	High Voltage	−40 to +105		●			●	160 to 500	2.7 to 39	±20	WEB
	ULV	32	High Voltage, Long Life	−40 to +105				●	●	160 to 500	1.8 to 33	±20	WEB
	UUQ	32	Wide Temperature Range	−40 to +105					●	6.3 to 50	1 to 1000	±20	WEB
	UCQ	32	Wide Temperature Range	−55 to +105					●	10 to 35	4.7 to 680	±20	WEB
	UUG※1	32	Higher Capacitance Range	−40 to + 85	●				●	6.3 to 450	4.7 to 10000	±20	WEB
	UUJ	32	Higher Capacitance Range	−55 (−40) to +105	●			●	●	10 to 450	3.3 to 6800	±20	144
	UUN※1	32	Bi-Polarized, Higher Capacitance Range	−55 to +105						6.3 to 100	22 to 3300	±20	WEB
	UUE※1	32	Vibration Resistance (125°C)	−55 (−40) to +125				●	●	10 to 50	33 to 4700	±20	147
	UBC	32	Vibration Resistance (150°C)	−55 (−40) to +150				●	●	16 to 50	33 to 2200	±20	149
	UBH	32	High Temperature Range Vibration Resistance Low Temperature ESR specification	−40 to +150				●	●	25 to 35	100 to 270	±20	151

※1 May have values that are products which are scheduled to be discontinued.
They are not recommended for new designs. Please refer to the series data pages for details.

※2 Products which are scheduled to be discontinued, Not recommended for new designs.

AEC-Q200 : AEC-Q200 Qualified. Please contact us for details.

Please refer to our website for the details of the series described as “WEB”.

Miniature Aluminum Electrolytic Capacitors

Classification	Type・Series	Configuration	Applications	Category Temperature Range (°C)	Features					Rated Voltage Range (V.D.C)	Rated Capacitance Range (μF)	Tolerance on Rated Capacitance (%)	Page
					Standard type	Smaller-sized & low profile	Low impedance	Long life	AEC-Q200				
Standard type	**UVK**	04	Miniature Sized, Standard	−40 (−25) to +85		●				6.3 to 450	2.2 to 22000	±20	WEB
	UVR	04	Standard	−40 (−25) to +85	●					6.3 to 450	1 to 22000	±20	152
	UVC	04	High Voltage, Ultra-Miniature Sized, For Adapters	−40 to 105		●				400	4.7 to 18	±20	WEB
	UVY	04	Miniature Sized, Wide Temperature Range	−55 (−40, −25) to +105		●				6.3 to 450	2.2 to 22000	±20	156
	UVZ	04	Wide Temperature Range	−55 (−40, −25) to +105	●					6.3 to 450	1 to 22000	±20	WEB
	URS ※1	04	Compact & Standard For General Purposes	−40 to +85		●				6.3 to 400	10 to 10000	±20	WEB
	URZ ※1	04	Low-Profile Sized, Wide Temperature Range	−55 (−40) to +105		●				6.3 to 400	10 to 10000	±20	160
	UVP	04	Bi-Polarized	−40 to +85	●					6.3 to 100	10 to 6800	±20	WEB
	UEP	04	Bi-Polarized, Wide Temperature Range	−55 to +105	●					6.3 to 100	10 to 6800	±20	163
High Reliability type	**UPM**	04	Low Impedance, High Reliability	−55 to +105			●	●	●	6.3 to 100	22 to 15000	±20	WEB
	UPW	04	Miniature Sized, Low Impedance, High Reliability	−55 to +105		●	●	●	●	6.3 to 100	15 to 15000	±20	166
	UPA	04	Miniature Sized, Low Impedance, High Reliability	−55 to +105		●	●	●		6.3 to 35	180 to 10000	±20	WEB
	UHV	04	Extremely Low Impedance, High Reliability	−40 to +105		●	●	●		6.3 to 35	150 to 8200	±20	171
	UHD	04	Extremely Low Impedance, High Reliability	−40 to +105		●	●			6.3 to 50	100 to 6800	±20	WEB
	UHE	04	Extremely Low Impedance, High Reliability	−40 to +105		●	●	●		6.3 to 100	27 to 18000	±20	WEB
	UHW	04	Extremely Low Impedance, High Reliability	−40 to +105		●	●	●		6.3 to 100	33 to 15000	±20	175
	UPJ	04	Low Impedance, For Switching Power Supplies	−55 to +105	●		●	●		6.3 to 100	22 to 15000	±20	WEB
	UPS	04	Miniature Sized, Low Impedance, For Switching Power Supplies	−55 to +105		●	●			6.3 to 100	22 to 15000	±20	181
	UPV ※1	04	Miniature Sized, Low Impedance, High Reliability	−55 to +105			●	●		6.3 to 50	47 to 390	±20	WEB
	UPT	04	Miniature Sized, High Ripple Current, Long Life	−40 to +105		●		●		200 to 450	15 to 390	±20	184
	UPZ ※1	04	High voltage, MiniatureSized	−40 to +105		●				200 to 450	18 to 470	±20	187
	UPH	04	High voltage, MiniatureSized	−40 to +105		●				400 to 450	27 to 220	±20	WEB
	UCP	04	High voltage, MiniatureSized, Long Life Assurance	−40 to +105		●		●		400 to 450	27 to 220	±20	190
	ULD ※1	04	Miniature Sized, Long Life Assurance	−40 to +105				●		10 to 450	2.2 to 330	±20	192
	UCS ※1	04	Miniature Sized, High Ripple Current, High Reliability	−40 to +105		●		●		160 to 450	6.8 to 330	±20	194
	UCY	04	Miniature Sized, High Ripple Current, High Reliability	−40 to +105		●		●	●	160 to 500	6.8 to 680	±20	197
	UBT	04	High Temperature Range (125°C)	−40 (−25) to +125				●	●	10 to 450	4.7 to 4700	±20	203
	UBW	04	High Temperature Range (135°C)	−55 to +135				●	●	10 to 100	4.7 to 4700	±20	206
	UBY	04	High Temperature Range, For Automobile equipment (125/135°C)	−40 to +135	●			●	●	25 to 100	160 to 12000	±20	209
	UXY	04	Vibration Resistance (125/135°C)	−40 to +135	●		●		●	25 to 35	5000 to 11000	±20	212
	UBX ※1	04	High Temperature Range, For Automobile equipment (150°C)	−55 (−40, −25) to +150				●	●	10 to 400	6.8 to 4700	±20	214
Special equipment	**UKL** ※2	04	Low Leakage Current	−40 to +85	●					6.3 to 100	10 to 10000	±20, ±10	WEB
	UAQ ※2	04	For Permissible Abnormal Voltage	−40 to +105						200・400	10 to 220	±20	WEB
	UAS	04	Miniature sized,For Permissible Abnormal Voltage	−40 to +105		●				200・400	22 to 330	±20	216
For audio equipment	**UKA**	04	105°C For High Grade Equipment	−55 to +105					●	6.3 to 50	100 to 22000	±20	218
	UKT ※1	04	105°C Standard, For Audio Equipment	−55 to +105	●				●	6.3 to 50	100 to 22000	±20	WEB
	UKW	04	Standard, For Audio Equipment	−40 to +85	●					10 to 100	33 to 15000	±20	WEB
	UFW ※1	04	Standard, For Audio Equipment	−40 to +85		●				6.3 to 100	33 to 22000	±20	WEB
	UUQ	32	105°C Chip Type, For Audio Equipment	−40 to +105					●	6.3 to 50	1 to 1000	±20	WEB
	UCQ	32	105°C Chip Type, For Audio Equipment	−55 to +105					●	10 to 35	4.7 to 680	±20	WEB
	UES ※1	04	Bi-Polarized, For Audio Equipment	−40 to +85	●					6.3 to 50	10 to 1000	±20	WEB
	UDB ※2	04	Bi-Polarized, For Speaker Network	−40 to +85	●					50	1 to 47	±20	WEB

※1 May have values that are products which are scheduled to be discontinued.
They are not recommended for new designs. Please refer to the series data pages for details.

※2 Products which are scheduled to be discontinued, Not recommended for new designs.

AEC-Q200 : AEC-Q200 Qualified. Please contact us for details.

Please refer to our website for the details of the series described as “WEB”.

Large Can Aluminum Electrolytic Capacitors

Classification	Type・Series	Configuration	Applications	Category Temperature Range (°C)	Features: Standard type	Features: Smaller-sized & low profile	Features: High ripple	Features: High reliability	Features: Long life	Rated Voltage Range (V.D.C)	Rated Capacitance Range (μF)	Tolerance on Rated Capacitance (%)	Page
Standard type	LLS	692	85°C Standard	−40 (−25) to +85	●					16 to 450	56 to 56000	±20	221
	LLG	692	85°C Smaller-Sized	−40 (−25) to +85		●				160 to 450	120 to 3900	±20	226
	LGU	692	105°C Standard	−40 (−25) to +105	●					16 to 450	47 to 47000	±20	229
	LGN	692	105°C Smaller-sized	−40 (−25) to +105		●				160 to 600	56 to 3300	±20	234
	LGG	692	105°C Ultra Smaller-Sized	−40 (−25) to +105		●				160 to 450	100 to 3300	±20	238
	LGL	692	105°C Ultra Smaller-Sized	−25 to +105		●				400・450	120 to 1000	±20	241
	LGM	692	105°C Ultra Smaller-Sized	−25 to +105		●				450	180 to 820	±20	243
	LGJ	692	105°C Low-Profile Sized	−40 (−25) to +105		●				200 to 450	47 to 680	±20	244
	LGJ(15)	692	105°C Low-Profile Sized (15mmL)	−40 (−25) to +105		●				160 to 400	39 to 390	±20	246
	LGY	692	105°C Long Life Assurance	−40 to +105					●	16 to 100	560 to 47000	±20	248
	LGR	692	105°C Long Life, Assurance	−40 (−25) to +105					●	200 to 450	39 to 1500	±20	251
	LGZ	692	105°C Long Life, Assurance	−25 to +105					●	450	82 to 330	±20	253
	LGX	692	105°C Long Life, Smaller-Sized	−25 to +105		●			●	200 to 500	56 to 2200	±20	254
	LGC	692	105°C Long Life Assurance, Ultra-Smaller-Sized	−40 to +105		●		●	●	500	68 to 680	±20	257
	LGW	692	105°C High Ripple Current	−40 (−25) to +105			●			200 to 450	82 to 2200	±20	258
	LHT	692	125°C High Reliability	−40 to +125			●			450	220 to 680	±20	260
	LAK	692	105°C Permissible Abnormal Voltage	−25 to +105				●		200・400・420	33 to 1200	±20	WEB
	LAQ	692	105°C Permissible Abnormal Voltage, Smaller-sized	−25 to +105		●		●		200・220・400	33 to 1500	±20	WEB
	LAS	692	105°C Permissible Abnormal Voltage, Smaller-sized	−25 to +105		●		●		400・420・450	56 to 390	±20	WEB
	LAR	692	105°C Permissible Overvoltage	−40 (−25) to +105		●		●		200 to 450	82 to 2200	±20	WEB
	LQS	692	105°C Permissible for Rapid Charge and Discharge Application	−25 to +105		●		●		350 to 450	82 to 820	±20	261
Screw Terminal Type	LNR	331	85°C Standard	−40 (−25) to +85	●		●			10 to 250	1000 to 680000	±20	263
	LNX	331	85°C Long Life Assurance	−25 to +85			●	●	●	350 to 550	1000 to 27000	±20	267
	LNK	331	85°C Smaller-Sized	−25 to +85		●				350 to 500	1000 to 18000	±20	WEB
	LNC	331	85°C Smaller-Sized High Ripple Current	−40 to +85		●	●	●		350 to 500	1000 to 22000	±20	270
	LQR	331	85°C Permissible for Rapid Charge and Discharge Application	−25 to +85		●	●	●		350 to 450	680 to 15000	±20	WEB
	LNY	331	85°C High Voltage, For General Inverter	−40 to +85	●					350 to 450	820 to 22000	±20	272
	LNT	331	105°C Standard	−40 (−25) to +105	●		●	●		10 to 500	220 to 680000	±20	274
	LNU	331	105°C High voltage, Smaller-Sized	−40 to +105		●	●			400 to 525	680 to 18000	±20	279
For audio equipment	LKX	692	Snap-in Terminal Type, For Audio Equipment of Switching Power Supplies	−40 (−25) to +105	●					200 to 450	56 to 2200	±20	WEB

Please refer to our website for the details of the series described as “WEB”.