

DIGITAL TRANSISTOR

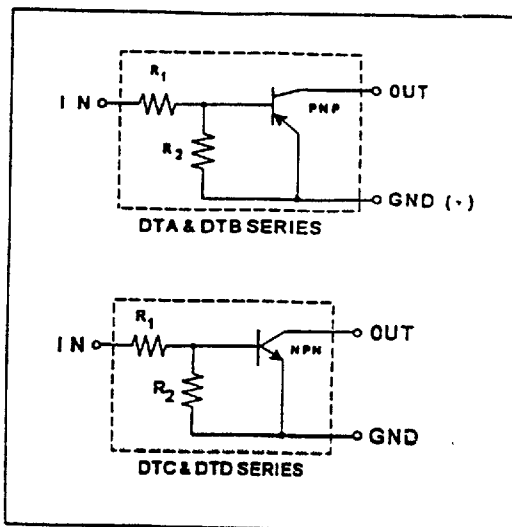
APPLICATION:

- Inverter, Driver & Interface Circuits

FEATURES:

- Replaces up to three parts (1 transistor & 2 resistors) with one part
- Available in a variety of surface mount or leaded (thru-hole) packages
- High packing density requires less board space
- Cost savings due to fewer components to purchase & stock & handle
- Improved reliability due to reduced number of components
- Available in PNP & NPN polarities
- Available in 100 mA & 500 mA devices
- Decreased parasitic effects
- Double diffused silicon, Epitaxial Planar Transistor with thin film internal bias resistors

EQUIVALENT CIRCUITS:



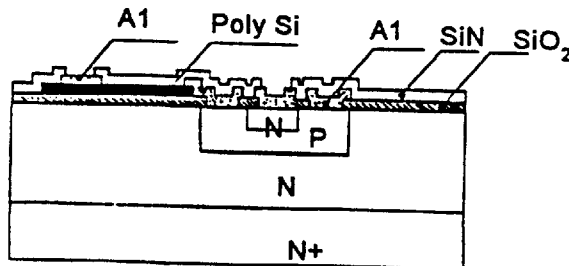
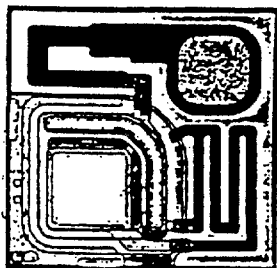
MAXIMUM RATINGS:

PARAMETER	PNP		NPN		UNITS
	DTA	DTB	DTC	DTD	
Power Supply Voltage (V_{cc})	50	50	50	50	Volts
Collector Current (I_c)	100	500	100	500	mA
Junction Temperature (T_j)	+125	+125	+125	+125	°C
Storage Temperature (T_{stg})	-55 to +125	-55 to +125	-55 to +125	-55 to +125	°C
Power Dissipation (P_d)	Rated by Package -- See Table Below				mW

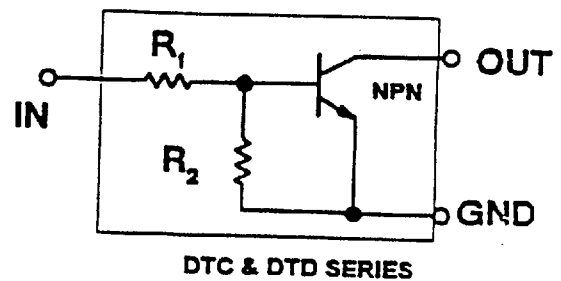
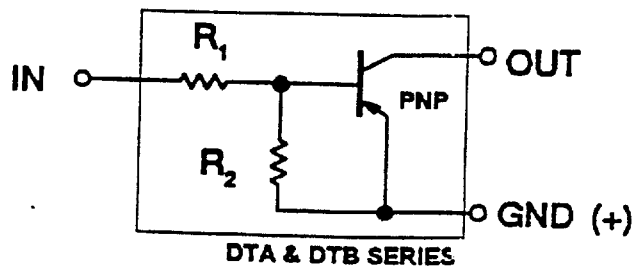
MAXIMUM POWER DISSIPATION BY PACKAGE: P_d (mW)

Test Condition	SURFACE MOUNT DEVICES				THRU-HOLE (LEADED) DEVICES				
	SST (SOT-23)	SMT (SC-59)	UMT	EM3	SPT (TO-92S)	ATR	ATV	FTR	FTL
Free Air/PCB	200	200	200	150	300	300	300	300	300
Ceramic Substrate	350	350	350	250	—	—	—	—	—

DIGITAL TRANSISTOR CONSTRUCTION:



• Digital Transistor Summary Table



Resistor Values		PNP $I_c(\text{Max}) = 100 \text{ mA}$ 2N3906	PNP $I_c(\text{Max}) = 500 \text{ mA}$ PN2907A/2N4403	NPN $I_c(\text{Max}) = 100 \text{ mA}$ 2N3904	NPN $I_c(\text{Max}) = 500 \text{ mA}$ PN2222A/2N4401
R_1	R_2				
1/K 1/K 1/K	1K NONE 10K	- DTA 113T DTA 113Z	DTB 113E - DTB 113Z	- - DTC 113Z	DTD 113E - DTD 113Z
10K 0 10K 10K 10K	10K 10K NONE 4.7K 47K	DTA 114E DTA 114G DTA 114T DTA 114W DTA 114Y/DTA 214Y	DTB 114E - DTB 114T - -	DTC 114E DTC 114G DTC 114T/DTC 314T* DTC 114W DTC 114Y	DTD 114E DTD 114G DTD 114T -
100K 0 100K 100K	100K 100K NONE 10K	DTA 115E DTA 115G DTA 115T DTA 115U	- - - -	DTC 115E DTC 115G DTC 115T DTC 115U	- - - -
.22K	4.7K	-	DTB 122J	-	DTD 122J
2.2K 2.2K 2.2K 2.2K	2.2K NONE 47K 10K	DTA 123E - DTA 123J DTA 123Y	DTB 123E DTB 123T - DTB 123Y	DTC 123E DTC 323T* DTC 123J DTC 123Y	DTD 123E DTD 123T - DTD 123Y
2.7K	1K	DTA 1D3R	-	DTC 1D3R	-
22K 0 22K 22K	22K 22K NONE 47K	DTA 124E DTA 124G DTA 124T DTA 124X	- - - -	DTC 124E DTC 124G DTC 124T DTC 124X	- - - -
220K	NONE	DTA 125T	-	DTC 125T	-
3.3K	10K	-	DTB 133H	-	DTD 133H
4.7K 4.7K 4.7K 4.7K 4.7K	4.7K NONE 10K 22K 47K	DTA 143E DTA 143T DTA 143X DTA 143Y DTA 143Z	DTB 143E DTB 143T - - -	DTC 143E DTC 143T/DTC 343T* DTC 143X DTC 143Y DTC 143Z	DTD 143E DTD 143T - - -
47K 0 47K 47K 47K	47K 47K NONE 10K 22K	DTA 144E DTA 144G DTA 144T DTA 144V DTA 144W	- - - - -	DTC 144E DTC 144G DTC 144T DTC 144V DTC 144W	- - - - -
6.8K 6.8K	6.8K NONE	- -	DTB 163T	DTC 363E* DTC 363T*	- DTD 163T

* $I_c = 600 \text{ mA}$

NOTE: See "How to Order" for complete part number

ROHM CORPORATION, Rohm Electronics Division, 3034 Owen Dr., Antioch, TN 37013 (615)641-2020 FAX (615)641-2022

DIGITAL TRANSISTOR: PNP

ELECTRICAL CHARACTERISTICS: 100 mA Series

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)				Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (mA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)	
DTA113Z	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA114E	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA114W	0.8	5	0.1	3	0.3	2	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA114Y	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA115E	0.5	5	0.1	3	0.3	1	0.1	0.3	5	0.25	0.15	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA115U	3.3	5	0.1	1.5	0.3	1	0.1	0.3	7	0.2	0.1	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA123E	0.5	5	0.1	3	0.3	20	0.1	0.3	10	0.5	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA123J	0.5	5	0.1	1.1	0.3	5	0.1	0.3	5	0.25	3.6	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA123Y	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA124E	0.5	5	0.1	3	0.2	5	0.1	0.3	10	0.5	0.36	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA124X	0.4	5	0.1	2.5	0.3	2	0.1	0.3	10	0.5	0.36	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA143E	0.5	5	0.1	3	0.3	20	0.1	0.3	10	0.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA143X	0.3	5	0.1	2.5	0.3	20	0.1	0.3	10	0.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA143Y	0.3	5	0.1	3	0.3	10	0.1	0.3	10	0.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA143Z	0.5	5	0.1	1.3	0.3	5	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA144E	0.5	5	0.1	3	0.3	2	0.1	0.3	10	0.5	0.18	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA144V	0.5	5	0.1	6	0.3	2	0.1	0.3	10	0.5	0.16	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA144W	0.8	5	0.1	4	0.3	2	0.1	0.3	10	0.5	0.16	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA214Y	0.3	5	0.1	1.4	0.3	1	0.1	0.3	50	2.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA1D3R	1.5	5	0.1	4	0.3	5	0.1	0.3	10	1	3.7	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)				Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)	
DTA143T	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5	
DTA114T	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	10	1	3	6	10	0	250	10	5	
DTA124T	0.8	5	0.1	3	0.3	2	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	5	0.5	3	6	10	0	250	10	5	
DTA144T	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	5	0.5	3	6	10	0	250	10	5	
DTA115T	0.5	5	0.1	3	0.3	1	0.1	0.3	5	0.25	0.15	5	10	30	0	0.3	1	0.1	3	6	10	0	250	10	5	
DTA125T	0.8	5	0.1	3	0.3	1	0.1	0.3	5	0.25	0.33	5	10	30	0	0.3	0.5	0.05	3	6	10	0	250	10	5	
DTA113T	0.5	5	0.1	3	0.3	20	0.1	0.3	10	0.5	3.8	5	10	30	0	0.3	5	0.2	3	6	10	0	250	10	5	

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)			Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)
DTA114G	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	10	0.5	3	6	10	0	250	10	5
DTA124G	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	10	0.5	3	6	10	0	250	10	5
DTA144G	0.8	5	0.1	3	0.3	2	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	10	0.5	3	6	10	0	250	10	5
DTA115G	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	10	0.25	3	6	10	0	250	10	5
DTB114G	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	50	2.5	3	6	10	0	200	10	5

ELECTRICAL CHARACTERISTICS: 500 mA Series

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)			Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)
DTB113E	0.5	5	0.1	3	0.3	20	0.1	0.3	50	2.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB113Z	0.3	5	0.1	3	0.3	20	0.1	0.3	50	2.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB114E	0.5	5	0.1	3	0.3	10	0.1	0.3	50	2.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB123E	0.5	5	0.1	3	0.3	20	0.1	0.3	50	2.5	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB143E	0.5	5	0.1	3	0.3	20	0.1	0.3	50	2.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB123Y	0.3	5	0.1	2	0.3	20	0.1	0.3	50	2.5	3.6	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB122J	0.3	5	0.1	2	0.3	30	0.1	0.3	50	2.5	4.5	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50
DTB133H	0.3	5	0.1	2	0.3	20	0.1	0.3	50	2.5	2.4	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50

PART NUMBER	Vin(off)			Vin(on)			Vo(on)			Ib		Ic(OFF)			Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ			
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)
DTB123T	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5
DTB143T	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5
DTB163T	0.8	5	0.1	3	0.3	2	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5
DTB114T	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5

DIGITAL TRANSISTOR: PNP

ELECTRICAL CHARACTERISTICS: 100 mA Series

PART NUMBER	TYP	RESISTOR VALUE		R2/R1			Ic Max (mA)	INPUT VOLT		hFE		Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT	
		R1 (K)	R2 (K)	Min	Typ	Max		Min	Max	Min	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)				Vce (V)
DTA113Z	PNP	1.0	10.0	8	10	12	100	-10	5	33	5	5	0.5	50	0.5	50	E11/111	A776	
DTA114E	PNP	10.0	10.0	0.8	1	1.2	100	-40	10	30	5	5	0.5	50	0.5	50	14	A768	
DTA114W	PNP	10.0	4.7	0.37	0.47	0.57	100	-30	10	24	5	10	0.5	50	0.5	50	74	A778	
DTA114Y	PNP	10.0	47.0	3.7	4.7	5.7	100	-40	8	68	5	5	0.5	50	0.5	50	54	A762	
DTA115E *	PNP	100.0	100.0	0.8	1	1.2	100	-40	10	82	5	5	0.5	50	0.5	50	19	B861	
DTA115U	PNP	100.0	10.0	0.08	0.1	0.12	100	-40	10	27	5	5	0.5	50	0.5	50	E79/179	B865	
DTA123E	PNP	2.2	2.2	0.8	1	1.2	100	-12	10	20	5	20	0.5	50	0.5	50	12	A733	
DTA123J	PNP	2.2	47.0	17	21	26	100	-12	5	80	5	10	0.5	50	0.5	50	E32/132	A774	
DTA123Y	PNP	2.2	10.0	3.8	4.5	5.5	100	-12	5	33	5	10	0.5	50	0.5	50	52	A777	
DTA124E	PNP	22.0	22.0	0.8	1	1.2	100	-40	10	56	5	5	0.5	50	0.5	50	15	A761	
DTA124X	PNP	22.0	47.0	1.7	2.1	2.6	100	-40	10	68	5	5	0.5	50	0.5	50	35	A770	
DTA143E	PNP	4.7	4.7	0.8	1	1.2	100	-30	10	20	5	10	0.5	50	0.5	50	13	A768	
DTA143X	PNP	4.7	10.0	1.7	2.1	2.6	100	-20	7	30	5	10	0.5	50	0.5	50	33	A769	
DTA143Y	PNP	4.7	22.0	3.7	4.7	5.7	100	-30	8	56	5	5	0.5	50	0.5	50	53	A785	
DTA143Z	PNP	4.7	47.0	8	10	12	100	-30	5	80	5	10	0.5	50	0.5	50	E13/113	A775	
DTA144E	PNP	47.0	47.0	0.8	1	1.2	100	-40	15	68	5	5	0.5	50	0.5	50	16	A782	
DTA144V	PNP	47.0	10.0	0.17	0.21	0.26	100	-40	10	33	5	5	0.5	50	0.5	50	E56/156	A774	
DTA144W	PNP	47.0	22.0	0.37	0.47	0.57	100	-40	10	56	5	5	0.5	50	0.5	50	76	A767	
DTA214Y	PNP	10	47	3.7	4.7	5.7	100	-40	6	68	5	5	0.5	50	0.5	50	N14	A762	
DTA1D3R	PNP	2.7	1.0	0.33	0.37	0.41	100	-15	15	20	5	30	0.5	50	0.5	50	K3B	A784	

PART NUMBER	TYP	RESISTOR VALUE		Vcbo	Vceo	Vebo	Ic	Min	hFE			Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT	
		R1 (K)	R2 (K)	Max (V)	Max (V)	Max (V)	Max (mA)		Typ	Max	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)				Veb (V)
DTA143T	PNP	4.7	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	93	A764	
DTA114T	PNP	10.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	94	A765	
DTA124T	PNP	22.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	95	A771	
DTA144T	PNP	47.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	96	A772	
DTA115T	PNP	100.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	99	B864	
DTA125T	PNP	200.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	9A	B863	
DTA113T	PNP	1.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	91	A786	

PART NUMBER	TYP	RESISTOR VALUE		Vcbo	Vceo	Vebo	Ic	Min	hFE			Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT	
		R1 (K)	R2 (K)	Max (V)	Max (V)	Max (V)	Max (mA)		Typ	Max	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)				Veb (V)
DTA114G	PNP	0	10.0	50	50	5	100	30	-	-	5	5	0.5	50	580	4	K14	A780	
DTA124G	PNP	0	22.0	50	50	5	100	56	-	-	5	5	0.5	50	260	4	K15	A781	
DTA144G	PNP	0	47.0	50	50	5	100	68	-	-	5	5	0.5	50	130	4	K16	A782	
DTA115G	PNP	0	100.0	50	50	5	100	82	-	-	5	5	0.5	50	58	4	K19	B862	
DTB114G	PNP	0	10.0	50	50	5	500	56	-	-	5	100	0.5	50	0.5	4	L14	B726	

ELECTRICAL CHARACTERISTICS: 500 mA Series

PART NUMBER	TYP	RESISTOR VALUE		R2/R1			Ic Max (mA)	INPUT VOLT		hFE			Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT
		R1 (K)	R2 (K)	Min	Typ	Max		Min	Max	Min	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)	Vce (V)			
DTB113E	PNP	1.0	1.0	0.8	1	1.2	500	-10	10	33	5	50	0.5	50	0.5	50	F11	B717	
DTB113Z	PNP	1.0	10.0	8	10	12	500	-10	5	56	5	50	0.5	50	0.5	50	G11	B718	
DTB114E	PNP	10.0	10.0	0.8	1	1.2	500	-40	10	56	5	50	0.5	50	0.5	50	F14	B714	
DTB123E	PNP	2.2	2.2	0.8	1	1.2	500	-12	10	39	5	50	0.5	50	0.5	50	F12	B712	
DTB143E	PNP	4.7	4.7	0.8	1	1.2	500	-30	10	47	5	50	0.5	50	0.5	50	F13	B713	
DTB123Y	PNP	2.2	10.0	3.8	4.5	5.5	500	-12	5	56	5	50	0.5	50	0.5	50	F52	B715	
DTB122J	PNP	0.22	4.7	17.1	21.3	25.6	500	-5	5	47	5	50	0.5	50	0.5	50	G3C	B725	
DTB133H	PNP	3.3	10.0	2.4	3	3.7	500	-20	8	56	5	50	0.5	50	0.5	50	G98	B719	

PART NUMBER	TYP	RESISTOR VALUE		Vcbo	Vceo	Vebo	Ic	hFE				Icbo	Icso			PART MARK	DIE TYPE	EQUIVALENT CIRCUIT
		R1 (K)	R2 (K)	Max (V)	Max (V)	Max (V)	Max (mA)	Min	Typ	Max	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)			
DTB123T	PNP	2.2	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	E92 B723	
DTB143T	PNP	4.7	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	F03 B720	
DTB163T	PNP	6.8	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	E97 B721	
DTB114T	PNP	10.0	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	E94 B722	

Base

R1

Collector

Emitter

DIGITAL TRANSISTOR: NPN

ELECTRICAL CHARACTERISTICS: 100 mA Series

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib	Ic(OFF)				Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (mA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Max (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)
DTC113Z	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC114E	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC114W	0.8	5	0.1	3	0.3	2	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC114Y	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC115E	0.5	5	0.1	3	0.3	1	0.1	0.3	5	0.25	0.15	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC115U	3.3	5	0.1	1.5	0.3	1	0.1	0.3	7	0.2	0.1	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC123E	0.5	5	0.1	3	0.3	20	0.1	0.3	10	0.5	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC123J	0.5	5	0.1	1.1	0.3	5	0.1	0.3	5	0.25	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC123Y	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC124E	0.5	5	0.1	3	0.2	5	0.1	0.3	10	0.5	0.36	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC124X	0.4	5	0.1	2.5	0.3	2	0.1	0.3	10	0.5	0.36	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC143E	0.5	5	0.1	3	0.3	20	0.1	0.3	10	0.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC143X	0.3	5	0.1	2.5	0.3	20	0.1	0.3	10	0.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC143Y	0.3	5	0.1	3	0.3	10	0.1	0.3	10	0.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC143Z	0.5	5	0.1	1.3	0.3	5	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC144E	0.5	5	0.1	3	0.3	2	0.1	0.3	10	0.5	0.18	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC144V	1.0	5	0.1	6	0.3	2	0.1	0.3	10	0.5	0.18	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC144W	0.8	5	0.1	4	0.3	2	0.1	0.3	10	0.5	0.16	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC214Y	0.3	5	0.1	1.4	0.3	1	0.1	0.3	50	2.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC1D3R	1.5	5	0.1	4	0.3	5	0.1	0.3	10	1	3.7	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)			Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)
DTC143T	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	250	10	5
DTC114T	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	10	1	3	6	10	0	250	10	5
DTC124T	0.8	5	0.1	3	0.3	2	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	5	0.5	3	6	10	0	250	10	5
DTC144T	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	5	0.5	3	6	10	0	250	10	5
DTC115T	0.5	5	0.1	3	0.3	1	0.1	0.3	5	0.25	0.15	5	10	30	0	0.3	1	0.1	3	6	10	0	250	10	5
DTC125T	0.8	5	0.1	3	0.3	1	0.1	0.3	5	0.25	0.33	5	10	30	0	0.3	0.5	0.05	3	6	10	0	250	10	5
DTC113T	0.5	5	0.1	3	0.3	20	0.1	0.3	10	0.5	3.8	5	10	30	0	0.3	5	0.2	3	6	10	0	250	10	5

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)				Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)	
DTC114G	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	10	0.5	3	6	10	0	250	10	5	
DTC124G	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	10	0.5	3	6	10	0	250	10	5	
DTC144G	0.8	5	0.1	3	0.3	2	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	10	0.5	3	6	10	0	250	10	5	
DTC115G	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	10	0.25	3	6	10	0	250	10	5	
DTD114G	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	50	2.5	3	6	10	0	200	10	5	

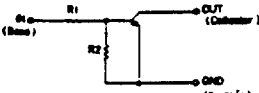
ELECTRICAL CHARACTERISTICS: 500 mA Series

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)				Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)	
DTD113E	0.5	5	0.1	3	0.3	20	0.1	0.3	50	2.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD113Z	0.3	5	0.1	3	0.3	20	0.1	0.3	50	2.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD114E	0.5	5	0.1	3	0.3	10	0.1	0.3	50	2.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD123E	0.5	5	0.1	3	0.3	20	0.1	0.3	50	2.5	3.8	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD143E	0.5	5	0.1	3	0.3	20	0.1	0.3	50	2.5	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD123Y	0.3	5	0.1	2	0.3	20	0.1	0.3	50	2.5	3.6	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD122J	0.3	5	0.1	2	0.3	30	0.1	0.3	50	2.5	4.5	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	
DTD133H	0.3	5	0.1	2	0.3	20	0.1	0.3	50	2.5	2.4	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	50	

PART NUMBER	Vin(off)			Vin(on)			Vo(on)				Ib		Ic(OFF)				Vce(SAT)			Cob @ F=1MHz				CUT-OFF FREQ		
	Max (V)	Vce (V)	Ic (mA)	Min (V)	Vce (V)	Ic (uA)	TYP (V)	Max (V)	Ic (mA)	Ib (mA)	Max (mA)	Vin (V)	Max (uA)	Vce (V)	Vin (V)	Max (V)	Ic (mA)	Ib (mA)	TYP (pF)	Max (pF)	Vcb (V)	Ie (mA)	fT (MHz)	Vce (V)	Ic (mA)	
DTD123T	0.3	5	0.1	3	0.3	20	0.1	0.3	10	0.5	7.2	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5	
DTD143T	0.5	5	0.1	3	0.3	10	0.1	0.3	10	0.5	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5	
DTD163T	0.8	5	0.1	3	0.3	2	0.1	0.3	5	0.25	1.8	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5	
DTD114T	0.3	5	0.1	1.4	0.3	1	0.1	0.3	5	0.25	0.88	5	10	30	0	0.3	5	0.25	3	6	10	0	200	10	5	

DIGITAL TRANSISTOR: NPN

ELECTRICAL CHARACTERISTICS: 100 mA Series

PART NUMBER	TYP	RESISTOR VALUE		R2/R1			Ic Max (mA)	INPUT VOLT		hFE		Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT	
		R1 (K)	R2 (K)	Min	Typ	Max		Min (V)	Max (V)	Min (V)	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)				Vce (V)
DTC113Z	NPN	1.0	10.0	8	10	12	100	-10	5	33	5	5	0.5	50	0.5	50	E12/121	C776	
DTC114E	NPN	10.0	10.0	0.8	1	1.2	100	-40	10	30	5	5	0.5	50	0.5	50	24	C766	
DTC114W	NPN	10.0	4.7	0.37	0.47	0.57	100	-30	10	24	5	10	0.5	50	0.5	50	84	C778	
DTC114Y	NPN	10.0	47.0	3.7	4.7	5.7	100	-40	8	68	5	5	0.5	50	0.5	50	64	C762	
DTC115E *	NPN	100.0	100.0	0.8	1	1.2	100	-40	10	82	5	5	0.5	50	0.5	50	29	D861	
DTC115U	NPN	100.0	10.0	0.08	0.1	0.12	100	-40	10	27	5	5	0.5	50	0.5	50	E89/189	D865	
DTC123E	NPN	2.2	2.2	0.8	1	1.2	100	-12	10	20	5	20	0.5	50	0.5	50	22	C733	
DTC123J	NPN	2.2	47.0	17	21	26	100	-12	5	80	5	10	0.5	50	0.5	50	E42/142	C774	
DTC123Y	NPN	2.2	10.0	3.6	4.5	5.5	100	-12	5	33	5	10	0.5	50	0.5	50	62	C777	
DTC124E	NPN	22.0	22.0	0.8	1	1.2	100	-40	10	56	5	5	0.5	50	0.5	50	25	C761	
DTC124X	NPN	22.0	47.0	1.7	2.1	2.6	100	-40	10	68	5	5	0.5	50	0.5	50	45	C770	
DTC143E	NPN	4.7	4.7	0.8	1	1.2	100	-30	10	20	5	10	0.5	50	0.5	50	23	C768	
DTC143X	NPN	4.7	10.0	1.7	2.1	2.6	100	-20	7	30	5	10	0.5	50	0.5	50	43	C769	
DTC143Y	NPN	4.7	22.0	3.7	4.7	5.7	100	-30	6	56	5	5	0.5	50	0.5	50	63	C785	
DTC143Z	NPN	4.7	47.0	8	10	12	100	-30	5	80	5	10	0.5	50	0.5	50	E23/123	C775	
DTC144E	NPN	47.0	47.0	0.8	1	1.2	100	-40	15	68	5	5	0.5	50	0.5	50	26	C782	
DTC144V	NPN	47.0	10.0	0.17	0.21	0.26	100	-	33	5	5	0.5	50	0.5	50	E66/166	C774		
DTC144W	NPN	47.0	22.0	0.37	0.47	0.57	100	-40	10	56	5	5	0.5	50	0.5	50	86	C767	
DTC214Y	NPN	10	47	3.7	4.7	5.7	100	-40	6	68	5	5	0.5	50	0.5	50	N24	C762	
DTC1D3R	NPN	2.7	1.0	0.33	0.37	0.41	100	-15	15	20	5	30	0.5	50	0.5	50	K4B	C784	

PART NUMBER	TYP	RESISTOR VALUE		Vcbo	Vceo	Vebo	Ic	Min	hFE Typ				Icbo	Icbo		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT
		R1 (K)	R2 (K)	Max (V)	Max (V)	Max (V)	Max (mA)			Max	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)			
DTC143T	NPN	4.7	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	3 C764	
DTC114T	NPN	10.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	4 C765	
DTC124T	NPN	22.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	5 C771	
DTC144T	NPN	47.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	6 C772	
DTC115T	NPN	100.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	9 D864	
DTC125T	NPN	200.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	0A D863	
DTC113T	NPN	1.0	NONE	50	50	5	100	100	250	600	5	1	0.5	50	0.5	4	1 C786	

Base

R1

Collector

Emitter

PART NUMBER	TYP	RESISTOR VALUE		Vcbo	Vceo	Vebo	Ic	Min	hFE			Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT
		R1 (K)	R2 (K)	Max (V)	Max (V)	Max (V)	Max (mA)		Typ	Max	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)			
DTC114G	NPN	0	10.0	50	50	5	100	30	-	-	5	5	0.5	50	580	4	K24 C780	
DTC124G	NPN	0	22.0	50	50	5	100	56	-	-	5	5	0.5	50	260	4	K25 C781	
DTC144G	NPN	0	47.0	50	50	5	100	68	-	-	5	5	0.5	50	130	4	K26 C782	
DTC115G	NPN	0	100.0	50	50	5	100	82	-	-	5	5	0.5	50	58	4	K29 D862	
DTD114G	NPN	0	10.0	50	50	5	500	56	-	-	5	100	0.5	50	0.5	4	L24 D726	

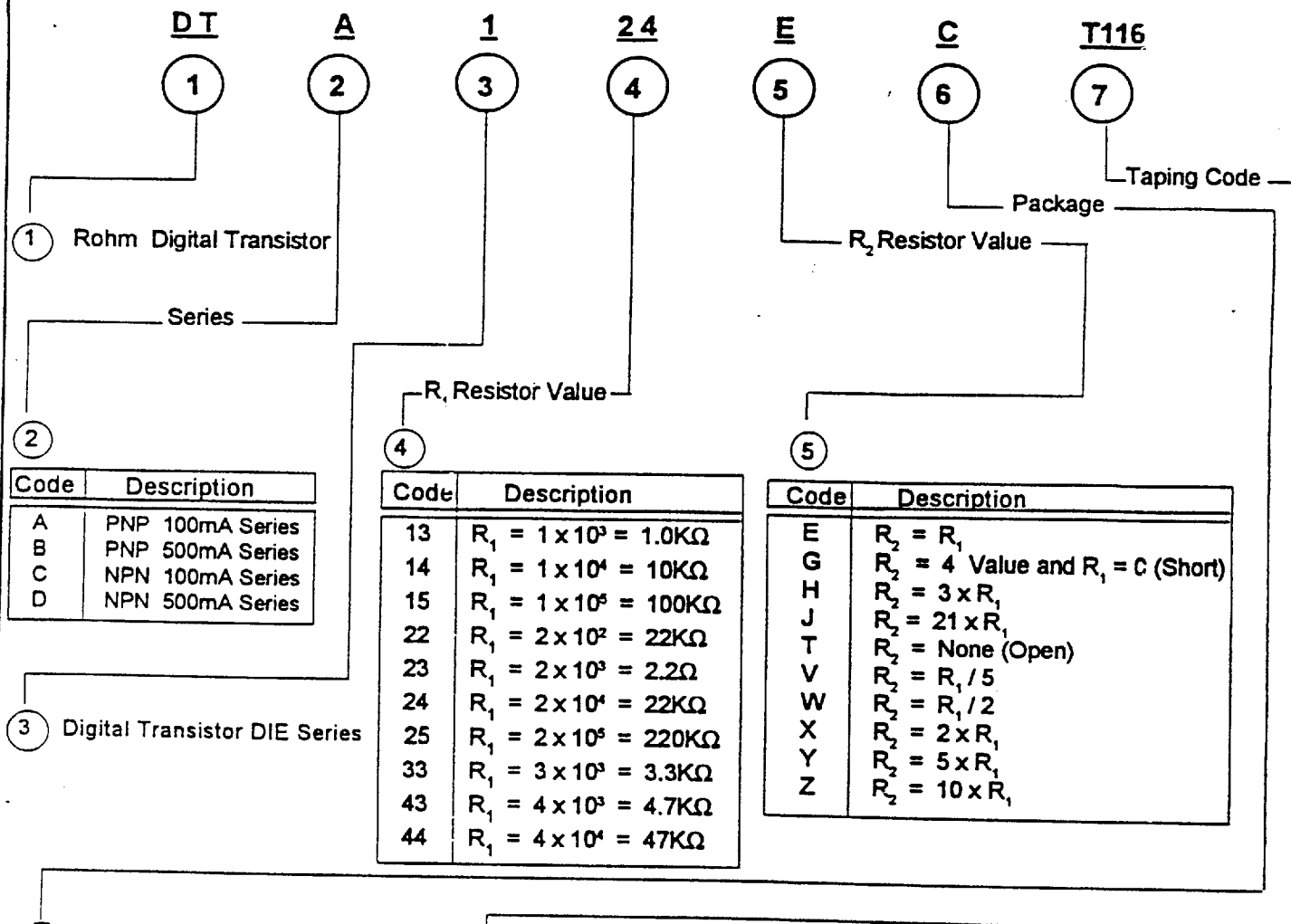
ELECTRICAL CHARACTERISTICS: 500 mA Series

PART NUMBER	TYP	RESISTOR VALUE			R2/R1		Ic Max (mA)	INPUT VOLT		hFE	-		Icbo		Icso		PART MARK	DIE TYPE	EQUIVALENT CIRCUIT
		R1 (K)	R2 (K)	Min	Typ	Max		Min	Max		Min	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)			
DTD113E	NPN	1.0	1.0	0.8	1	1.2	500	-10	10	33	5	50	0.5	50	0.5	50	F21	D717	
DTD113Z	NPN	1.0	10.0	8	10	12	500	-10	5	56	5	50	0.5	50	0.5	50	G21	D718	
DTD114E	NPN	10.0	10.0	0.8	1	1.2	500	-40	10	56	5	50	0.5	50	0.5	50	F24	D714	
DTD123E	NPN	2.2	2.2	0.8	1	1.2	500	-12	10	39	5	50	0.5	50	0.5	50	F22	D712	
DTD143E	NPN	4.7	4.7	0.8	1	1.2	500	-30	10	47	5	50	0.5	50	0.5	50	F23	D713	
DTD123Y	NPN	2.2	10.0	3.6	4.5	5.5	500	-12	5	56	5	50	0.5	50	0.5	50	F62	D715	
DTD122J	NPN	0.22	4.7	17.1	21.3	25.6	500	-5	5	47	5	50	0.5	50	0.5	50	G4C	D725	
DTD133H	NPN	3.3	10.0	2.4	3	3.7	500	-20	6	56	5	50	0.5	50	0.5	50	G06	D719	

PART NUMBER	TYP	RESISTOR VALUE		Vcbo	Vceo	Vebo	Ic	Min	hFE			Icbo	Icso	Icso	Icso	PART MARK	DIE TYPE	EQUIVALENT CIRCUIT	
		R1 (K)	R2 (K)	Max (V)	Max (V)	Max (V)	Max (mA)		Typ	Max	Vce (V)	Ic (mA)	Max (uA)	Vcb (V)	Max (uA)				Veb (V)
DTD123T	NPN	2.2	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	E02	D723	
DTD143T	NPN	4.7	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	F13	D720	
DTD163T	NPN	6.8	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	E07	D721	
DTD114T	NPN	10.0	NONE	50	50	5	500	100	250	600	5	50	0.5	50	0.5	4	E04	D722	

• Digital Transistors

HOW TO ORDER:



	PKG	DESCRIPTION	TAPING CODE	DESCRIPTION	PKG. QTY.	PACKAGE SIZE
SURFACE MOUNT	K	SMT (SC-59/JAPANESE SOT-23)	* T146 * T147 * T246	1 PIN SIDE ON FEED HOLE SIDE 2 PIN SIDE ON FEED HOLE SIDE 1 PIN SIDE ON FEED HOLE SIDE	3,000 3,000 10,000	178mm/7" Reel 178mm/7" Reel 330mm/13" Reel
	C	SST (EUROPEAN SOT-23)	* T116 * T117 * T216	1 PIN SIDE ON FEED HOLE SIDE 2 PIN SIDE ON FEED HOLE SIDE 1 PIN SIDE ON FEED HOLE SIDE	3,000 3,000 10,000	178mm/7" Reel 178mm/7" Reel 330 mm/13" Reel
	U	UMT (DTA & DTC ONLY)	* T106 * T107	1 PIN SIDE ON FEED HOLE SIDE 2 PIN SIDE ON FEED HOLE SIDE	3,000 3,000	178 mm/7" Reel 178 mm/7" Reel
	E	EM3 (DTA & DTC ONLY)	* TL * TR	1 PIN SIDE ON FEED HOLE SIDE 2 PIN SIDE ON FEED HOLE SIDE	3,000 3,000	178 mm/7" Reel 178 mm/7" Reel
LEADED DEVICES	S	SPT (Short TO-92)	* TP * NONE	AMMO BOX RADIAL BULK	5,000 2,000	W-335/H-135/D-40(mm) Polyethylene Bag
	V	ATV	* TV2 * TV3	AMMO BOX RADIAL AMMO BOX RADIAL	2,500 2,500	W-334/H-280/D-41(mm) W-334/H-280/D-41(mm)
	L	FTL	* TL2 * TL3	AMMO BOX RADIAL AMMO BOX RADIAL	2,500 2,500	W-334/H-280/D-41(mm) W-334/H-280/D-41(mm)
	F	FTR <i>Discontinued</i>	* NONE * C1	BULK TUBE	2,000 8,000	Polyethylene Bag L-565/W-4.2/H-11.5(mm)
	A	ATR <i>Discontinued</i>	* NONE * C2	BULK TUBE	2,000 8,000	Polyethylene Bag L-565/W-4.2/H-12.6(mm)

Note: SOT-23, SC-59 and SPT packages are standard products.

* Standard Taping Codes

ROHM CORPORATION, Rohm Electronics Division, 3034 Owen Dr., Antioch, TN 37013 (615)641-2020 FAX (615)641-2022

Figure 1 shows the dimensions of the emitter-base-collector assembly. The dimensions are given in inches with tolerances. The assembly consists of three main parts: (1) Emitter, (2) Base, and (3) Collector. The dimensions are as follows:

- Emitter width: 1.9 ± 0.2
- Emitter thickness: $0.15^{+0.1}_{-0.08}$
- Base width: 3.95 ± 0.05
- Base thickness: $0.3 - 0.6$
- Collector width: 2.8 ± 0.2
- Collector thickness: $0.4^{+0.1}_{-0.05}$
- Lead dimensions: 0.8 ± 0.1 , $0.3 - 0.6$, $0 - 0.1$

(Each lead has same dimensions)

Technical drawing of a mechanical part, likely a bracket or support, showing dimensions and labels. The drawing includes a side view and a cross-sectional view labeled 'C'.

Dimensions:

- Top horizontal dimension: 4.0 ± 0.1
- Left vertical dimension: 2.0 ± 0.05
- Right vertical dimension: 1.15 ± 0.1
- Bottom horizontal dimension: 8.0 ± 0.2
- Bottom horizontal dimension (from left edge): 5.3 ± 0.2
- Bottom horizontal dimension (from left edge): 3.5 ± 0.05
- Bottom horizontal dimension (from left edge): 0.5
- Bottom horizontal dimension (from left edge): 0.3 ± 0.1

Labels:

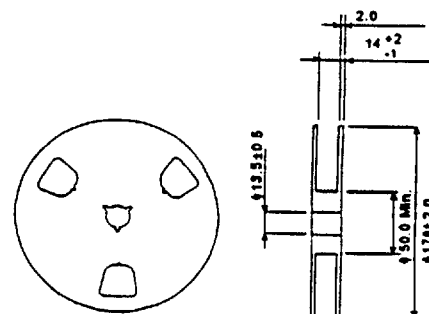
- IPn**: Located near the top left and bottom left of the main body.
- A**: Located near the bottom center of the main body.
- C**: Located near the bottom right of the cross-sectional view.

Package	Code
SMT	T147
SST	T117
UMT	T107
EM3	TR

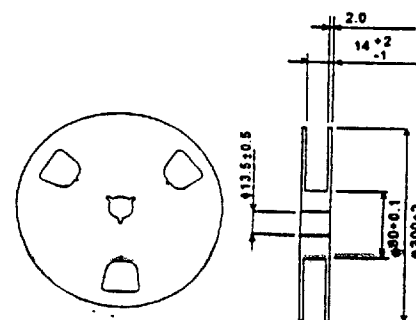
Package	Code
SMT	T146/T246
SST	T116/T216
UMT	T106/T206
EMB	TL

Package	Size		
	A	B	C
SMT	3.1±0.2	3.2±0.2	1.35±0.1
SST	3.1±0.2	2.8±0.2	1.25±0.2
UMT	2.2±0.1	2.4±0.1	1.15±0.1
EMB	1.8±0.1	1.8±0.2	0.9±0.2

Tape and Reel Dimensions

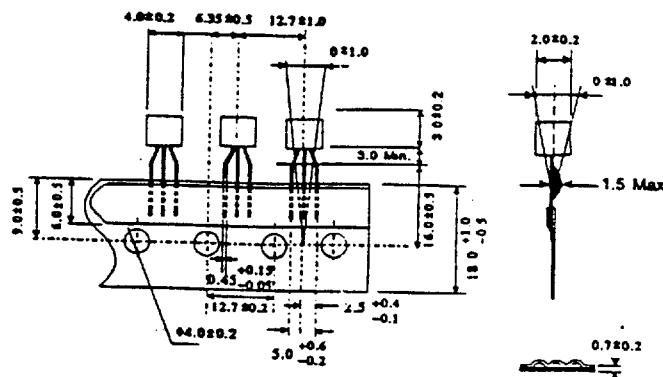


178 mm/7" Reel



330 mm/13" Reel

Technical drawing of a vertical component. The drawing shows a long, thin rectangular body with a wider rectangular head at the top. The head has a width dimension of 2.0 ± 0.2 . The main body has a total height dimension of 0.5 and a base width dimension of 0.45 . A small dimension of 0.15 is indicated at the bottom right, likely representing a fillet or a specific feature height.



Technical drawing of a mechanical part with dimensions and tolerances:

- Top width: 6.8 ± 0.2
- Top thickness: 0.9
- Dimension from top face to start of hole: 4.4 ± 0.2
- Dimension from start of hole to bottom: 14.5 ± 0.5
- Dimension from top face to bottom: 1.05
- Dimension from top face to center of hole: 1.0
- Dimension from center of hole to bottom: 0.5 ± 0.1
- Dimension from top face to center of hole: 0.65 Max
- Bottom width: $2.54^{+0.4}_{-0.1}$
- Bottom thickness: 0.45
- Bottom width (right side): 2.5 ± 0.2

Technical drawing showing the dimensions of a three-hole punch and its punch assembly.

Punch Dimensions:

- Top width: 6.8 ± 0.2
- Central hole diameter: 1.0 ± 0.1
- Total height: 14.5 ± 0.5
- Distance from top to first hole: 0.9
- Distance between holes: 1.0 ± 0.1
- Distance from bottom to first hole: 0.5 ± 0.1
- Distance from bottom to second hole: 0.5 ± 0.1
- Distance from bottom to third hole: 0.5 ± 0.1
- Distance from bottom to fourth hole: 0.5 ± 0.1
- Distance from bottom to fifth hole: 0.5 ± 0.1
- Distance from bottom to sixth hole: 0.5 ± 0.1
- Distance from bottom to seventh hole: 0.5 ± 0.1
- Distance from bottom to eighth hole: 0.5 ± 0.1
- Distance from bottom to ninth hole: 0.5 ± 0.1
- Distance from bottom to tenth hole: 0.5 ± 0.1
- Distance from bottom to eleventh hole: 0.5 ± 0.1
- Distance from bottom to twelfth hole: 0.5 ± 0.1
- Distance from bottom to thirteenth hole: 0.5 ± 0.1
- Distance from bottom to fourteenth hole: 0.5 ± 0.1
- Distance from bottom to fifteenth hole: 0.5 ± 0.1
- Distance from bottom to sixteenth hole: 0.5 ± 0.1
- Distance from bottom to seventeenth hole: 0.5 ± 0.1
- Distance from bottom to eighteenth hole: 0.5 ± 0.1
- Distance from bottom to nineteenth hole: 0.5 ± 0.1
- Distance from bottom to twentieth hole: 0.5 ± 0.1
- Distance from bottom to twenty-first hole: 0.5 ± 0.1
- Distance from bottom to twenty-second hole: 0.5 ± 0.1
- Distance from bottom to twenty-third hole: 0.5 ± 0.1
- Distance from bottom to twenty-fourth hole: 0.5 ± 0.1
- Distance from bottom to twenty-fifth hole: 0.5 ± 0.1
- Distance from bottom to twenty-sixth hole: 0.5 ± 0.1
- Distance from bottom to twenty-seventh hole: 0.5 ± 0.1
- Distance from bottom to twenty-eighth hole: 0.5 ± 0.1
- Distance from bottom to twenty-ninth hole: 0.5 ± 0.1
- Distance from bottom to thirtieth hole: 0.5 ± 0.1
- Distance from bottom to thirty-first hole: 0.5 ± 0.1
- Distance from bottom to thirty-second hole: 0.5 ± 0.1
- Distance from bottom to thirty-third hole: 0.5 ± 0.1
- Distance from bottom to thirty-fourth hole: 0.5 ± 0.1
- Distance from bottom to thirty-fifth hole: 0.5 ± 0.1
- Distance from bottom to thirty-sixth hole: 0.5 ± 0.1
- Distance from bottom to thirty-seventh hole: 0.5 ± 0.1
- Distance from bottom to thirty-eighth hole: 0.5 ± 0.1
- Distance from bottom to thirty-ninth hole: 0.5 ± 0.1
- Distance from bottom to fortieth hole: 0.5 ± 0.1
- Distance from bottom to forty-first hole: 0.5 ± 0.1
- Distance from bottom to forty-second hole: 0.5 ± 0.1
- Distance from bottom to forty-third hole: 0.5 ± 0.1
- Distance from bottom to forty-fourth hole: 0.5 ± 0.1
- Distance from bottom to forty-fifth hole: 0.5 ± 0.1
- Distance from bottom to forty-sixth hole: 0.5 ± 0.1
- Distance from bottom to forty-seventh hole: 0.5 ± 0.1
- Distance from bottom to forty-eighth hole: 0.5 ± 0.1
- Distance from bottom to forty-ninth hole: 0.5 ± 0.1
- Distance from bottom to fiftieth hole: 0.5 ± 0.1
- Distance from bottom to fifty-first hole: 0.5 ± 0.1
- Distance from bottom to fifty-second hole: 0.5 ± 0.1
- Distance from bottom to fifty-third hole: 0.5 ± 0.1
- Distance from bottom to fifty-fourth hole: 0.5 ± 0.1
- Distance from bottom to fifty-fifth hole: 0.5 ± 0.1
- Distance from bottom to fifty-sixth hole: 0.5 ± 0.1
- Distance from bottom to fifty-seventh hole: 0.5 ± 0.1
- Distance from bottom to fifty-eighth hole: 0.5 ± 0.1
- Distance from bottom to fifty-ninth hole: 0.5 ± 0.1
- Distance from bottom to sixtieth hole: 0.5 ± 0.1
- Distance from bottom to sixty-first hole: 0.5 ± 0.1
- Distance from bottom to sixty-second hole: 0.5 ± 0.1
- Distance from bottom to sixty-third hole: 0.5 ± 0.1
- Distance from bottom to sixty-fourth hole: 0.5 ± 0.1
- Distance from bottom to sixty-fifth hole: 0.5 ± 0.1
- Distance from bottom to sixty-sixth hole: 0.5 ± 0.1
- Distance from bottom to sixty-seventh hole: 0.5 ± 0.1
- Distance from bottom to sixty-eighth hole: 0.5 ± 0.1
- Distance from bottom to sixty-ninth hole: 0.5 ± 0.1
- Distance from bottom to seventieth hole: 0.5 ± 0.1
- Distance from bottom to seventy-first hole: 0.5 ± 0.1
- Distance from bottom to seventy-second hole: 0.5 ± 0.1
- Distance from bottom to seventy-third hole: 0.5 ± 0.1
- Distance from bottom to seventy-fourth hole: 0.5 ± 0.1
- Distance from bottom to seventy-fifth hole: 0.5 ± 0.1
- Distance from bottom to seventy-sixth hole: 0.5 ± 0.1
- Distance from bottom to seventy-seventh hole: 0.5 ± 0.1
- Distance from bottom to seventy-eighth hole: 0.5 ± 0.1
- Distance from bottom to seventy-ninth hole: 0.5 ± 0.1
- Distance from bottom to eightieth hole: 0.5 ± 0.1
- Distance from bottom to eighty-first hole: 0.5 ± 0.1
- Distance from bottom to eighty-second hole: 0.5 ± 0.1
- Distance from bottom to eighty-third hole: 0.5 ± 0.1
- Distance from bottom to eighty-fourth hole: 0.5 ± 0.1
- Distance from bottom to eighty-fifth hole: 0.5 ± 0.1
- Distance from bottom to eighty-sixth hole: 0.5 ± 0.1
- Distance from bottom to eighty-seventh hole: 0.5 ± 0.1
- Distance from bottom to eighty-eighth hole: 0.5 ± 0.1
- Distance from bottom to eighty-ninth hole: 0.5 ± 0.1
- Distance from bottom to ninetieth hole: 0.5 ± 0.1
- Distance from bottom to ninety-first hole: 0.5 ± 0.1
- Distance from bottom to ninety-second hole: 0.5 ± 0.1
- Distance from bottom to ninety-third hole: 0.5 ± 0.1
- Distance from bottom to ninety-fourth hole: 0.5 ± 0.1
- Distance from bottom to ninety-fifth hole: 0.5 ± 0.1
- Distance from bottom to ninety-sixth hole: 0.5 ± 0.1
- Distance from bottom to ninety-seventh hole: 0.5 ± 0.1
- Distance from bottom to ninety-eighth hole: 0.5 ± 0.1
- Distance from bottom to ninety-ninth hole: 0.5 ± 0.1
- Distance from bottom to one hundred hole: 0.5 ± 0.1

Punch Assembly Dimensions:

- Top width: 2.5 ± 0.2
- Total height: 1.05
- Distance from top to bottom: 0.45 ± 0.1

Technical drawing of a three-pronged fork with dimensions in millimeters. The drawing shows a top view and a side view. The top view shows a central prong and two side prongs. Dimensions include a total width of 6.8 ± 0.2 mm, a central prong width of 2.54 mm, and a side prong width of 2.54 mm. The side view shows a total height of 14.5 ± 0.5 mm, a central prong height of 1.0 mm, and a side prong height of 0.5 ± 0.1 mm. A maximum depth of 0.65 mm is indicated for the side prongs. A detail view of a hole is shown with a diameter of 2.4 ± 0.2 mm and a depth of 0.45 ± 0.1 mm.

Technical drawing of a three-hole punch showing dimensions for three different punch types: (1) a standard punch, (2) a punch with a central hole, and (3) a punch with a central hole and a side hole. Dimensions include hole diameter (6.8 ± 0.2), punch diameter (2.4 ± 0.2), hole spacing (1.3 Max.), punch length (14.5 ± 0.5), and hole diameter (0.3 ± 0.1).

[illegible]

Technical drawing of a mechanical part with dimensions and tolerances. The drawing includes a top view and a side view. Dimensions are given in millimeters (mm) with tolerances.

Top View Dimensions:

- Overall width: 6.8 ± 0.2
- Overall height: 3.8 ± 0.2
- Distance from top edge to center of hole (1): 0.65 ± 0.1
- Distance from top edge to center of hole (2): 0.65 ± 0.1
- Distance from top edge to center of hole (3): 0.65 ± 0.1
- Distance from center of hole (1) to center of hole (2): 2.54
- Distance from center of hole (2) to center of hole (3): 2.54
- Distance from center of hole (1) to center of hole (3): 5.08
- Distance from center of hole (1) to center of hole (2): 0.65 ± 0.1
- Distance from center of hole (2) to center of hole (3): 0.65 ± 0.1
- Distance from center of hole (1) to center of hole (3): 0.65 ± 0.1

Side View Dimensions:

- Overall width: 2.5 ± 0.2
- Overall height: 1.05
- Distance from top edge to center of hole: 0.45 ± 0.1
- Distance from center of hole to bottom edge: 0.6

Technical drawings of three types of fasteners:

- (1) Bolt with a hexagonal head. Dimensions: Head width 8.8 ± 0.2 , Head height 0.3 , Shank diameter 0.6 , Shank length 3.8 ± 0.1 , Total length 1.1 , Head-to-shank transition radius 0.55 ± 0.1 , Shank-to-head transition radius 2.54 .
- (2) Bolt with a hexagonal head and a threaded shank. Dimensions: Head width 8.8 ± 0.2 , Head height 0.3 , Shank diameter 0.6 , Shank length 3.8 ± 0.1 , Total length 1.1 , Head-to-shank transition radius 0.55 ± 0.1 , Shank-to-head transition radius 2.54 .
- (3) Bolt with a hexagonal head and a threaded shank. Dimensions: Head width 2.4 ± 0.2 , Head height 0.3 , Shank diameter 0.45 ± 0.1 , Shank length 3.8 ± 0.1 , Total length 1.1 , Head-to-shank transition radius 0.55 ± 0.1 , Shank-to-head transition radius 2.54 .

PKG.	TAPING CODE	DESCRIPTION	PKG. QTY.
SPT(TO-92S)	TP	AMMO BOX RADIAL (Standard)	5,000
	NONE	BULK	2,000
ATV	TV2	AMMO BOX RADIAL (Standard)	2,500
	TV3	AMMO BOX RADIAL	2,500
FTL	TL2	AMMO BOX RADIAL (Standard)	2,500
	TL3	AMMO BOX RADIAL	2,500
PTR	NONE	BULK (Standard)	2,000
	01	TUBE	8,000
ATR	NONE	BULK (Standard)	2,000
	01	TUBE	8,000