

DT20T Standard Series TRIACs

DT20T Standard Series TRIACs SILICON BIDIRECTIONAL THYRISTORS

General description

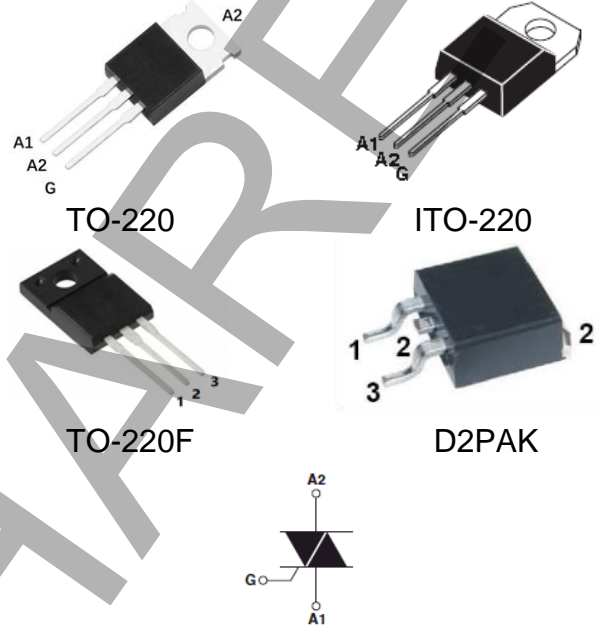
These products TRIACs are insulated packages for third quadrant, DT20T Series TRIACs are high temperature & commutation performance without snubber circuit. It can be controlled by phase angle trigger or on/off trigger.

FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering Triac
- Over 800V V_{DRM}/V_{RRM}
- 125°C operation temperature.
- Without snubber circuit.
- “Green” molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead free in RoHS II 2015/863/EU compliant
- Moisture sensitivity meets industry standard IPC/JEDEC J-STD-020

APPLICATIONS

- General purpose AC switch control
- Control loads in Motor, Fan, and Pump.
- Heater, Wash Machine
- Power Tool
- Inrush current limiting circuits



PIN ASSIGNMENT

Pin	Assignment
1	Main Terminal 1 (A1)
2	Main Terminal 2 (A2)
3	Gate

DT20T Standard Series TRIACs

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$, unless otherwise specified.)

Absolute Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Peak repetitive off-state voltage ($T_j = -40$ to 125°C , Full sine wave, 50 to 60 Hz; Gate open) (Note 1)	V_{DRM} V_{RRM}	800	V
On-stage RMS current (Full sine wave, $T_c = 110^\circ\text{C}$)	$I_{T(RMS)}$	20	A
Peak non-repetitive surge current (one full cycle 60 Hz, $T_j = 25^\circ\text{C}$)	I_{TSM}	160	A
Circuit fusing consideration ($t = 8.3\text{ms}$)	I^2T	106	A^2S
Operating junction temperature range	T_j	-40 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-40 to +150	$^\circ\text{C}$

Note :

- (1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

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CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)



Thermal Characteristics

PARAMETER	SYMBOL	VALUE		UNIT
Thermal resistance from junction to case	R _{th(j-c)}	Max	10	°C/W
Junction to ambient (DC)	R _{th(j-a)}	Typ	50	
Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds)	T _L	Max	260	°C

Static Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Threshold Voltage (T _j = 150°C)	V _{to}	--	--	0.95	V	
Dynamic resistors (T _j = 150°C)	R _d	--	--	17	mΩ	
Peak repetitive forward or reverse blocking current (V _{AK} = rated V _{DRM} and V _{RRM} , gate open)	T _j = 25°C	I _{DRM}	--	--	5	uA
	T _j = 125°C	I _{RRM}	--	--	0.5	mA

ON Characteristics

PARAMETER	SYMBOL	DT20T35	DT20T50		UNIT
Peak forward on-state voltage (I _{TM} = 20 A @ T _j = 25°C)	V _{TM}	1.7	--	Max	V
V _D = V _{DRM} , R _L = 100Ω, T _j = 150°C	V _{GD}	0.4	--	Min	V
Gate trigger current (V _{AK} = 12V, R _L = 100Ω)	I _{GT1}	35	50	Max	mA
	I _{GT2}	35	50		
	I _{GT3}	35	50		
Gate trigger voltage (V _{AK} = 12V, R _L = 100Ω)	V _{GT1}	1	1	Max	V
	V _{GT2}				
	V _{GT3}				
Holding current (V _{AK} = 12V, R _L = 100Ω)	I _{H1}	35	50	Max	mA
	I _{H3}				
Latching current (V _{AK} = 12V, R _L = 100Ω)	I _{L1}	50	50	Max	mA
	I _{L2}	80	80		
	I _{L3}	50	50		

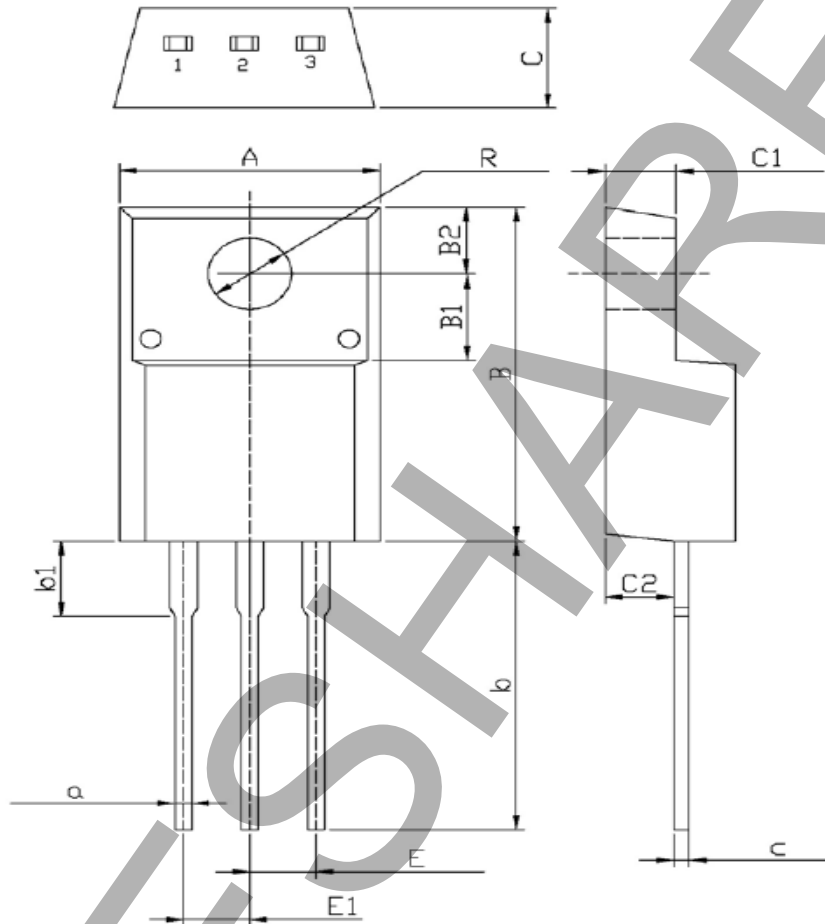
Dynamic Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Critical rate of rise of off-state voltage (V _{AK} = 67% rated V _{DRM} , T _j = 125°C, gate open)	dv/dt	--	--	2000	V/us
Critical rate of rise of on-state current, (V _{DRM} = maximum V _{DRM} , T _j = 125°C)	di/dt(s)	--	--	70	A/us

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TO-220F Plastic Package

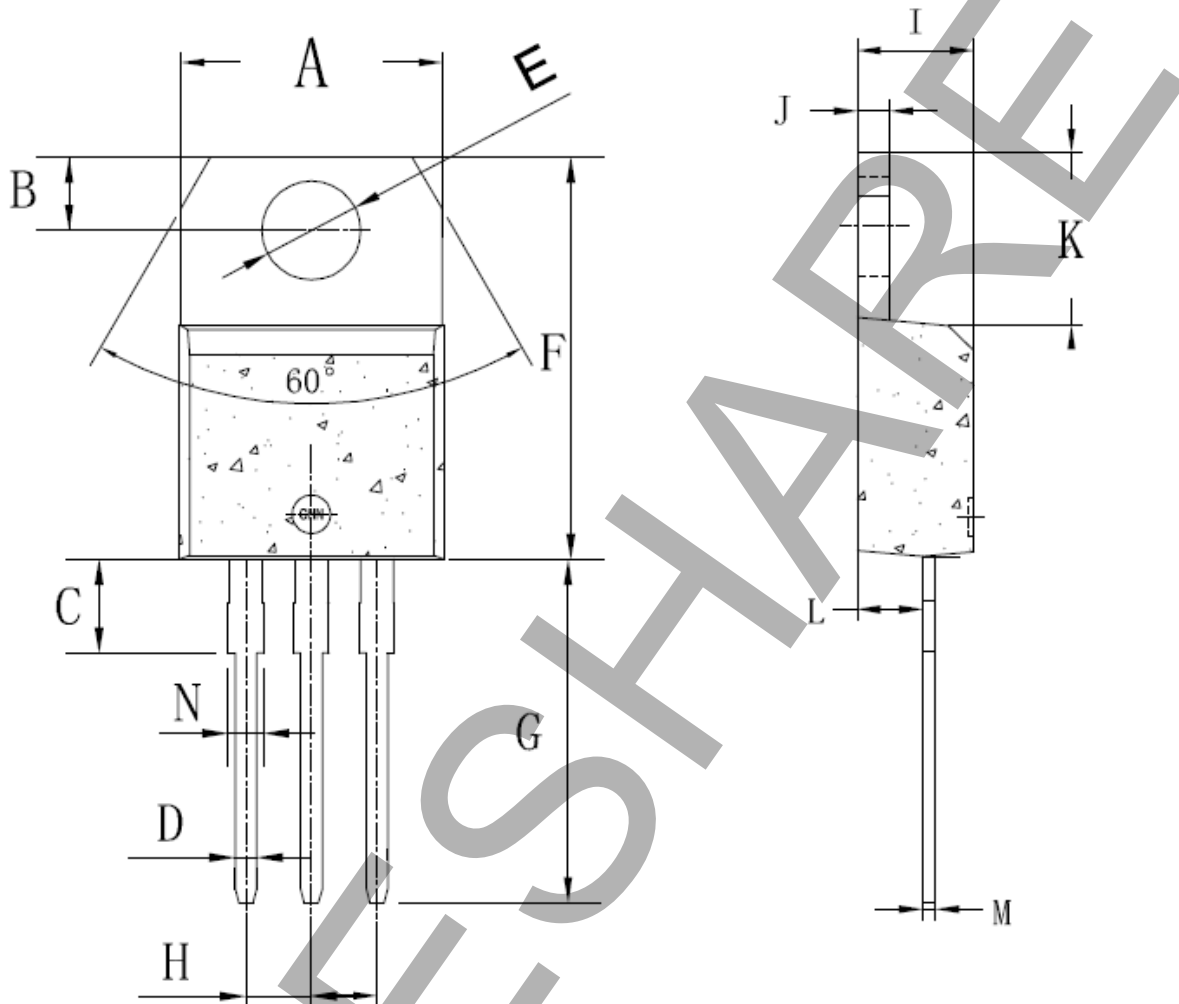


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.7	10.3	E	2.29	2.79	b	12.5	13.5
B	14.7	15.3	E1	2.29	2.79	b1	2.9	3.9
C	4.3	4.7	B1	3.8	4.0	a	0.55	0.75
C1	2.5	2.9	B2	2.9	3.1	c	0.5	0.7
C2	2.5	2.7	R	3.0	3.4			

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ITO-220 Plastic Package

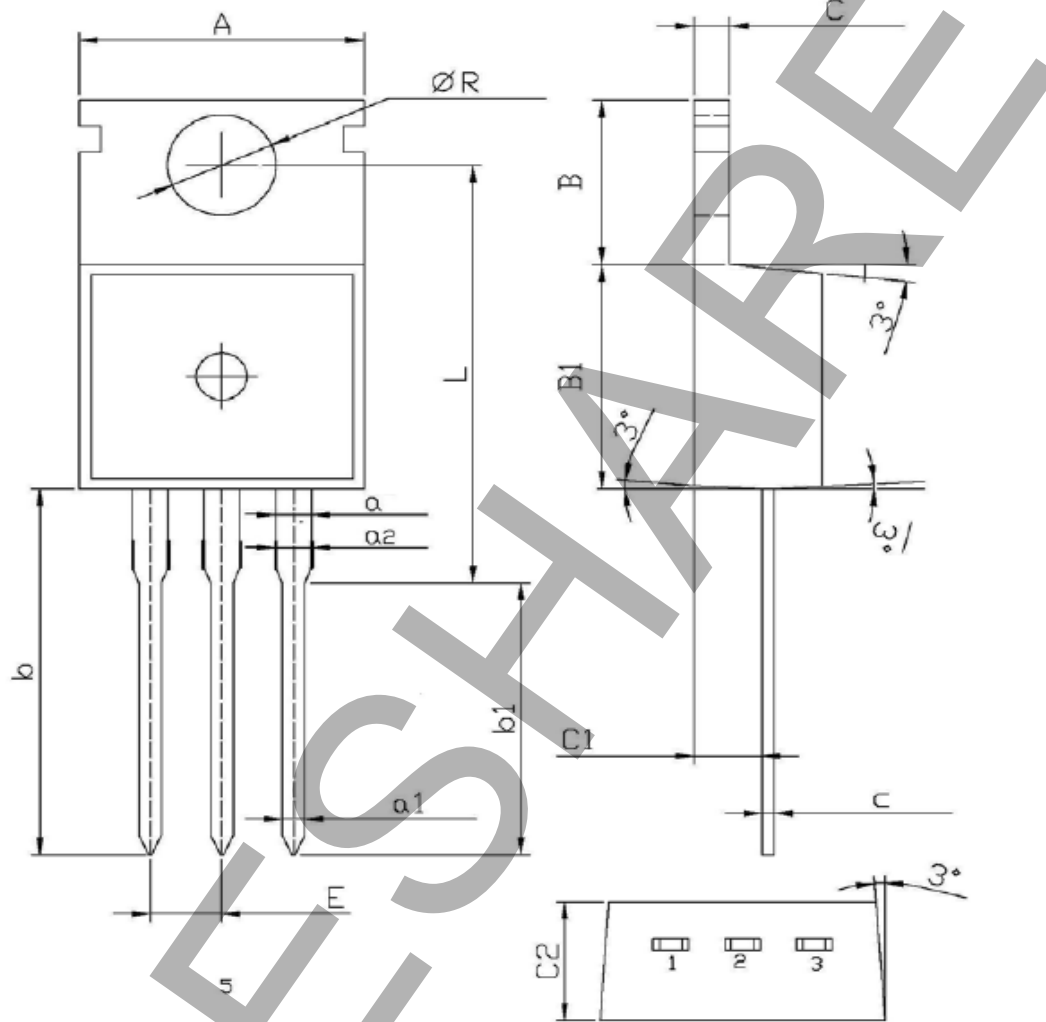


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.8	10.4	E	3.75	3.95	I	4.38	4.61
B	2.65	3.1	F	14.8	16.1	J	1.15	1.36
C	2.8	4.2	G	13.05	13.6	K	5.85	6.82
D	0.7	0.92	H	2.4	2.7	L	2.35	2.75
M	0.35	0.65	N	1.18	1.42			

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TO-220 Plastic Package

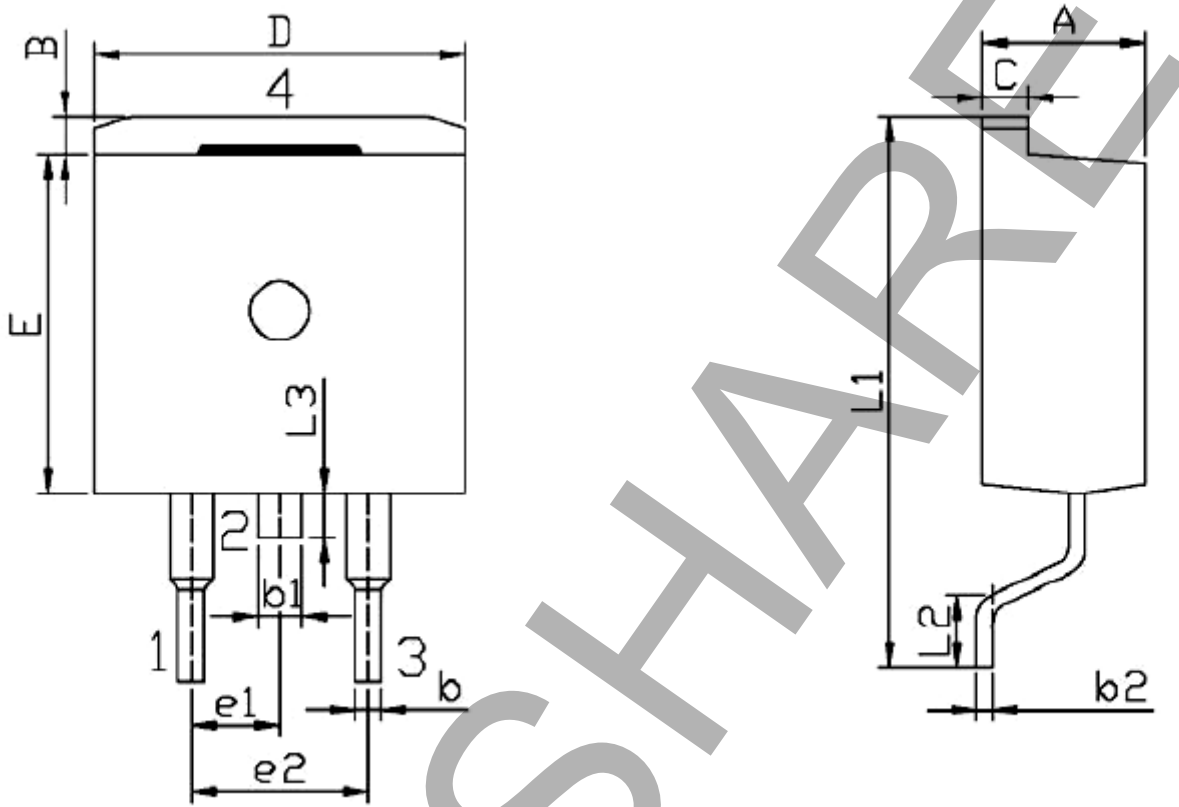


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.7	10.4	a	1.22	1.32	a2	1.18	1.45
B	6.13	6.82	a1	0.7	0.92	C2	4.3	4.71
C	1.2	1.42	b1	9.6	10.6	E	2.34	2.74
B1	9.0	9.4	c	0.38	0.65	R	3.55	3.78
b	12.6	13.6	C1	2.2	2.75	L	15.7	16.14

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D2PAK Plastic Package



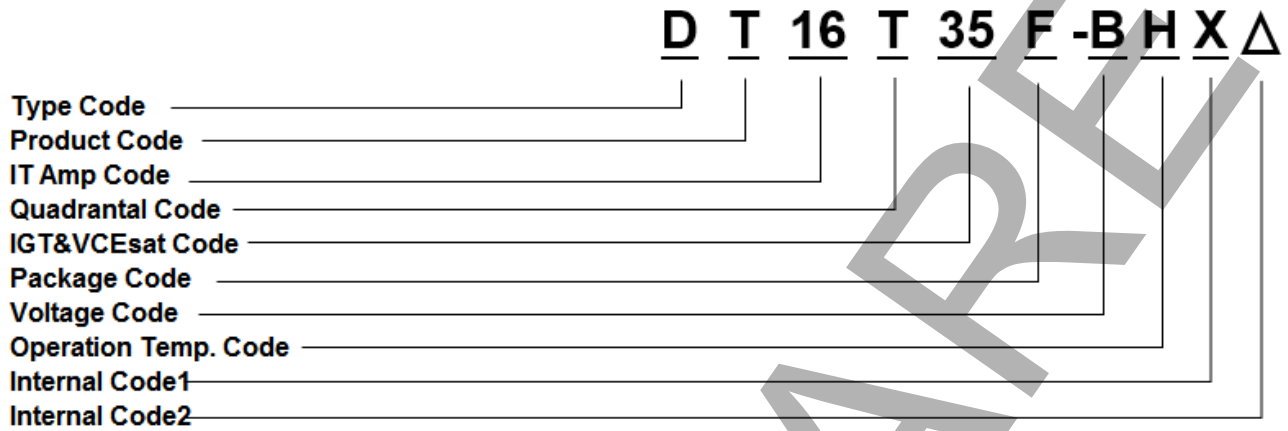
Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

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Ordering information scheme



- Type Code: Doeshare Standar products
- Product Code: T for Triac series
- IT Amp Code: 16 for 16A, 1 for 1A
- Quadrantal Code: T for 3Q, F for 4Q
- IGT&VCEsat Code: 35 means Igt 35mA, 5 means Igt 5mA
- Package Code: A=>TO-92, C=>TO-126, D=> DPAK, E=>D2PAK, F=> TO-220F, G=>SOT-223
M=>ITO-3P, P=>TO-3P, T=> TO-220, Y=>TO251
- Voltage Code: A=> 600V, B=> 800V, C=> 1000V
- Operation Temp Code: None=>125°C, H=>150°C

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