

# DT25T Standard Series TRIACs

## DT25T Standard Series TRIAC SILICON BIDIRECTIONAL THYRISTORS

### General description

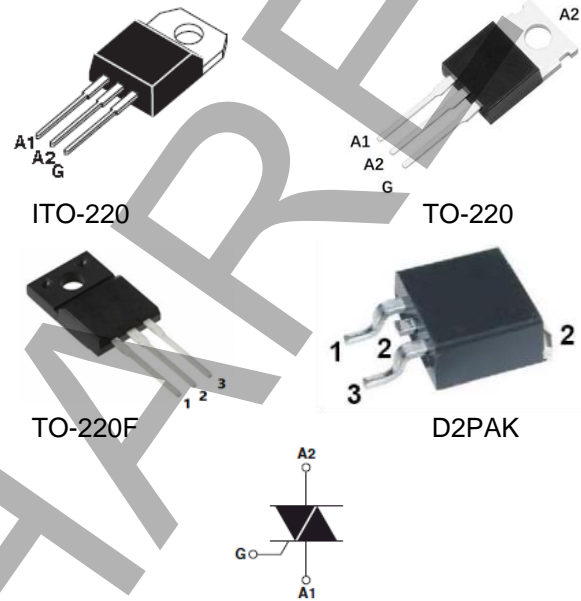
These products TRIAC are packages for third quadrant in 25A, DT25T are high commutation performance without snubber circuit. It can be controlled by phase angle trigger or on/off trigger.

### FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering TRIAC, Over 800V  $V_{DRM}/V_{RRM}$
- 150°C  $T_j$  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.
- Solenoid drivers
- LED Dimming
- Inrush current limiting circuits



### PIN ASSIGNMENT

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

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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 $125^\circ\text{C}$ , Full sine wave, 50 to 60 Hz; Gate open) (Note 1)	$V_{DRM}$ $V_{RRM}$	800	V
On-stage RMS current (Full sine wave, $T_c = 100^\circ\text{C}$ )	$I_{T(RMS)}$	25	A
Peak non-repetitive surge current ( one full cycle 60 Hz, $T_j = 25^\circ\text{C}$ )	$I_{TSM}$	190	A
Circuit fusing consideration ( $t = 8.3\text{ms}$ )	$I^2T$	149.5	$\text{A}^2\text{S}$
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.

Version 05, Oct-2020

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CHARACTERISTIC & CURVES ( $T_j = 25^\circ\text{C}$ , unless otherwise specified.)



## Thermal Characteristics

PARAMETER	SYMBOL	VALUE		UNIT
Thermal resistance from junction to case (1)	$R_{th(j-c)}$	Max	10	$^\circ\text{C/W}$
Junction to ambient (DC) (1)	$R_{th(j-a)}$	Typ	50	
Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds)	$T_L$	Max	260	$^\circ\text{C}$

Note 1: Without heatsink

## Static Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Threshold Voltage ( $T_j = 150^\circ\text{C}$ )	$V_{to}$	--	--	0.95	V
Dynamic resistors ( $T_j = 150^\circ\text{C}$ )	$R_d$	--	--	15	$\text{m}\Omega$
Peak repetitive forward or reverse blocking current ( $V_{AK} = \text{rated } V_{DRM}$ and $V_{RRM}$ , gate open)	$T_j = 25^\circ\text{C}$ $I_{DRM}$	--	--	5	$\mu\text{A}$
	$T_j = 125^\circ\text{C}$ $I_{RRM}$	--	--	1	mA

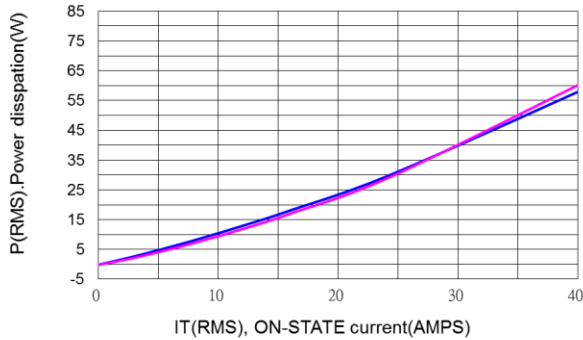
## ON Characteristics

PARAMETER	SYMBOL	DT25T35	DT25T50		UNIT
Peak forward on-state voltage ( $I_{TM} = 25\text{ A @ } T_j = 25^\circ\text{C}$ )	$V_{TM}$	1.5	1.5	Max	V
$V_D = V_{DRM}$ , $R_L = 100\Omega$ , $T_j = 125^\circ\text{C}$	$V_{GD}$	0.25	0.25	Min	V
Gate trigger current ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$I_{GT1}$	35	50	Max	mA
	$I_{GT2}$	35	50		
	$I_{GT3}$	35	50		
Gate trigger voltage ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$V_{GT1}$	1	1	Max	V
	$V_{GT2}$				
	$V_{GT3}$				
Holding current ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$I_{H1}$ $I_{H3}$	50	50	Max	mA
Latching current ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$I_{L1}$	50	80	Max	mA
	$I_{L2}$	80	80		
	$I_{L3}$	50	80		
Critical rate of rise of on-state current, $T_j = 125^\circ\text{C}$	$di/dt(s)$	50	50	Max	A/ $\mu\text{s}$
$V_D = 67\% V_{DRM}$ , gate open, $T_j = 125^\circ\text{C}$	$dV/dt$	2000	2000	Max	V/ $\mu\text{s}$
Without snubber, $T_j = 125^\circ\text{C}$	$di/dt(c)$	10	10	Max	A/ms
$T_j = 125^\circ\text{C}$ , 20V/dt	$di/dt(c)$	35	35	Max	A/ms

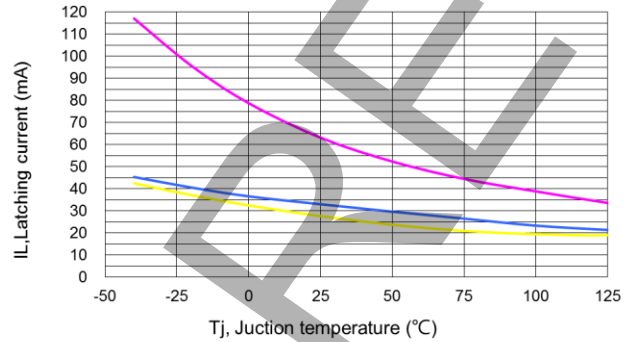
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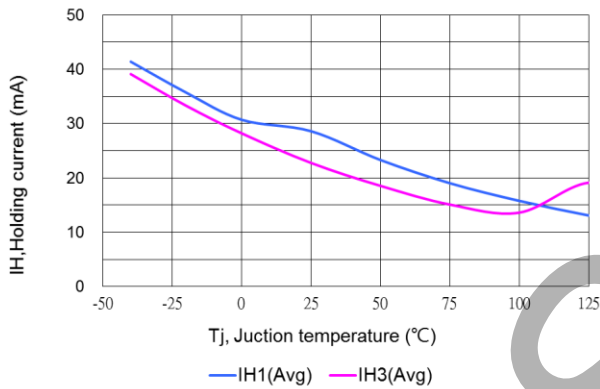
Power dissipation VS ON-STATE current



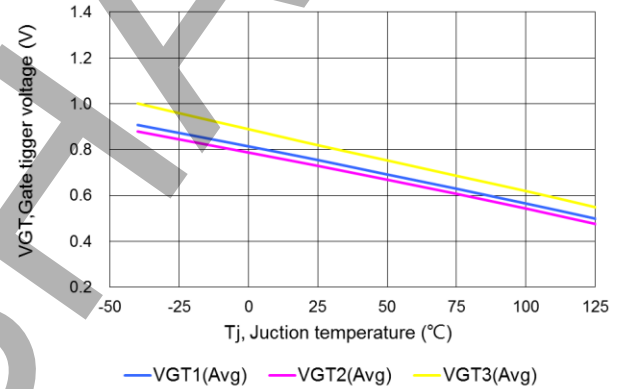
Typical latch current V.S. junction temperature



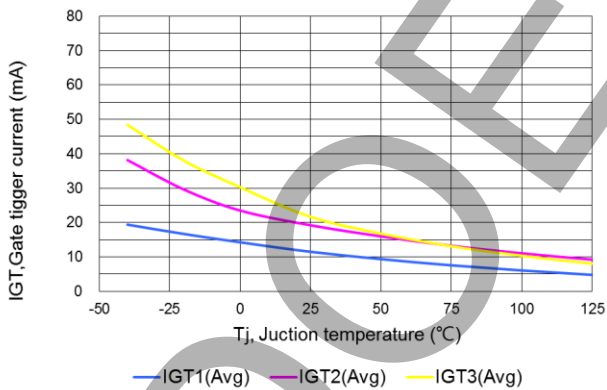
Typical holding current V.S. junction temperature



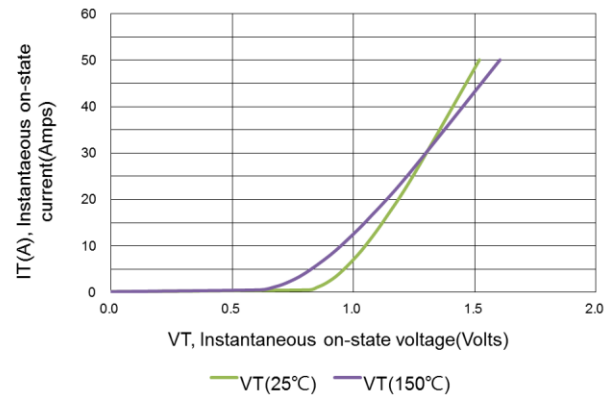
Typical gate trigger voltage V.S. junction temperature



Typical gate trigger current V.S. junction temperature



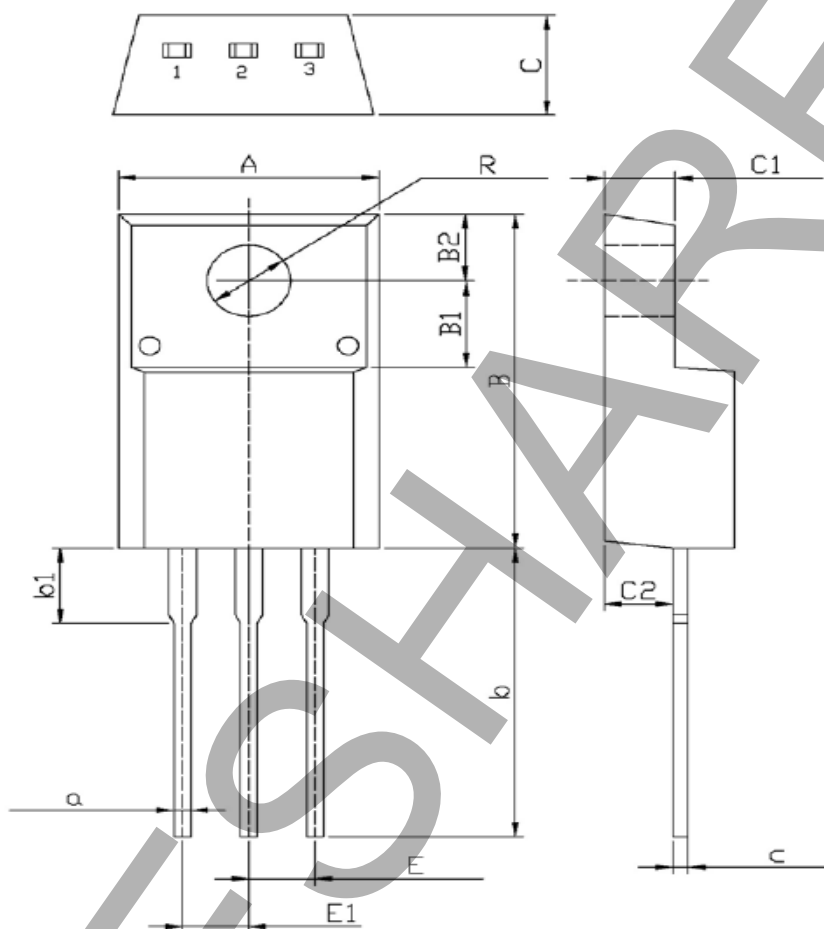
VTM -  $I_T$



# DT25T Standard Series TRIACs

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

## TO-220F Plastic Package

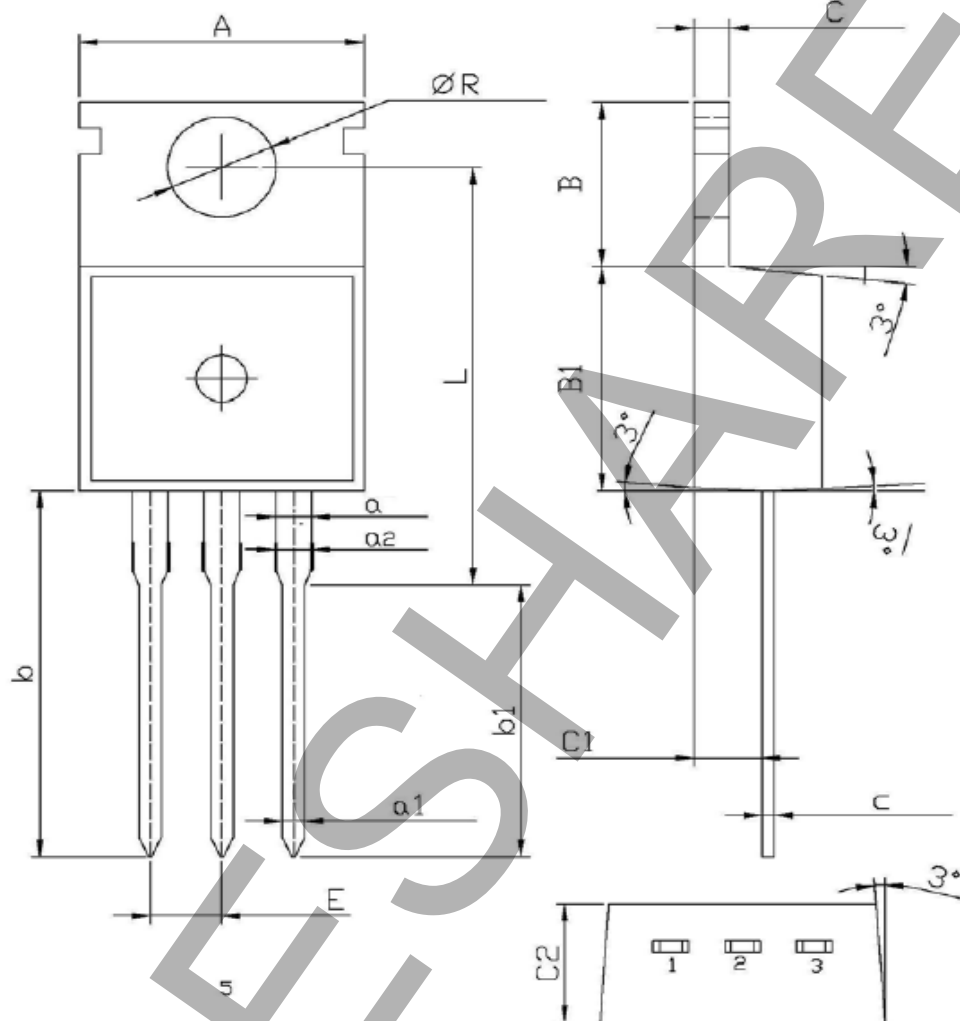


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.7	10.3	E	2.29	2.79	b	12.5	13.5
B	14.7	15.3	E1	2.29	2.79	b1	2.9	3.9
C	4.3	4.7	B1	3.8	4.0	a	0.55	0.75
C1	2.5	2.9	B2	2.9	3.1	c	0.5	0.7
C2	2.5	2.7	R	3.0	3.4			

# DT25T Standard Series TRIACs

CHARACTERISTIC & CURVES (T<sub>j</sub> = 25°C, unless otherwise specified.)

## TO-220 Plastic Package

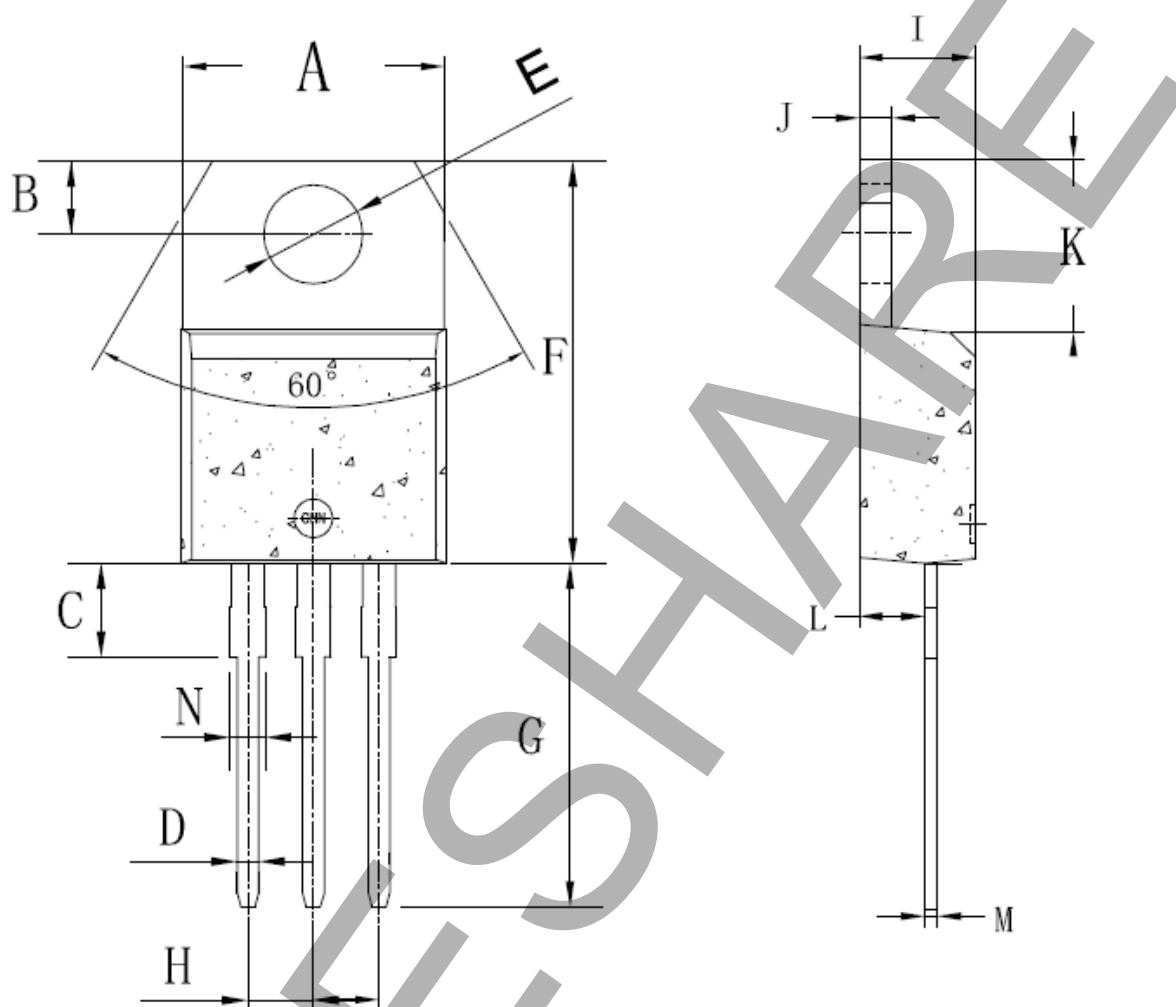


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.7	10.4	a	1.22	1.32	a2	1.18	1.45
B	6.13	6.82	a1	0.7	0.92	C2	4.3	4.71
C	1.2	1.42	b1	9.6	10.6	E	2.34	2.74
B1	9.0	9.4	c	0.38	0.65	R	3.55	3.78
b	12.6	13.6	C1	2.2	2.75	L	15.7	16.14

# DT25T Standard Series TRIACs

CHARACTERISTIC & CURVES ( $T_j = 25^{\circ}\text{C}$ , unless otherwise specified.)

## ITO-220 Plastic Package

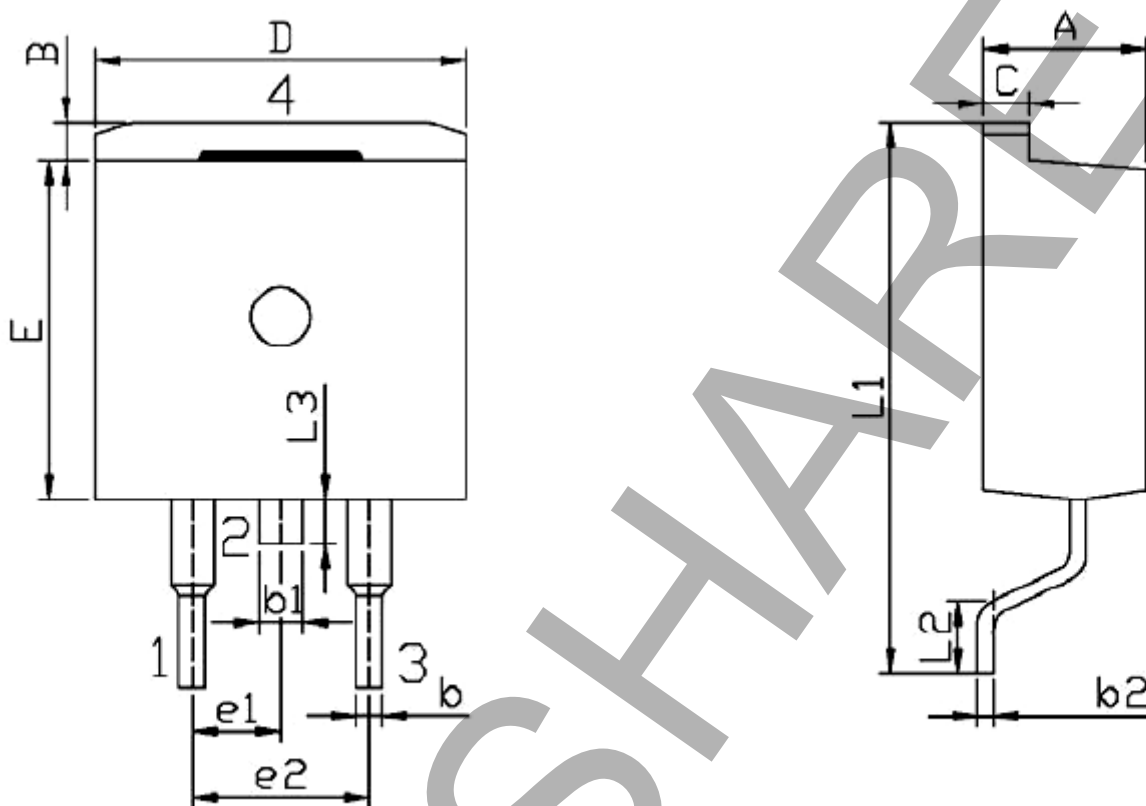


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.8	10.4	E	3.75	3.95	I	4.38	4.61
B	2.65	3.1	F	14.8	16.1	J	1.15	1.36
C	2.8	4.2	G	13.05	13.6	K	5.85	6.82
D	0.7	0.92	H	2.4	2.7	L	2.35	2.75
M	0.35	0.65	N	1.18	1.42			

## DT25T Standard Series TRIACs

CHARACTERISTIC & CURVES ( $T_j = 25^{\circ}\text{C}$ , unless otherwise specified.)

### D2PAK Plastic Package



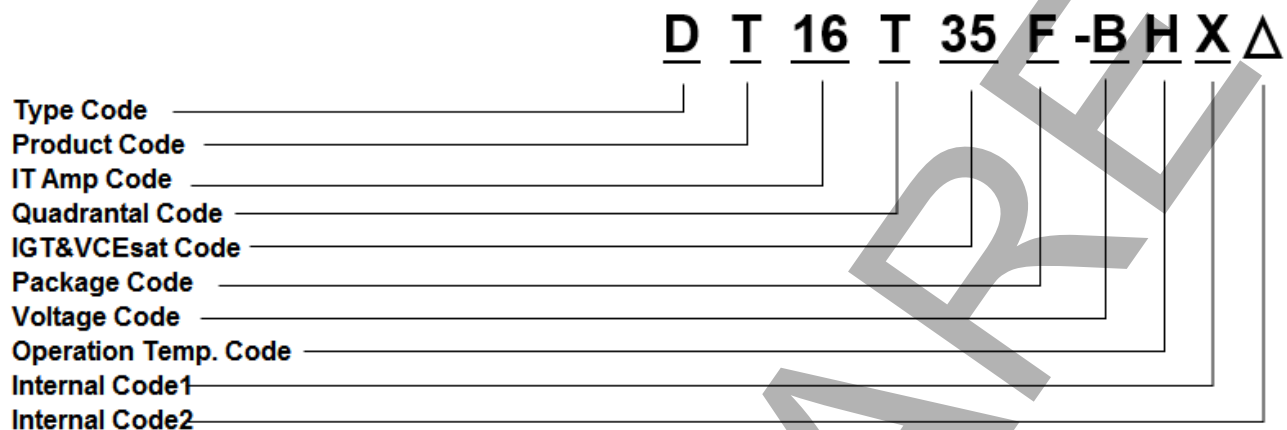
Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

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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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