

# DT8T High Temperature Series TRIACs

## DT8T High Temperature TRIACs SILICON BIDIRECTIONAL THYRISTORS

### General description

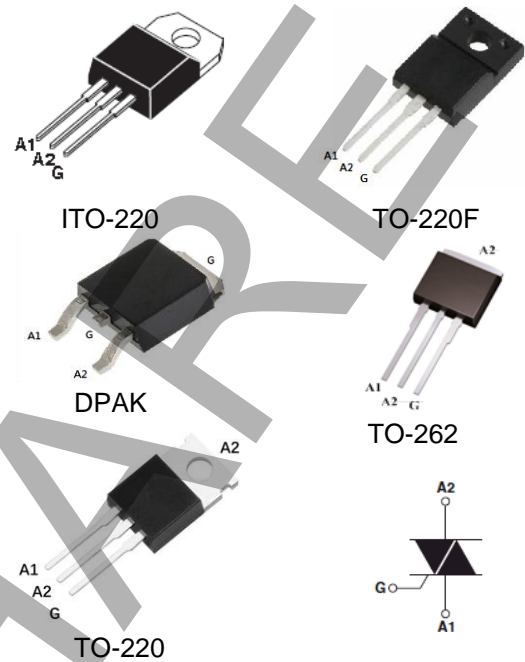
This products TRIAC are packages for third quadrant high commutation performance without snubber circuit. It can be controlled by phase angle trigger or on/off trigger.

### FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering.
- Over 800V  $V_{DRM}/V_{RRM}$
- 150 Degree 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.
- Solenoid drivers
- LED Dimming
- Logic control
- Inrush current limiting circuits



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

## DT8T High Temperature 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 $150^\circ\text{C}$ , Full sine wave, 50 to 60 Hz; Gate open) (Note 1)	$V_{DRM}$ $V_{RRM}$	800	V
On-stage RMS current (Full sine wave, $T_c = 100^\circ\text{C}$ )	$I_{T(RMS)}$	8	A
Peak non-repetitive surge current ( one full cycle 60 Hz, $T_j = 25^\circ\text{C}$ )	$I_{TSM}$	72	A
Circuit fusing consideration ( $t = 8.3\text{ms}$ )	$I^2T$	20	$\text{A}^2\text{S}$
Operating junction temperature range	$T_j$	-40 to +150	$^\circ\text{C}$
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<sub>j</sub> = 25°C, unless otherwise specified.)



### Thermal Characteristics

PARAMETER	SYMBOL	VALUE		UNIT
Thermal resistance from junction to case, without heatsink, (1)	Rth(j-c)	Max	11	°C/W
Junction to Lead, without heatsink, (1)	Rth(j-L)	Typ	9	
Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds)	T <sub>L</sub>	Max	260	°C

Note1: without heat sink, unidirectional, continuous & full cycle.

### Static Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Threshold Voltage (T <sub>j</sub> = 150°C)	V <sub>to</sub>	--	--	0.9	V
Dynamic resistors (T <sub>j</sub> = 150°C)	R <sub>d</sub>	--	--	50	mΩ
Peak repetitive forward or reverse blocking current (V <sub>AK</sub> = V <sub>DRM</sub> and V <sub>RRM</sub> , gate open)	T <sub>j</sub> = 25°C	I <sub>DRM</sub>	--	5	uA
	T <sub>j</sub> = 150°C	I <sub>RRM</sub>	--	2	mA

### ON Characteristics

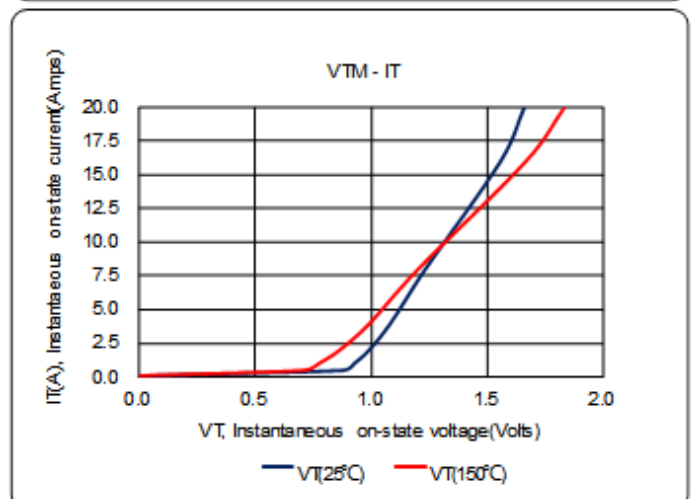
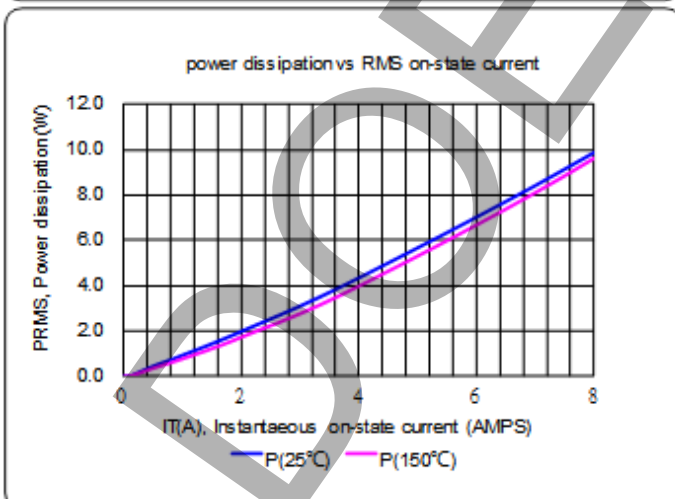
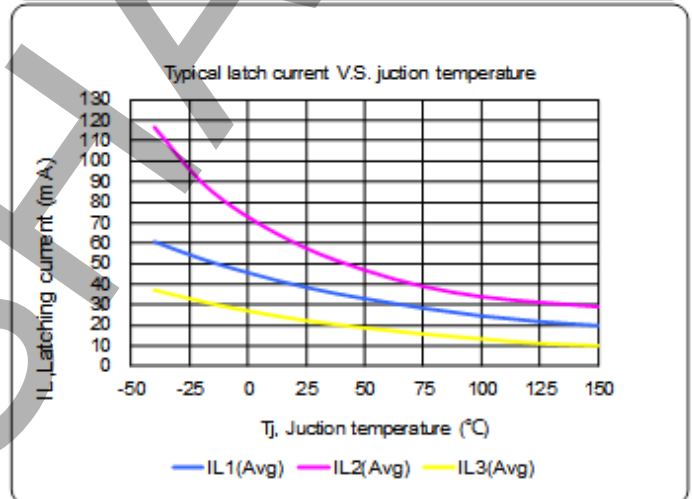
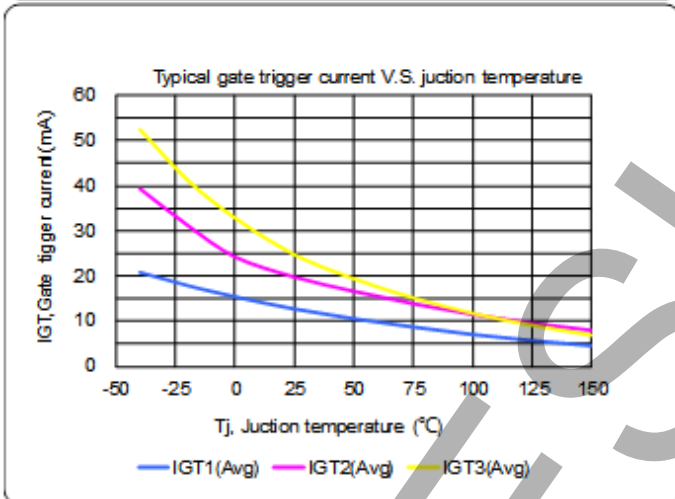
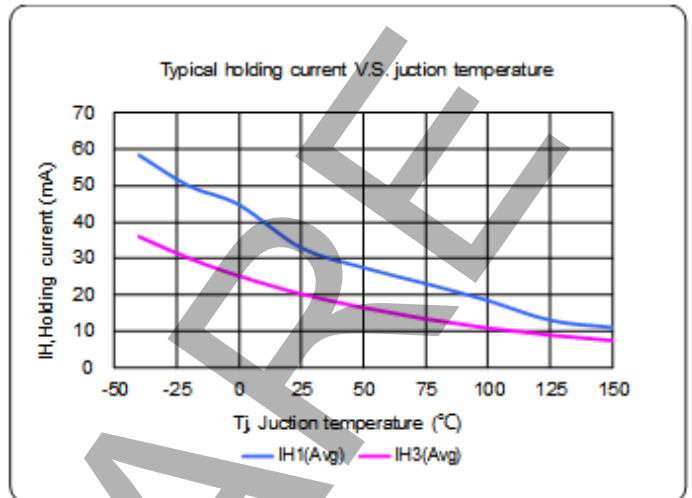
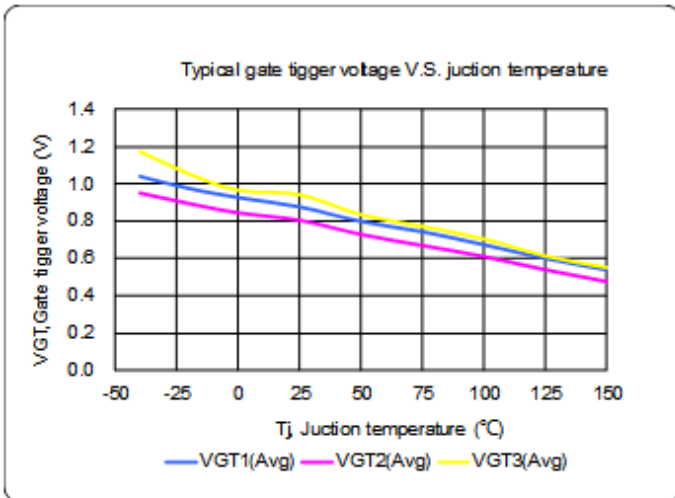
PARAMETER	SYMBOL	DT8T10	DT8T35		UNIT
Peak forward on-state voltage (I <sub>TM</sub> = 8 A @ T <sub>j</sub> = 25°C)	V <sub>TM</sub>	1.5	1.6	Max	V
V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 100Ω, T <sub>j</sub> = 150°C	V <sub>GD</sub>	0.25	0.3	Min	V
Gate trigger current (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)	I <sub>GT1</sub>	10	35	Max	mA
	I <sub>GT2</sub>	10			
	I <sub>GT3</sub>	10			
Gate trigger voltage (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)	V <sub>GT1</sub>	1	1	Max	V
	V <sub>GT2</sub>				
	V <sub>GT3</sub>				
Holding current (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)	I <sub>H1</sub>	10	50	Max	mA
	I <sub>H3</sub>				
Latching current (V <sub>AK</sub> = 12V, R <sub>L</sub> = 100Ω)	I <sub>L1</sub>	25	50	Max	mA
	I <sub>L2</sub>	25	70		
	I <sub>L3</sub>	25	50		
Critical rate of rise of on-state current, T <sub>j</sub> = 150°C	dI/dt(s)	50	50	Max	A/us
V <sub>D</sub> = 67% V <sub>DRM</sub> , gate open, T <sub>j</sub> = 150°C	dV/dt	500	2000	Max	V/us
Without snubber, T <sub>j</sub> = 150°C	dI/dt(c)	2	5	Max	A/ms
T <sub>j</sub> = 150°C, 10V/dt, Gate open	dI/dt(c)	5	30	Max	A/ms

# DT8T High Temperature Series TRIACs

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



### DT8T35x-BH Characteristic

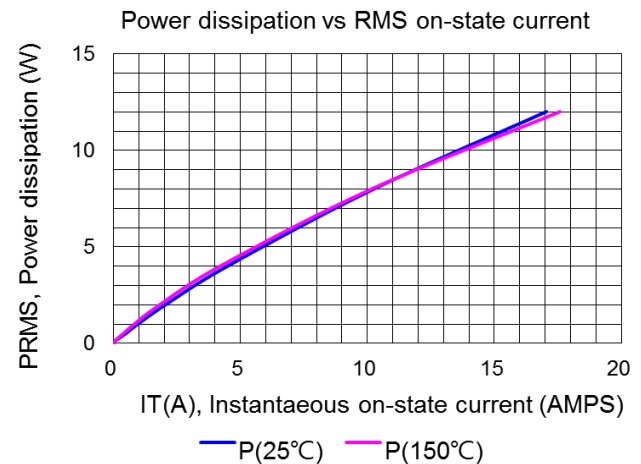
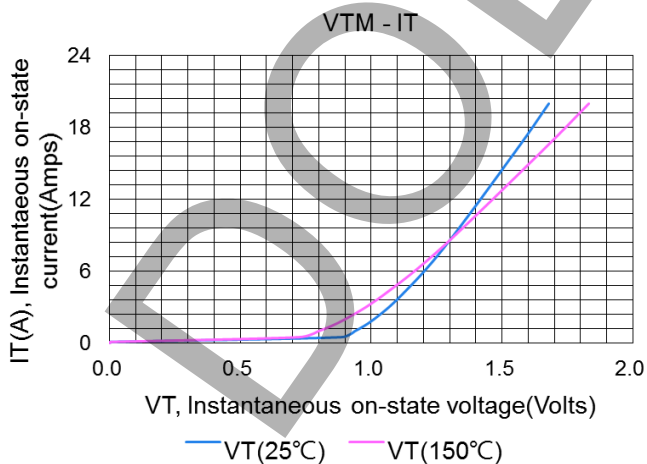
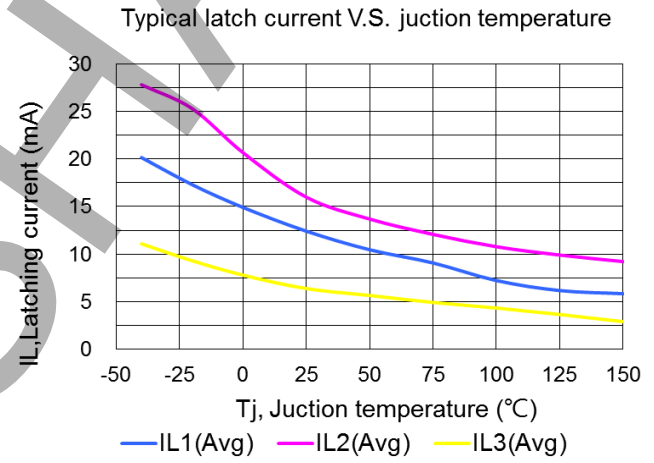
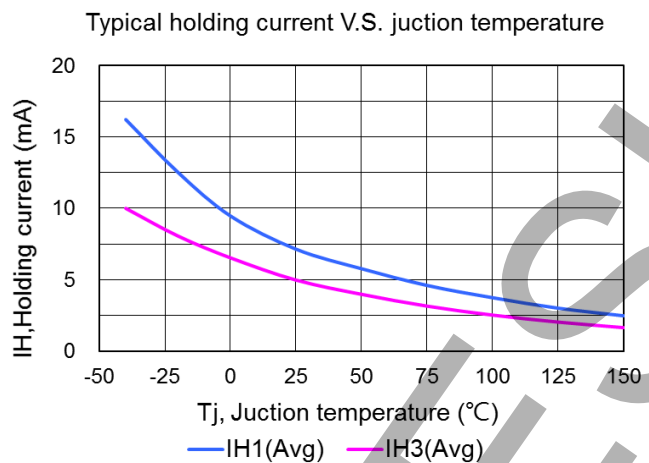
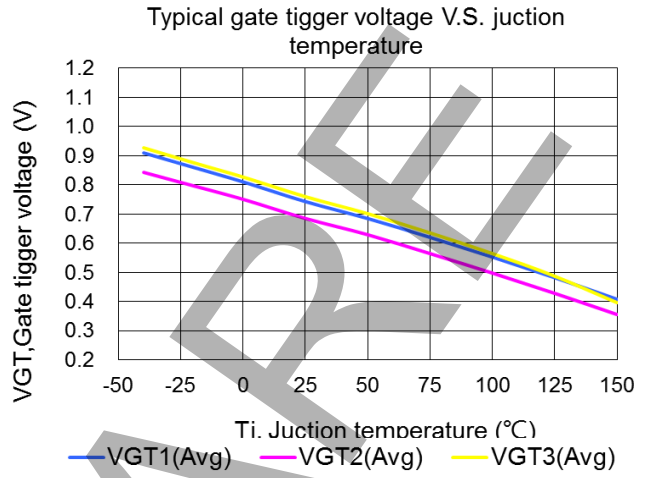
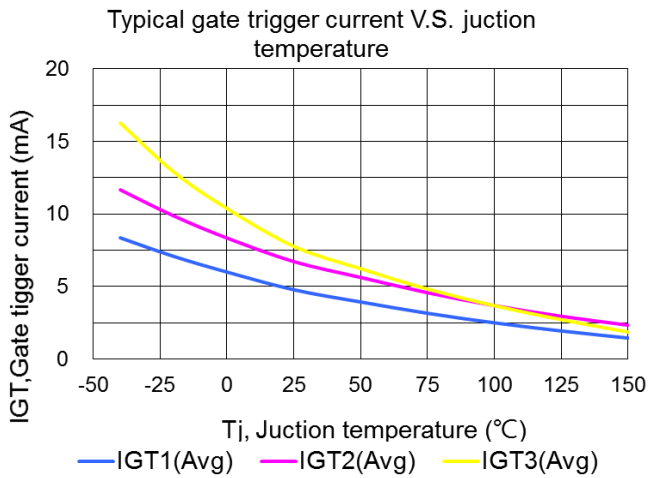


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## CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)



### T8T35x-BH Characteristic

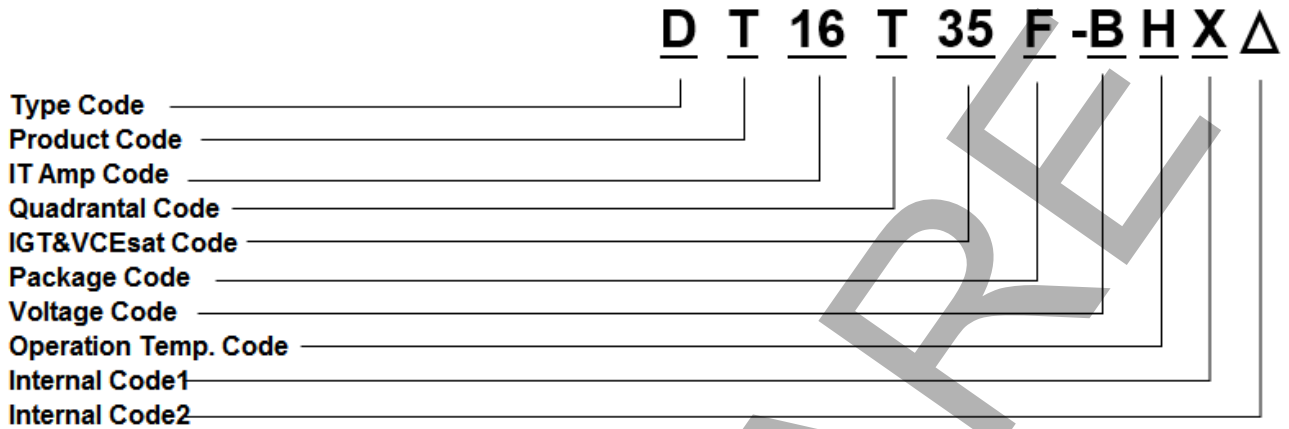


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CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)



## Ordering information scheme

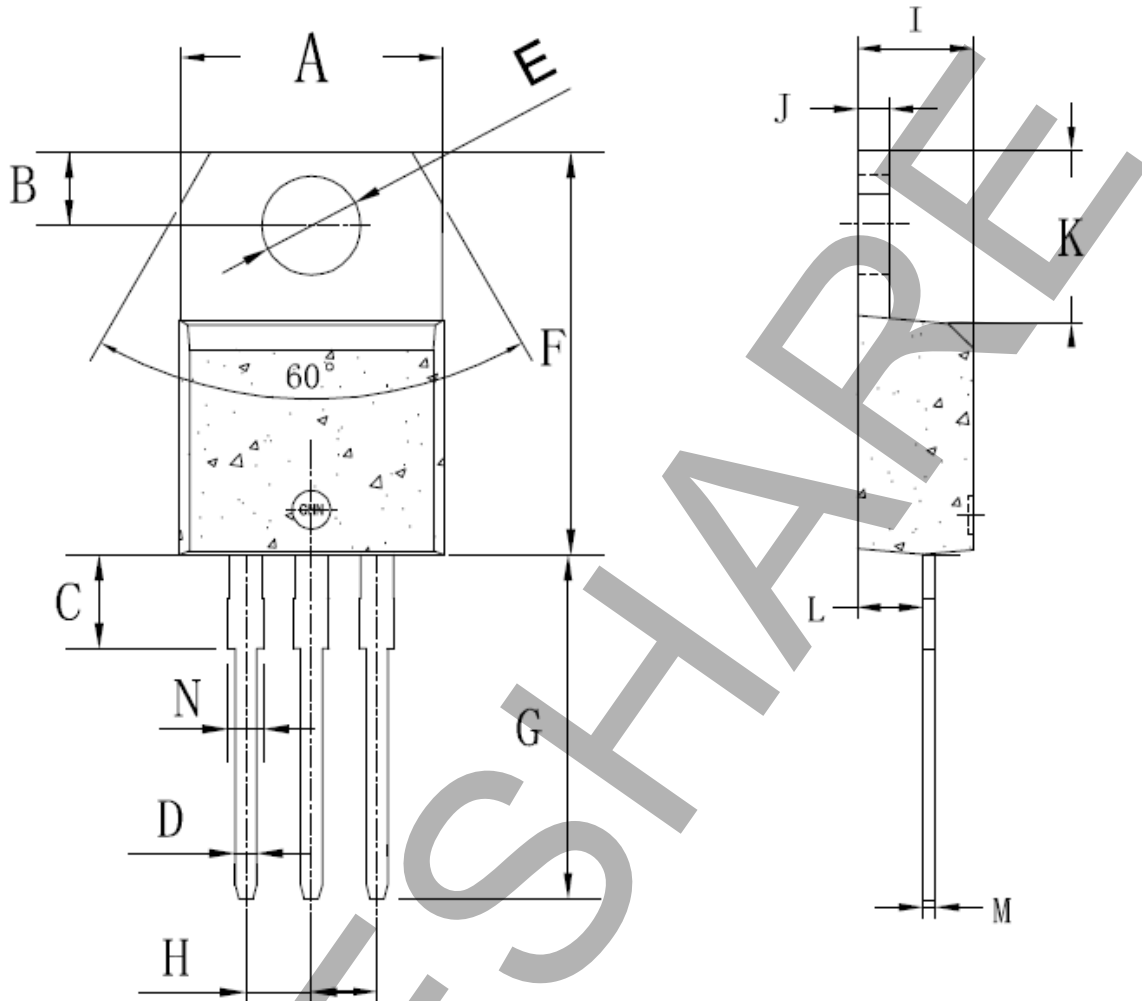


- Type Code: Doeshare Standar products
- Product Code: T for Triac series
- IT Amp Code: 16 for 16A, 1 for 1A
- Quadrantal Code: T for 3Q, F for 4Q
- IGT&VCEsat Code: 35 means Igt 35mA, 5 means Igt 5mA
- Package Code: A=>TO-92, C=>TO-126, D=> DPAK, E=>D2PAK, F=> TO-220F, G=>SOT-223  
M=>ITO-3P, P=>TO-3P,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

# DT8T High Temperature Series TRIACs

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

## ITO-220 Plastic Package

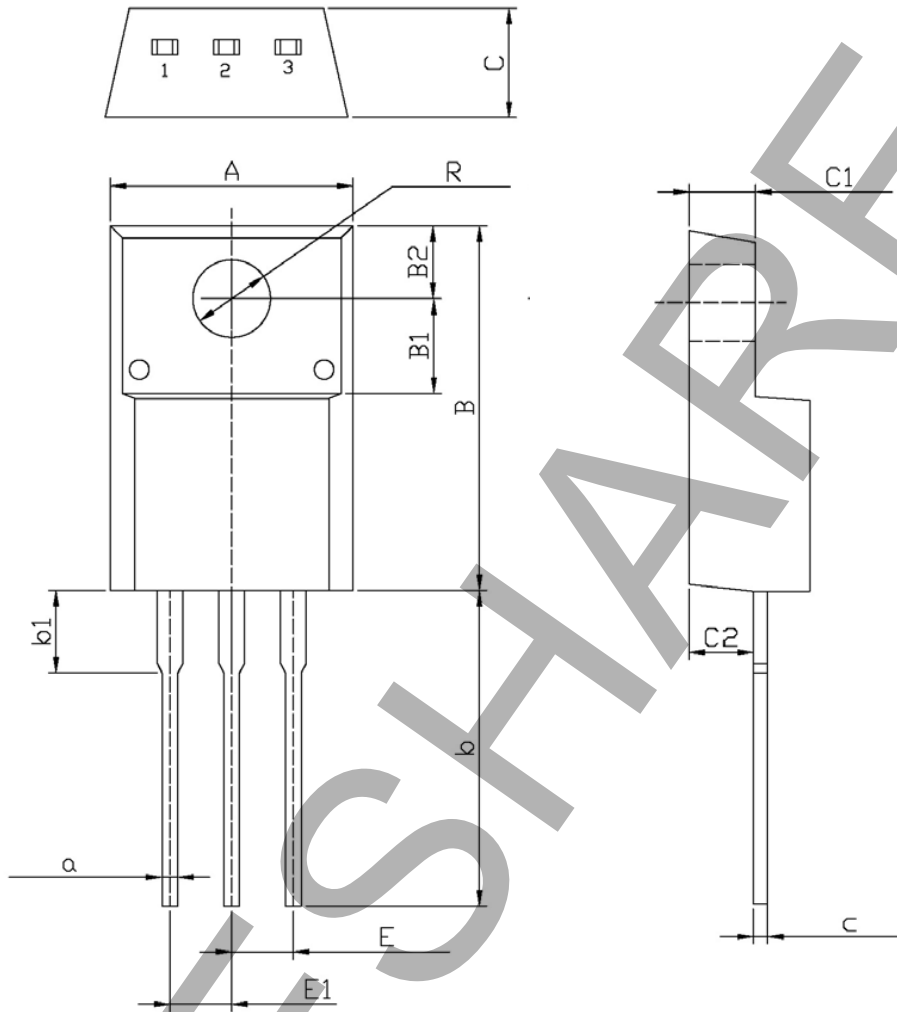


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.8	10.4	E	3.75	3.95	I	4.38	4.61
B	2.65	3.1	F	14.8	16.1	J	1.15	1.36
C	2.8	4.2	G	13.05	13.6	K	5.85	6.82
D	0.7	0.92	H	2.4	2.7	L	2.35	2.75
M	0.35	0.65	N	1.18	1.42			

# DT8T High Temperature Series TRIACs

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

TO-220F Plastic Package



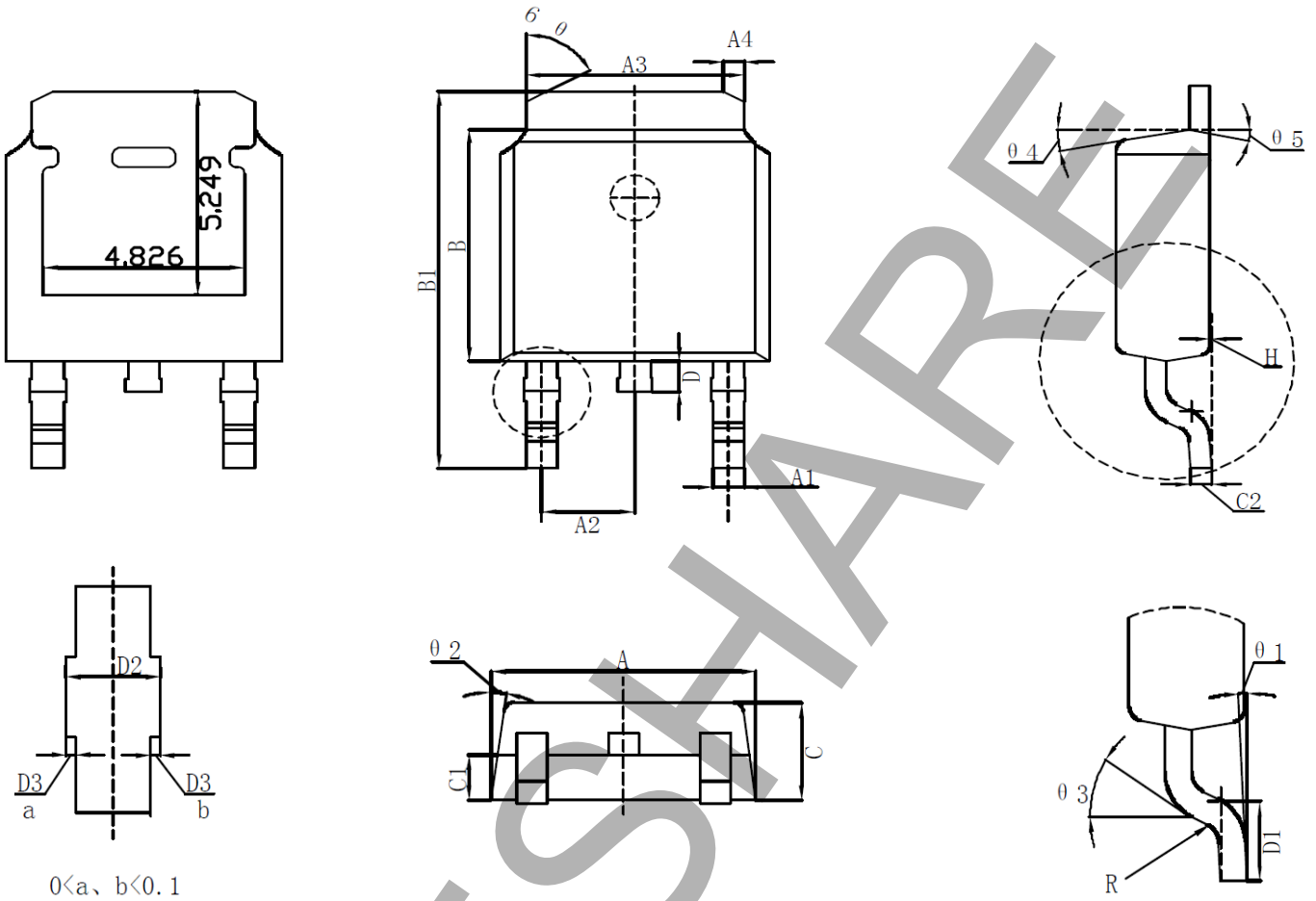
DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
C	4.3	4.7	R	3.0	3.4	E1	2.29	2.79
A	9.7	10.3	b	12.5	13.5	C1	2.5	2.9
B	14.7	15.3	b1	2.9	3.9	C2	2.5	2.7
B1	3.8	4.0	a	0.55	0.75	c	0.5	0.7
B2	2.9	3.1	E	2.29	2.79			

# DT8T High Temperature Series TRIACs

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



## DPAK(TO-252) Plastic Package



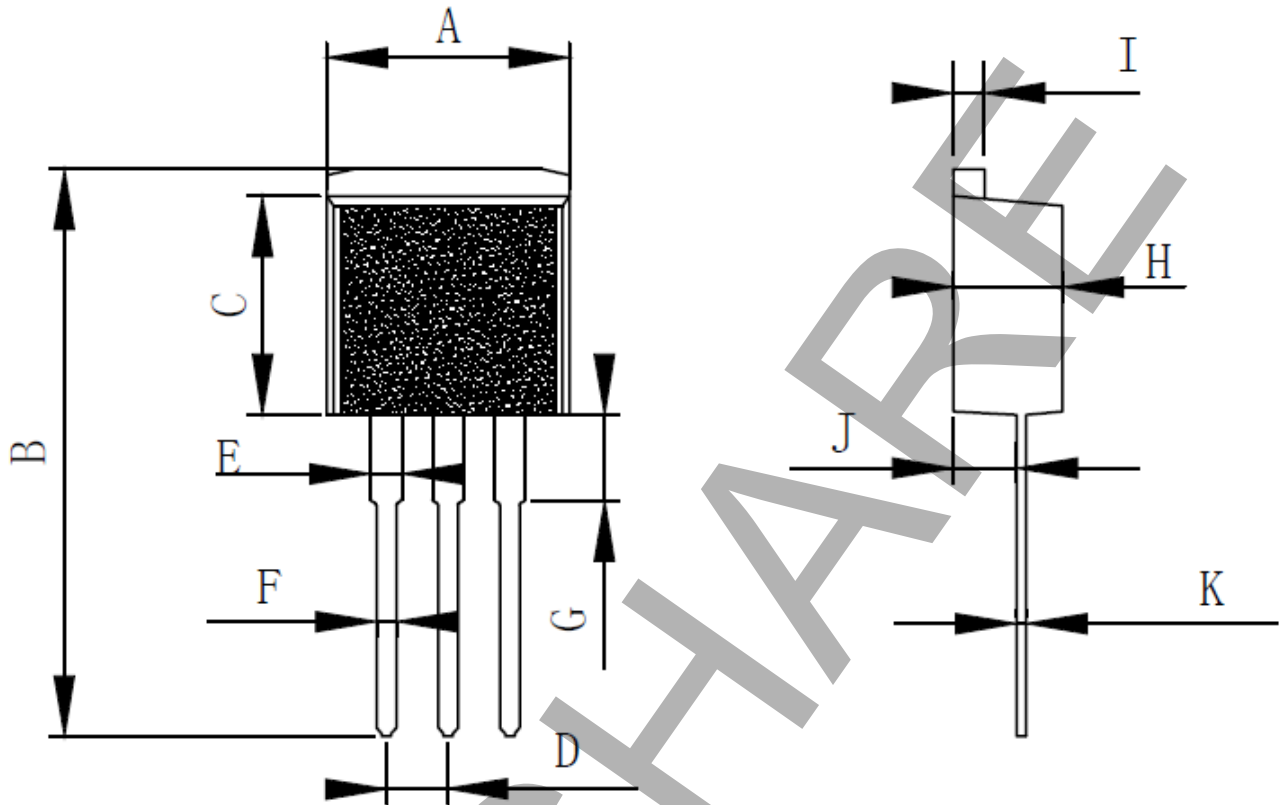
DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	6.50	6.70	C1	0.967	1.087	θ1	0° ~ 8°	
A1	0.71	0.81	C2	0.498	0.518	θ2	8.5° TYP4	
A2	2.236	2.336	D	0.70	0.90	θ3	25° TYP	
A3	5.284	5.384	D1	1.40	1.60	θ4	10° TYP	
A4	0.75	0.85	D2	0.81	0.91	θ5	10° TYP	
B	6.00	6.20	D3	0.05TYP		θ6	70° TYP	
B1	9.80	10.10	H	0.00	0.10			
C	2.20	2.40	R	0.40TYP				



# DT8T High Temperature Series TRIACs

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

TO-262 Plastic Package



Item	Unit: mm		
	Type	Min	Max
A	10	9.95	10.2
B	23.35	23.25	23.45
C	9	8.9	9.1
D	2.54	2.5	2.6
E	1.27	1.2	1.35
F	0.8	0.75	0.85
G	3.5	3.3	3.6
H	4.5	4.45	4.55
I	1.27	1.25	1.29
J	2.6	2.5	2.7
K	0.4	0.38	0.42

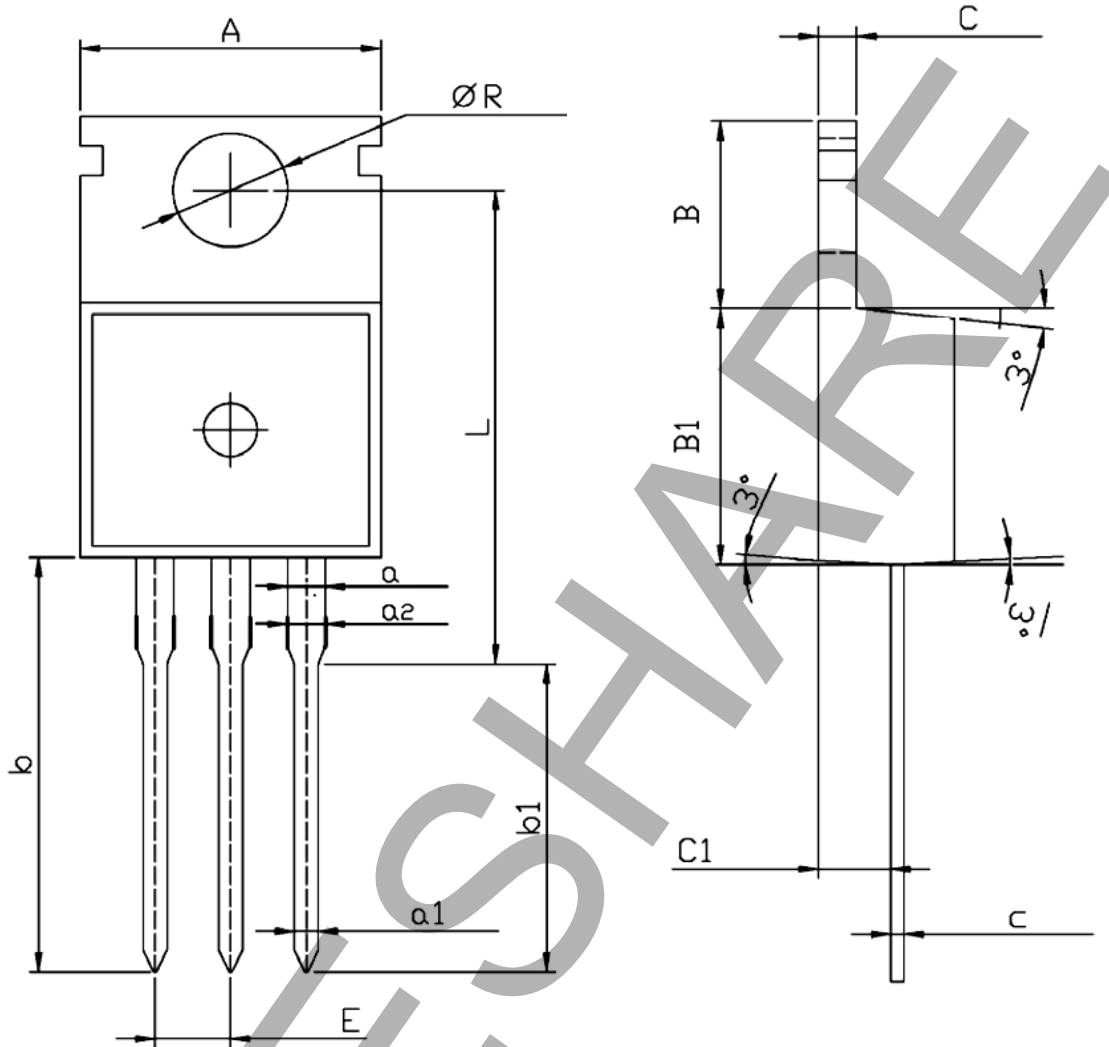
# DT8T High Temperature Series TRIACs

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



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TO-220C 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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CHARACTERISTIC & CURVES (T<sub>j</sub> = 25°C, unless otherwise specified.)



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