

# DT8T Standard Series TRIACs

## DT8T Standard Series TRIACs SILICON BIDIRECTIONAL THYRISTORS

### General description

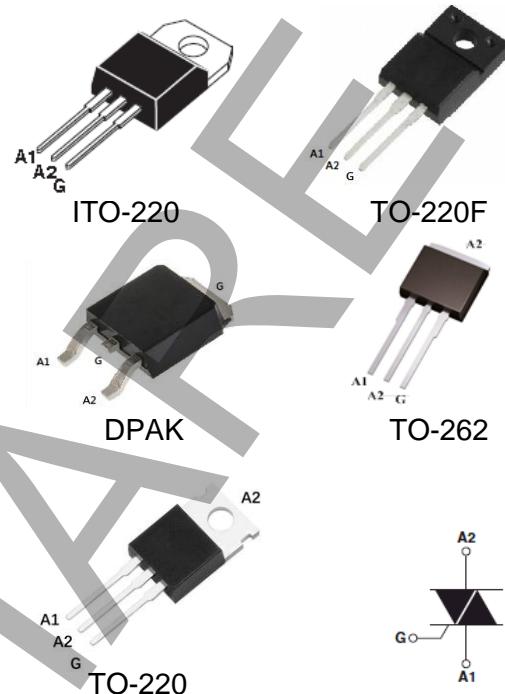
These products TRAIC are packages for third quadrant in 8A, DT8T standard Series TRIACs are high commutation performance without snubber circuit. It can be controlled by phase angle trigger or on/off trigger.

### FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering.
- Over 800V V<sub>DRM</sub>/V<sub>RRM</sub>
- 125 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-02

### 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<sub>j</sub> = 25°C, unless otherwise specified.)

### Absolute Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Peak repetitive off-state voltage ( T <sub>j</sub> = -40 to 150°C, Full sine wave, 50 to 60 Hz; Gate open) (Note 1)	V <sub>DRM</sub> V <sub>RRM</sub>	800	V
On-stage RMS current (Full sine wave, T <sub>C</sub> = 100°C )	I <sub>T(RMS)</sub>	8	A
Peak non-repetitive surge current ( one full cycle 60 Hz, T <sub>j</sub> = 25°C)	I <sub>TSM</sub>	70	A
Circuit fusing consideration ( t = 8.3ms)	I <sup>2</sup> T	20	A <sup>2</sup> S
Operating junction temperature range	T <sub>j</sub>	-40 to +125	°C
Storage temperature range	T <sub>STG</sub>	-40 to +150	°C

Note :

(1) V<sub>DRM</sub> and V<sub>RRM</sub> 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 03, 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, without heatsink, (1)	$R_{th(j-c)}$	Max	9	$^\circ\text{C/W}$
Junction to Lead, without heatsink, (1)	$R_{th(j-L)}$	Typ	8	
Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds)	$T_L$	Max	260	$^\circ\text{C}$

Note1: unidirectional, continuous & full cycle.

## Static Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Threshold Voltage ( $T_j = 125^\circ\text{C}$ )	$V_{to}$	--	--	1	V
Dynamic resistors ( $T_j = 125^\circ\text{C}$ )	$R_d$	--	--	60	$\text{m}\Omega$
Peak repetitive forward or reverse blocking current ( $V_{AK} = V_{DRM}$ and $V_{RRM}$ , gate open )	$T_j = 25^\circ\text{C}$	--	--	5	$\mu\text{A}$
	$T_j = 125^\circ\text{C}$	--	--	500	$\mu\text{A}$

## ON Characteristics

PARAMETER	SYMBOL	DT8T10	DT8T35		UNIT
Peak forward on-state voltage ( $I_{TM} = 8 \text{ A}$ @ $T_j = 25^\circ\text{C}$ )	$V_{TM}$	1.5	1.6	Max	V
$V_D = V_{DRM}$ , $R_L = 100\Omega$ , $T_j = 125^\circ\text{C}$	$V_{GD}$	0.25	0.3	Min	V
Gate trigger current ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$I_{GT1}$ $I_{GT2}$ $I_{GT3}$	10 10 10	35	Max	$\text{mA}$
Gate trigger voltage ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$V_{GT1}$ $V_{GT2}$ $V_{GT3}$	1	1	Max	V
Holding current ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$I_{H1}$ $I_{H3}$	10	50	Max	$\text{mA}$
Latching current ( $V_{AK} = 12\text{V}$ , $R_L = 100\Omega$ )	$I_{L1}$ $I_{L2}$ $I_{L3}$	25 25 25	50 70 50	Max	$\text{mA}$
Critical rate of rise of on-state current, $T_j = 125^\circ\text{C}$	$dl/dt(s)$	50	50	Max	$\text{A/us}$
$V_D = 67\% V_{DRM}$ , gate open, $T_j = 125^\circ\text{C}$	$dV/dt$	900	3000	Max	$\text{V/us}$
Without snubber, $T_j = 125^\circ\text{C}$	$dl/dt(c)$	5	10	Max	$\text{A/ms}$

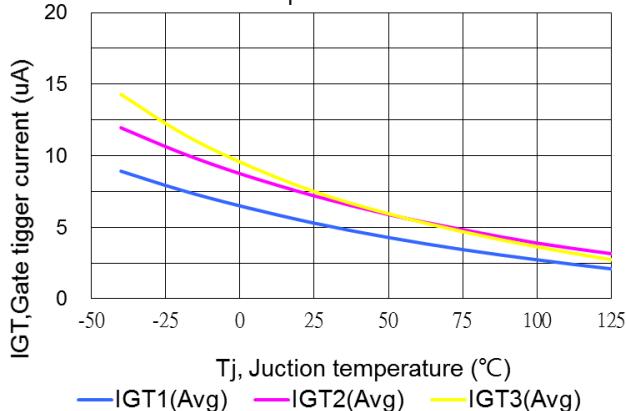
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CHARACTERISTIC & CURVES ( $T_j = 25^\circ\text{C}$ , unless otherwise specified.)

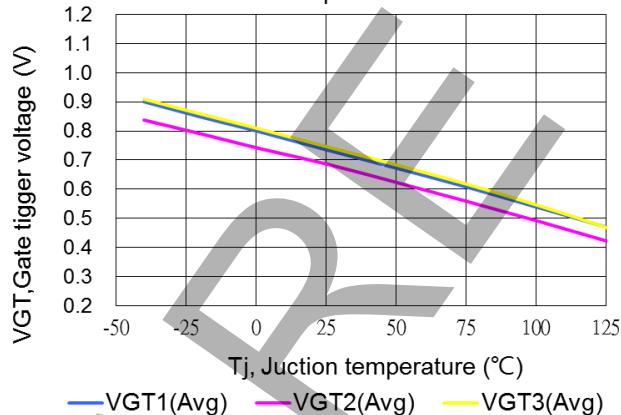


## DT8T10x-B Characteristic

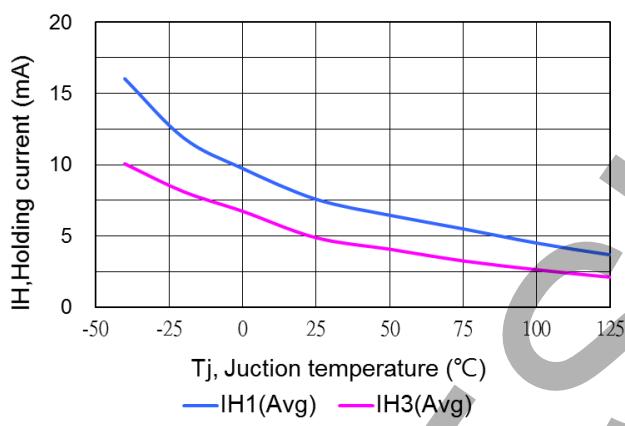
Typical gate trigger current V.S. juction temperature



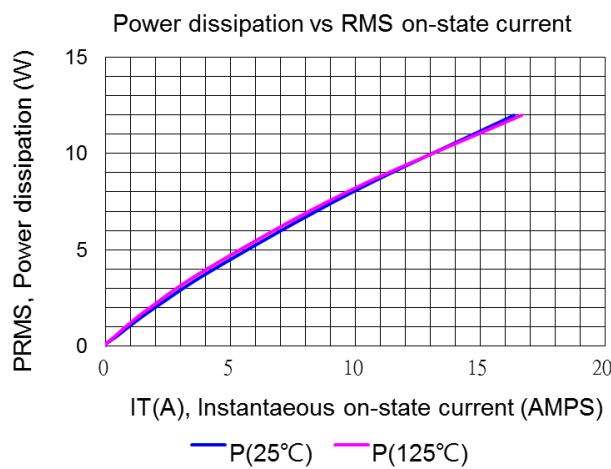
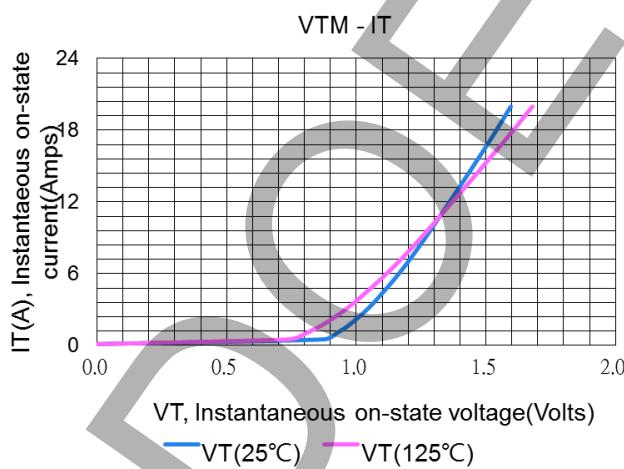
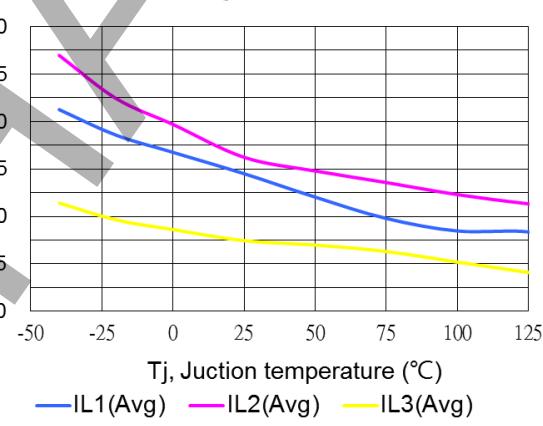
Typical gate tigger voltage V.S. juction temperature



Typical holding current V.S. juction temperature



Typical latch current V.S. juction temperature

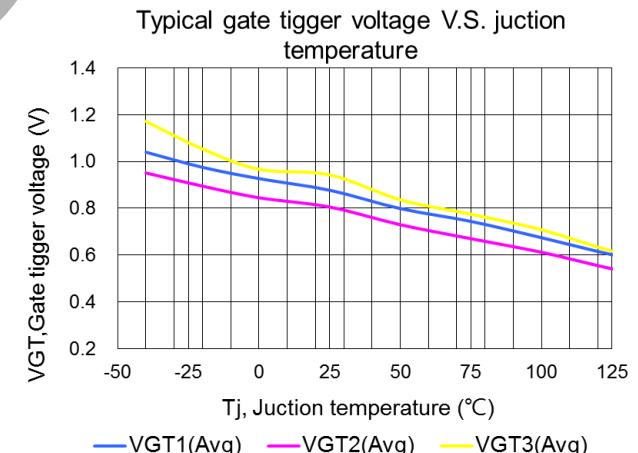
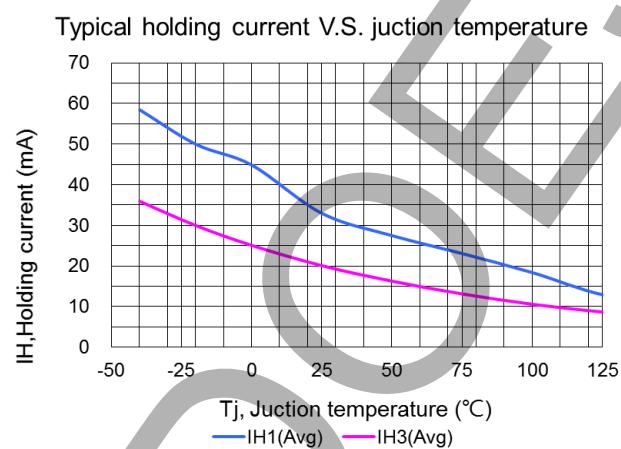
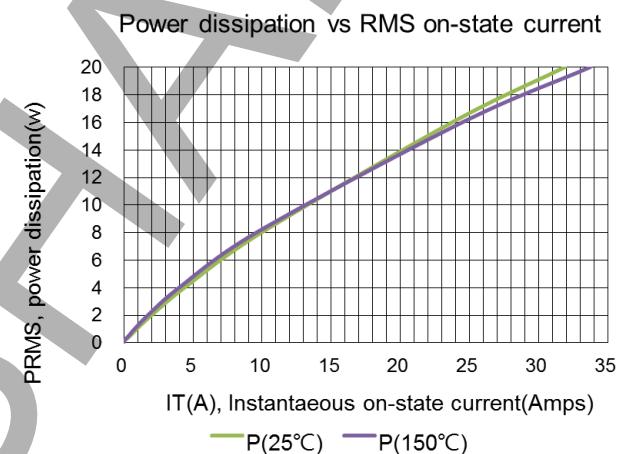
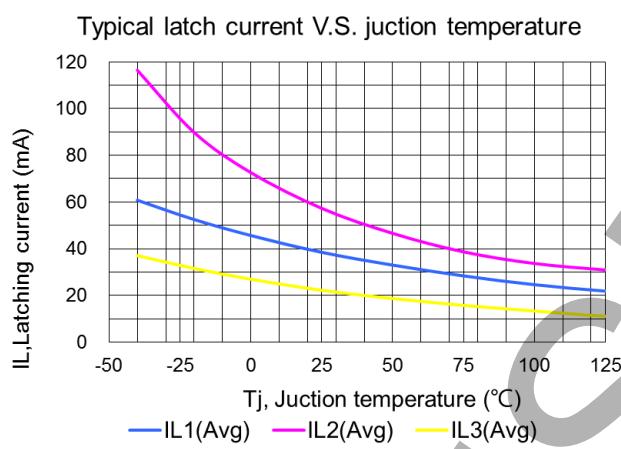
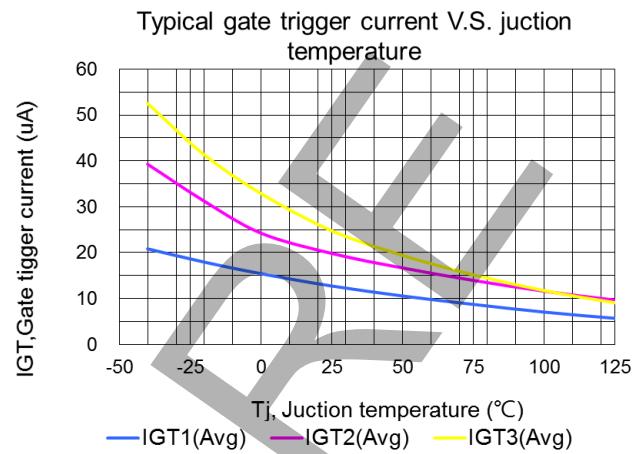
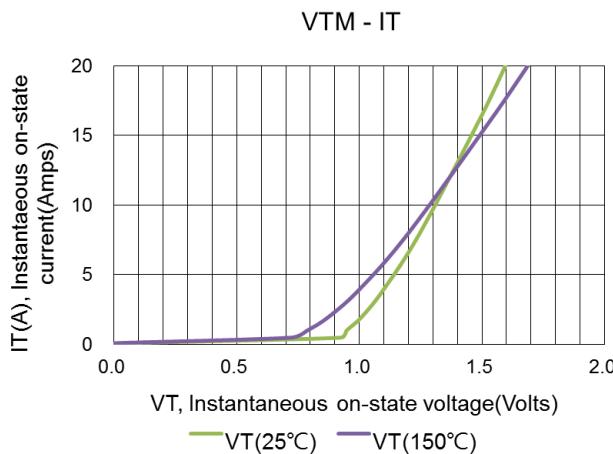


# DT8T Standard Series TRIACs

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



## DT8T35x-B Characteristic



# DT8T Standard Series TRIACs

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



Ordering information scheme

D T 16 T 35 F -B H X Δ

Type Code \_\_\_\_\_

Product Code \_\_\_\_\_

IT Amp Code \_\_\_\_\_

Quadrantal Code \_\_\_\_\_

IGT&VCEsat Code \_\_\_\_\_

Package Code \_\_\_\_\_

Voltage Code \_\_\_\_\_

Operation Temp. Code \_\_\_\_\_

Internal Code1 \_\_\_\_\_

Internal Code2 \_\_\_\_\_

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

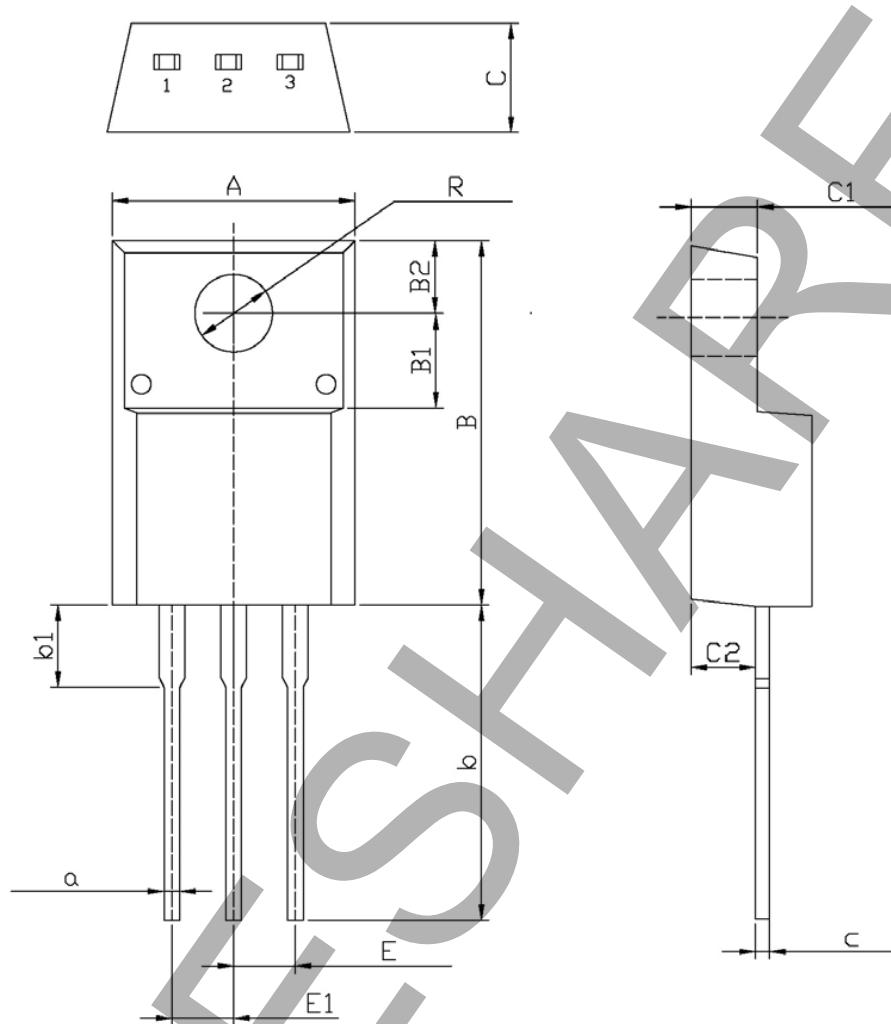
Operation Temp Code:

None=>125°C, H=>150°C

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## TO-220F Plastic Package



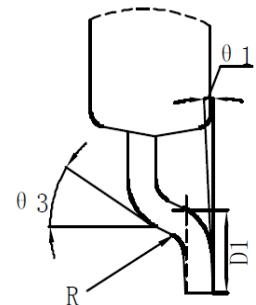
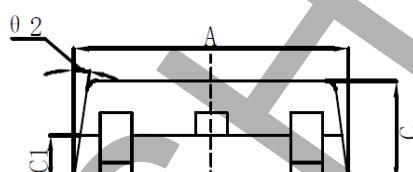
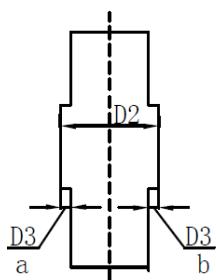
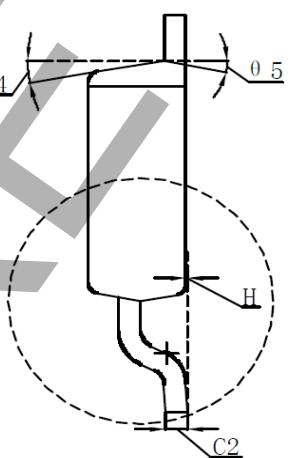
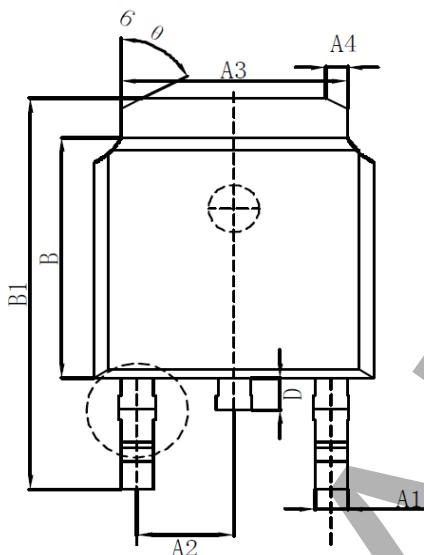
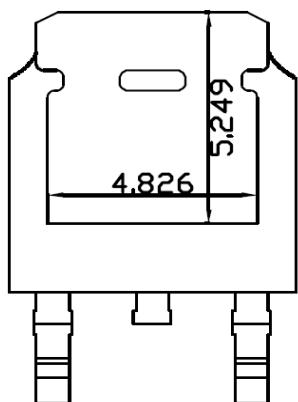
DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
C	4.3	4.7	R	3.0	3.4	E1	2.29	2.79
A	9.7	10.3	b	12.5	13.5	C1	2.5	2.9
B	14.7	15.3	b1	2.9	3.9	C2	2.5	2.7
B1	3.8	4.0	a	0.55	0.75	c	0.5	0.7
B2	2.9	3.1	E	2.29	2.79			

# DT8T Standard Series TRIACs

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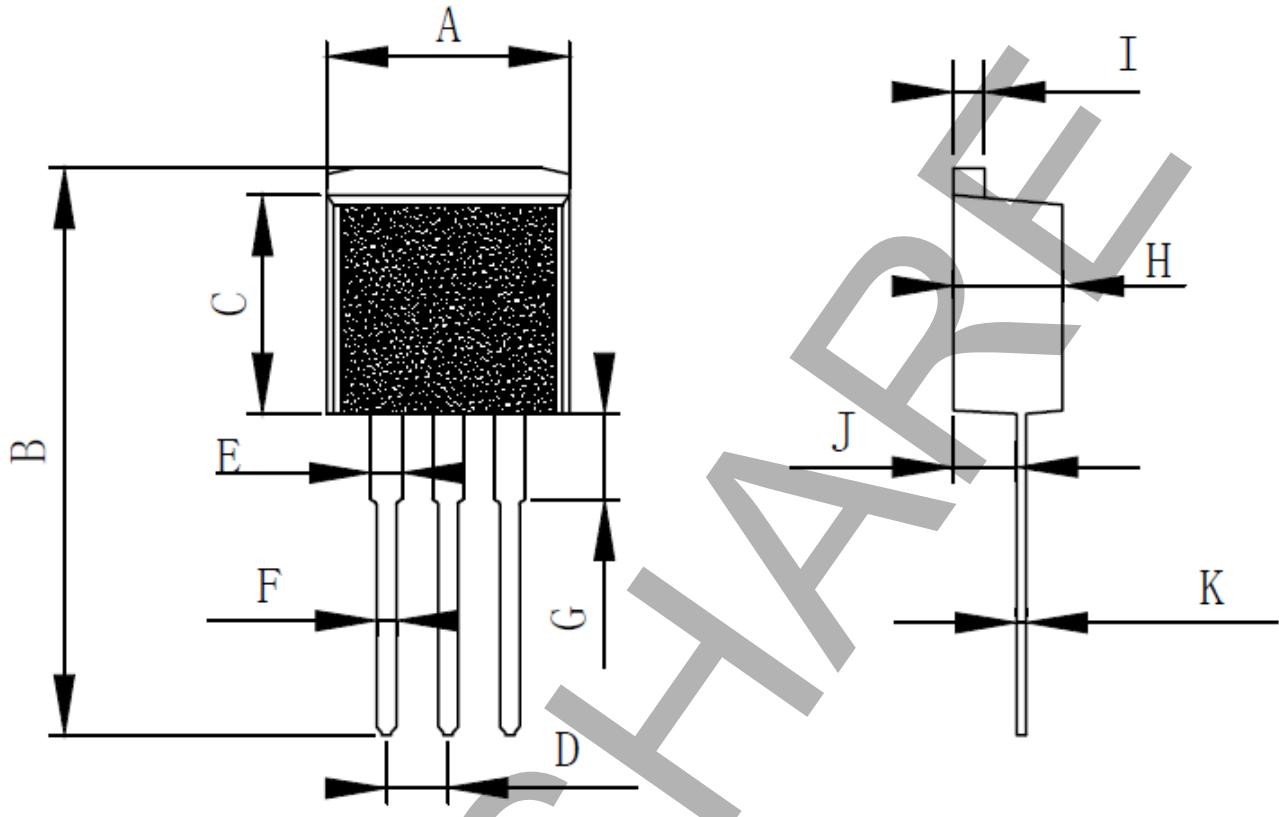
## DPAK(TO-252) Plastic Package



$0 < a, b < 0.1$

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

## TO-262 Plastic Package



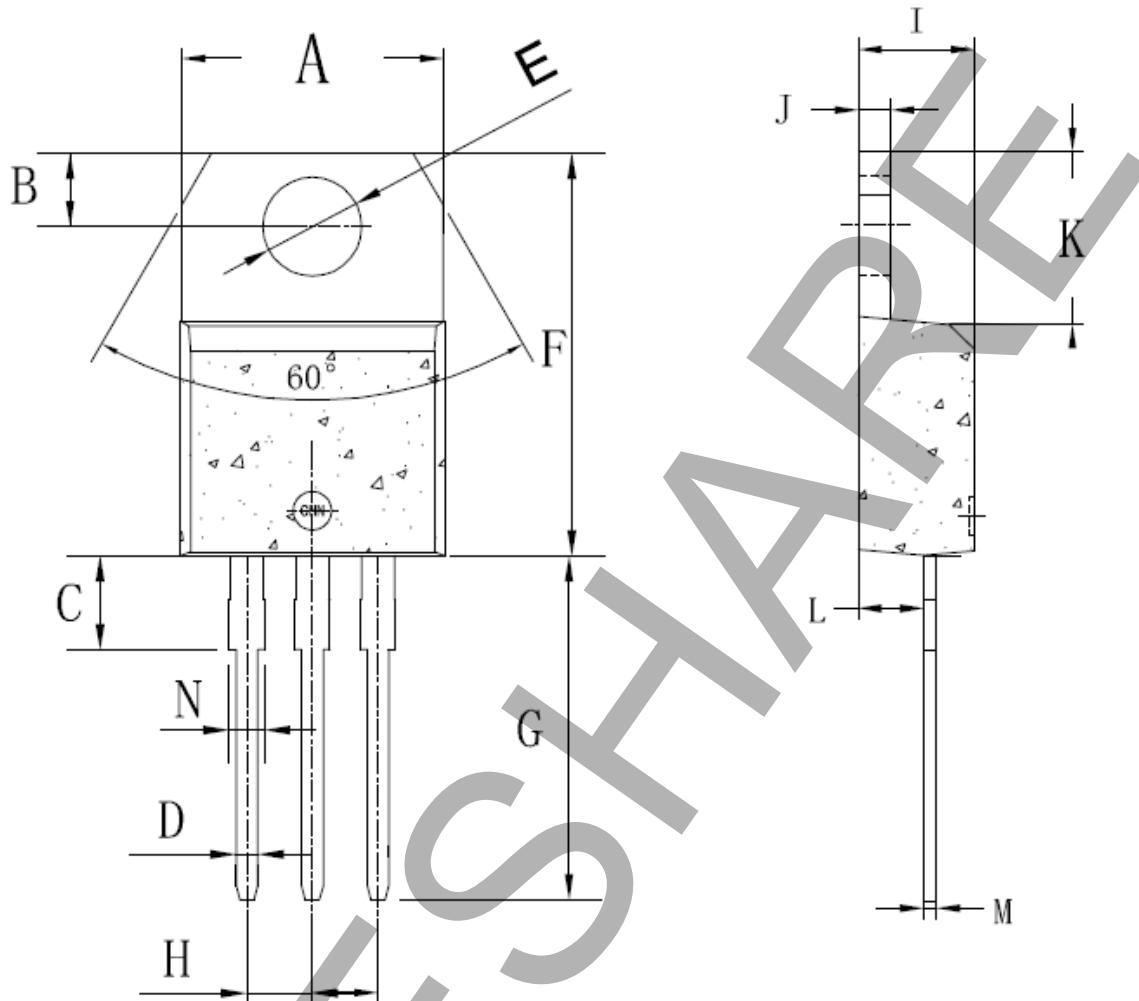
Item	Unit: mm		
	Type	Min	Max
A	10	9.95	10.2
B	23.35	23.25	23.45
C	9	8.9	9.1
D	2.54	2.5	2.6
E	1.27	1.2	1.35
F	0.8	0.75	0.85
G	3.5	3.3	3.6
H	4.5	4.45	4.55
I	1.27	1.25	1.29
J	2.6	2.5	2.7
K	0.4	0.38	0.42

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## ITO-220 Plastic Package



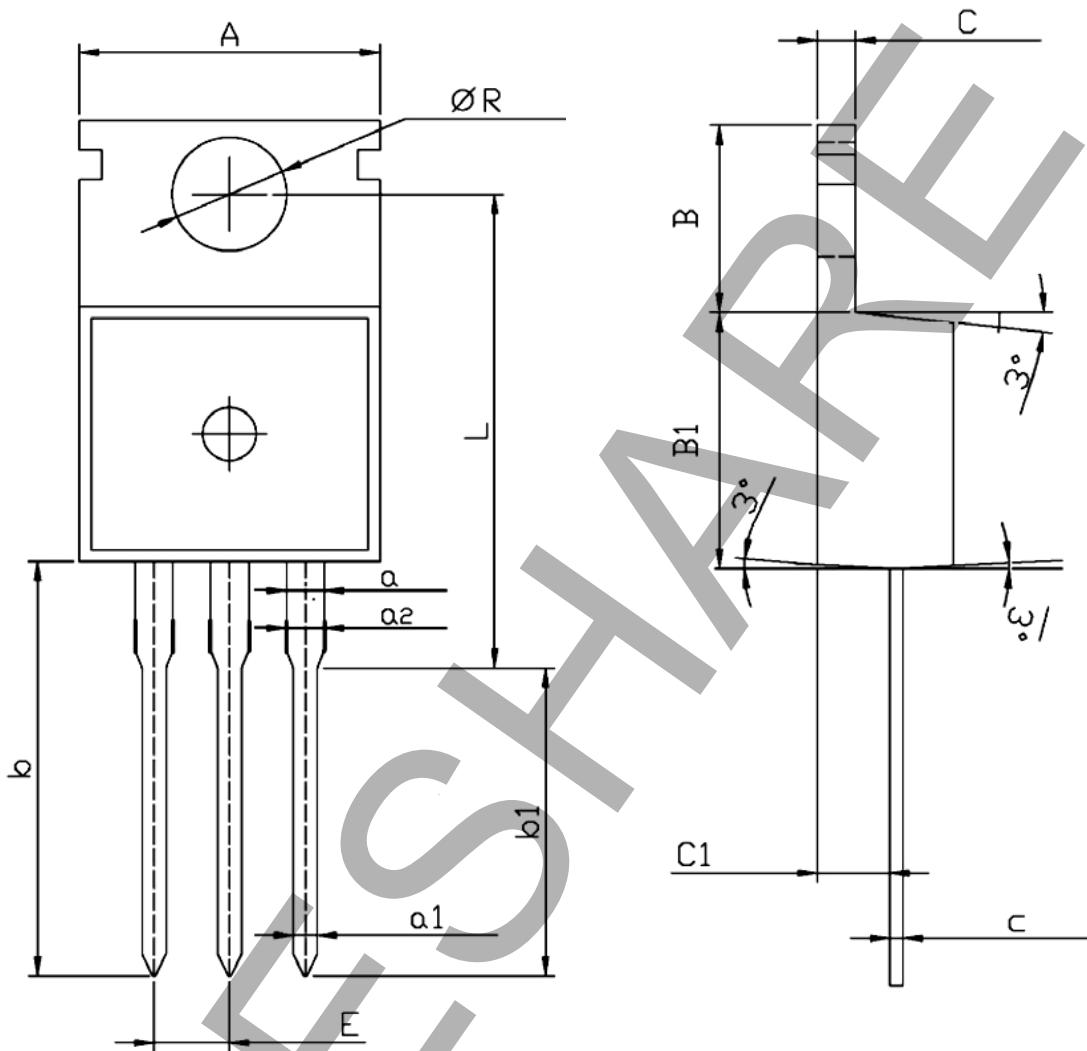
DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.8	10.4	E	3.75	3.95	I	4.38	4.61
B	2.65	3.1	F	14.8	16.1	J	1.15	1.36
C	2.8	4.2	G	13.05	13.6	K	5.85	6.82
D	0.7	0.92	H	2.4	2.7	L	2.35	2.75
M	0.35	0.65	N	1.18	1.42			

# DT8T Standard Series TRIACs

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



## 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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