

DT16T Standard TRIACs

DT16T Standard TRIACs SILICON BIDIRECTIONAL THYRISTORS

General description

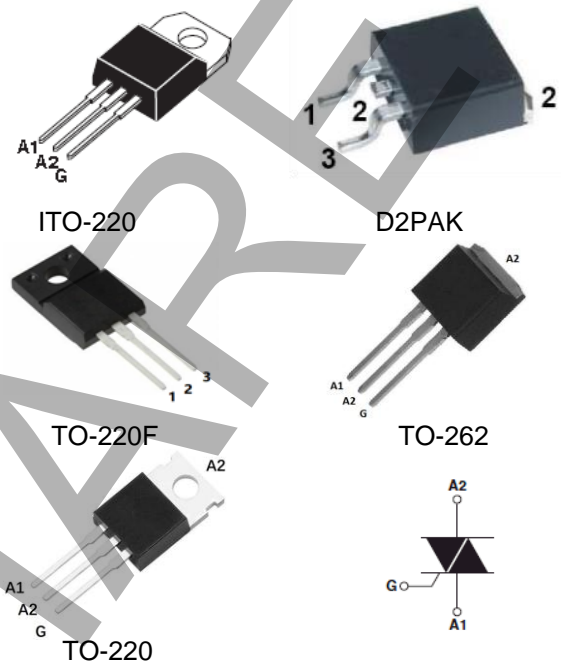
These products 16A TRIAC are packages for third quadrant, DT16T are high commutation performance without snubber circuit. It can be controlled by phase angle trigger or on/off trigger.

FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering TRIAC, Over 800V V_{DRM}/V_{RRM}
- 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.
- 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°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, $T_c = 100^\circ\text{C}$)	$I_{T(RMS)}$	16	A
Peak non-repetitive surge current (one full cycle 60 Hz, $T_j = 25^\circ\text{C}$)	I_{TSM}	140	A
Circuit fusing consideration ($t = 8.3\text{ms}$)	I^2T	90	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.

Version 03, NOV-2020

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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 (1)	ITO-220	R _{th(j-c)}	Max	10	°C/W
Junction to ambient (DC) (1)	ITO-220	R _{th(j-L)}	Max	9.5	
Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds)		T _L	Max	260	°C

Note 1: Without Heatsink

Static Characteristics

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT
Threshold Voltage (T _j = 125°C)		V _{to}	--	--	0.95	V
Dynamic resistors (T _j = 125°C)		R _d	--	--	30	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	DT16T10T	DT16T35T	.	UNIT
Peak forward on-state voltage (I _{TM} = 20 A @ T _j = 25°C)	V _{TM}	1.5	1.5	Max	V
V _D = V _{DRM} , R _L = 100Ω, T _j = 125°C	V _{GD}	0.25	0.25	Min	V
Gate trigger current (V _{AK} = 12V, R _L = 100Ω)	I _{GT1}	10	35	Max	mA
	I _{GT2}	10	35		
	I _{GT3}	10	35		
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}	10	40	Max	mA
	I _{H3}				
Latching current (V _{AK} = 12V, R _L = 100Ω)	I _{L1}	25	50	Max	mA
	I _{L2}	25	80		
	I _{L3}	25	50		

Dynamic Characteristics

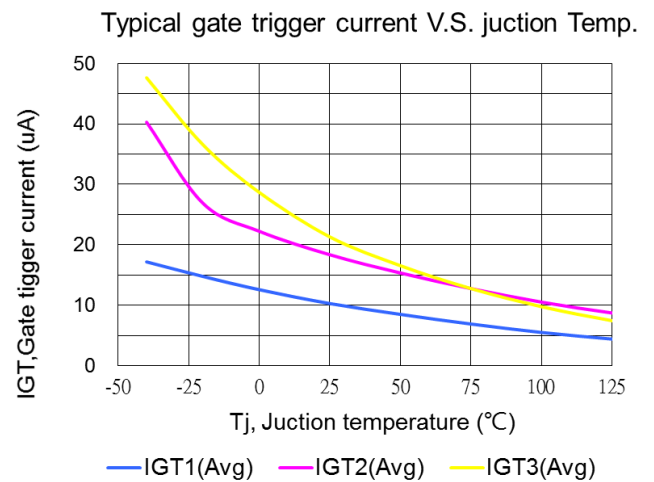
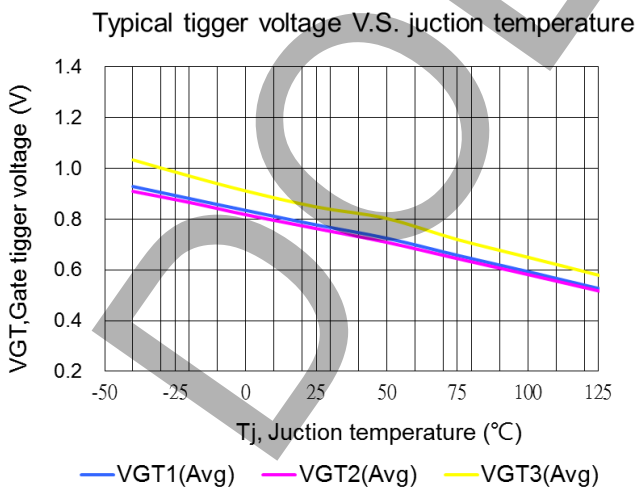
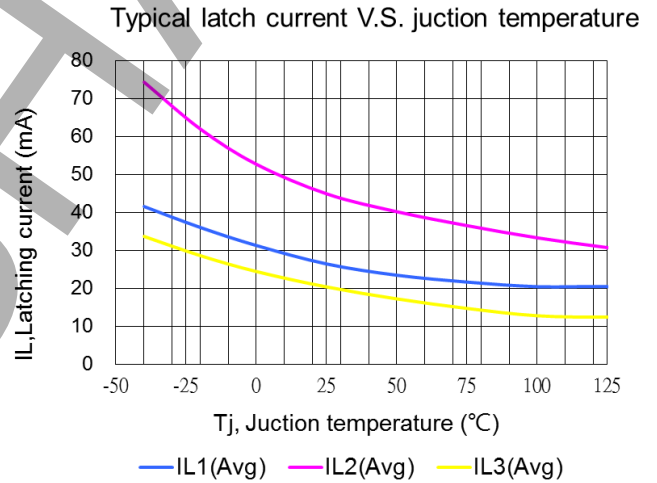
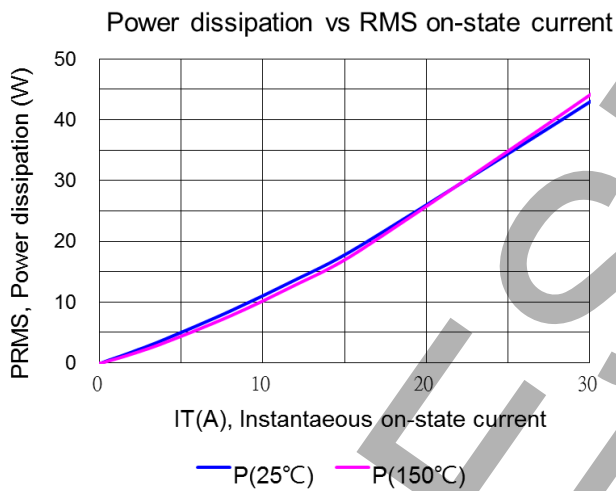
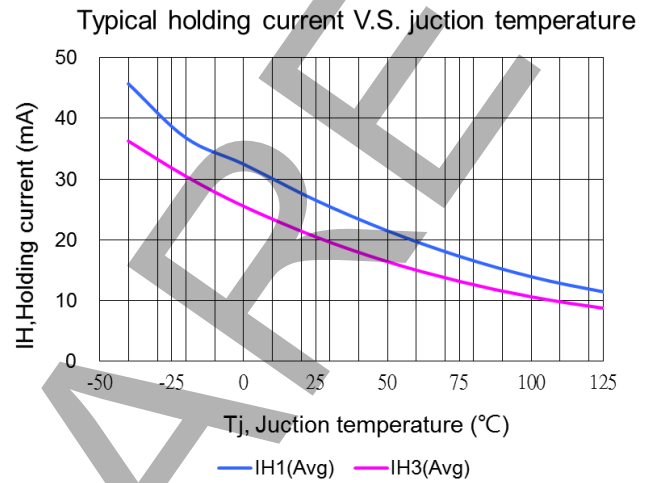
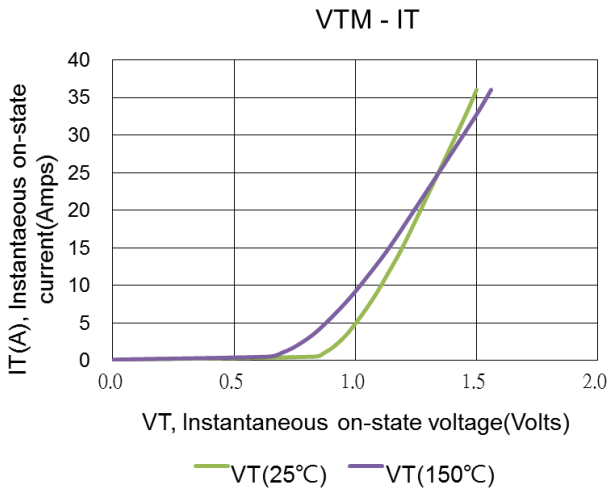
PARAMETER	SYMBOL	MIN.	TYP.		UNIT
Critical rate of rise of off-stage voltage (V _{AK} = 67% rated V _{DRM} , T _j = 125°C, gate open)	dv/dt	500	2000	Max	V/us
Critical rate of rise of on-state current, (V _{DRM} = maximum V _{DRM} , T _j = 125°C)	di/dt(s)	70	70	Max	A/us
125°C, Gate open, without snubber	di/dt(c)	2.5	4	Max	A/ms

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DT16T35 Characteristics



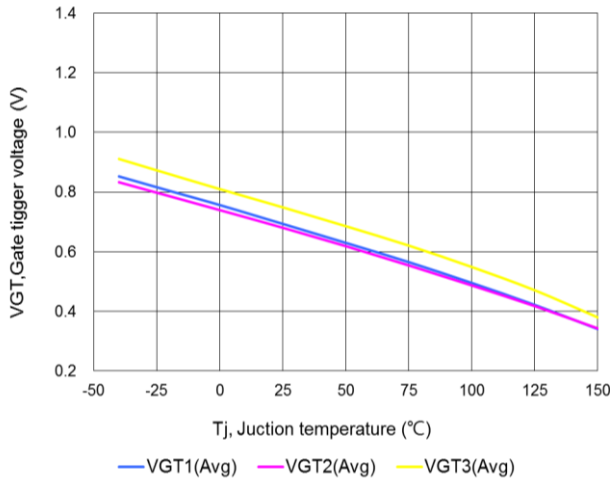
DT16T Standard TRIACs

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

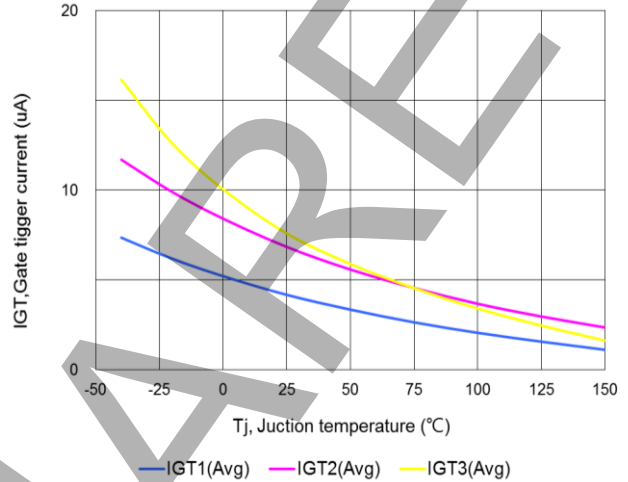


DT16T10 Characteristics

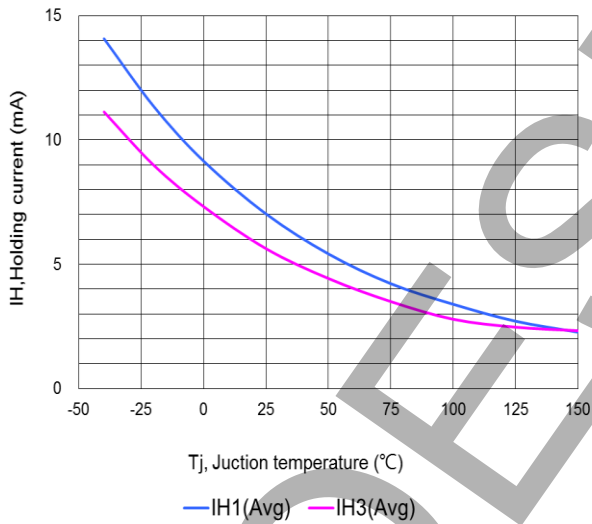
Typical gate trigger voltage V.S. junction temperature



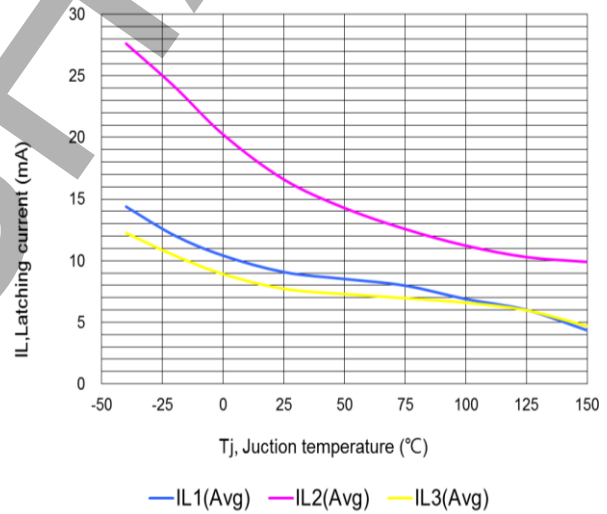
Typical gate trigger current V.S. junction temperature



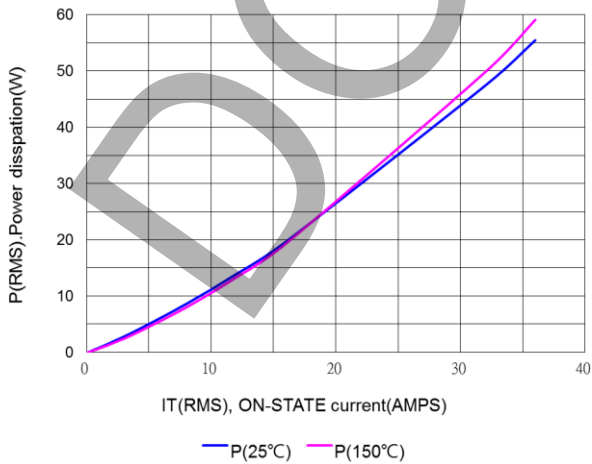
Typical holding current V.S. junction temperature



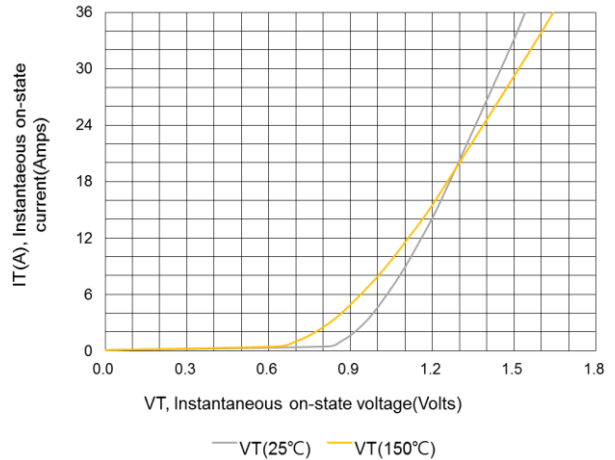
Typical latch current V.S. junction temperature



Power dissipation VS ON-STATE current



VTM - IT

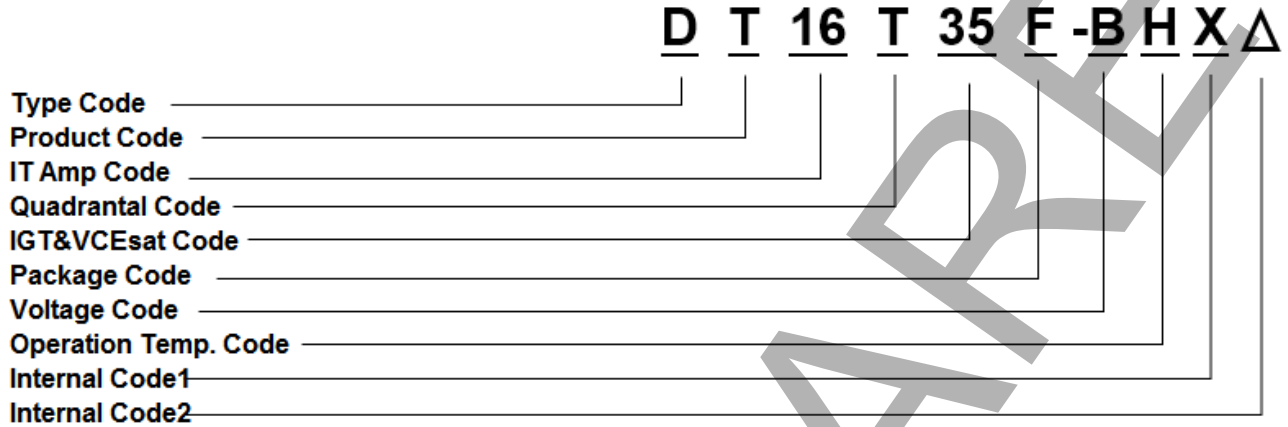


DT16T Standard TRIACs

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



Ordering information scheme

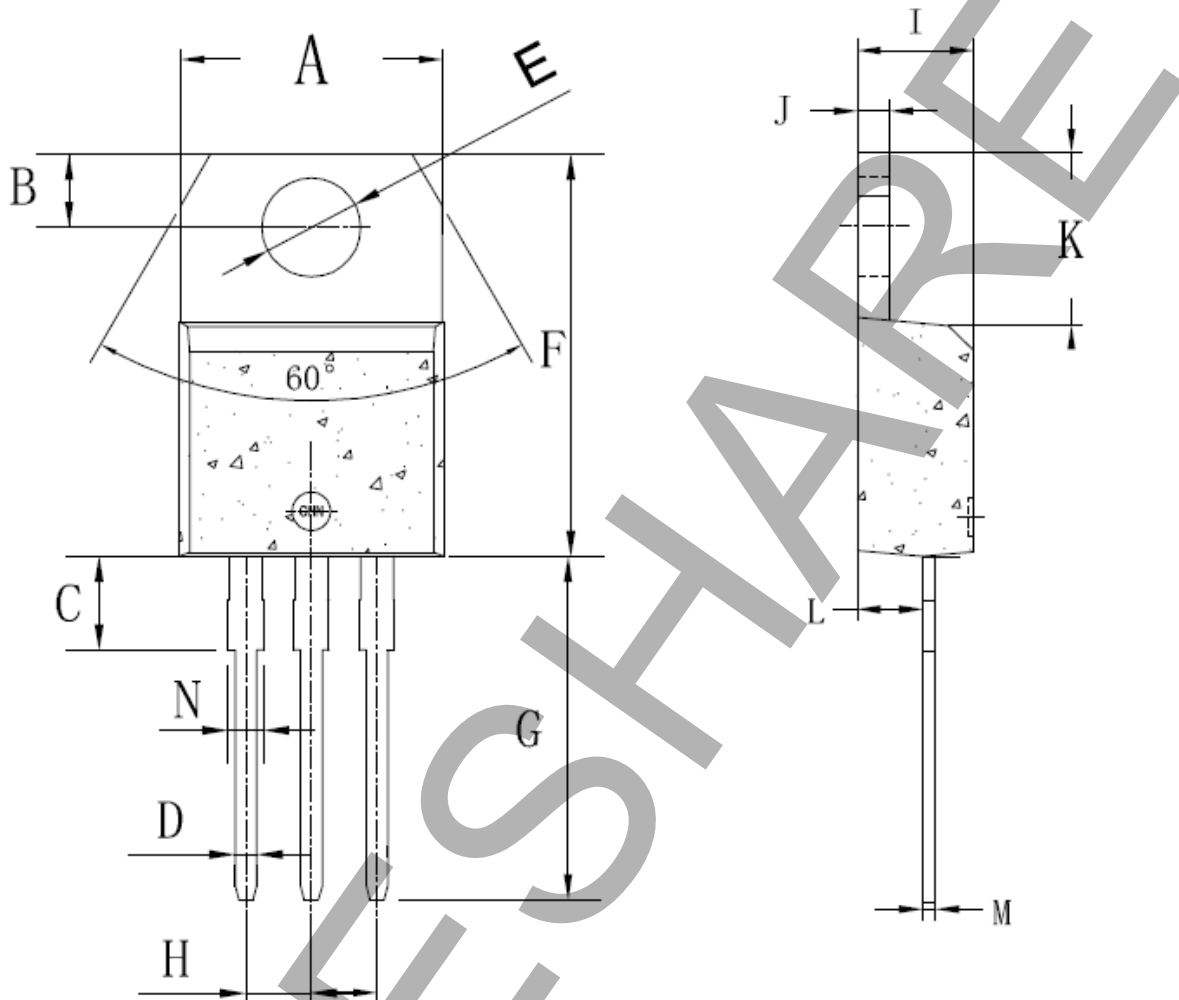


- Type Code: Doeshare Standar products
- Product Code: T for Triac series
- IT Amp Code: 16 for 16A, 1 for 1A
- Quadrantal Code: T for 3Q, F for 4Q
- IGT&VCEsat Code: 35 means Igt 35mA, 5 means Igt 5mA
- Package Code: A=>TO-92, C=>TO-126, D=> DPAK, E=>D2PAK, F=> TO-220F, G=>SOT-223
M=>ITO-3P, P=>TO-3P,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

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ITO-220 Plastic Package

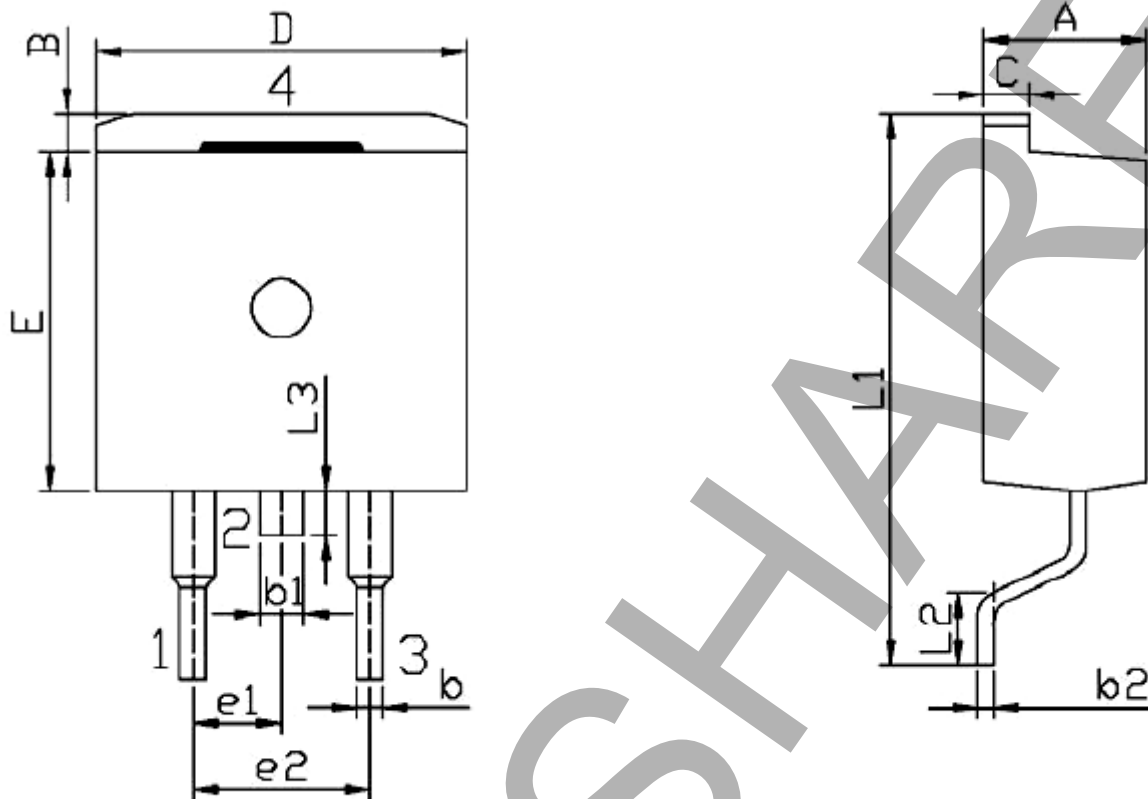


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.8	10.4	E	3.75	3.95	I	4.38	4.61
B	2.65	3.1	F	14.8	16.1	J	1.15	1.36
C	2.8	4.2	G	13.05	13.6	K	5.85	6.82
D	0.7	0.92	H	2.4	2.7	L	2.35	2.75
M	0.35	0.65	N	1.18	1.42			

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D2PAK Plastic Package

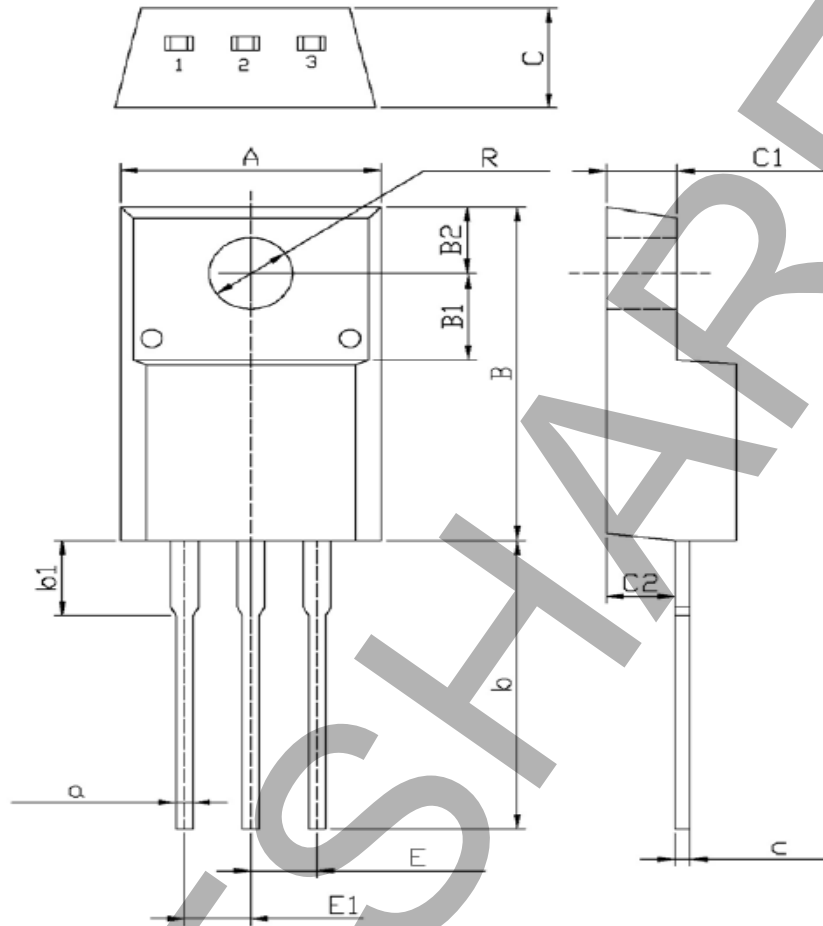


Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

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

TO-220F Plastic Package

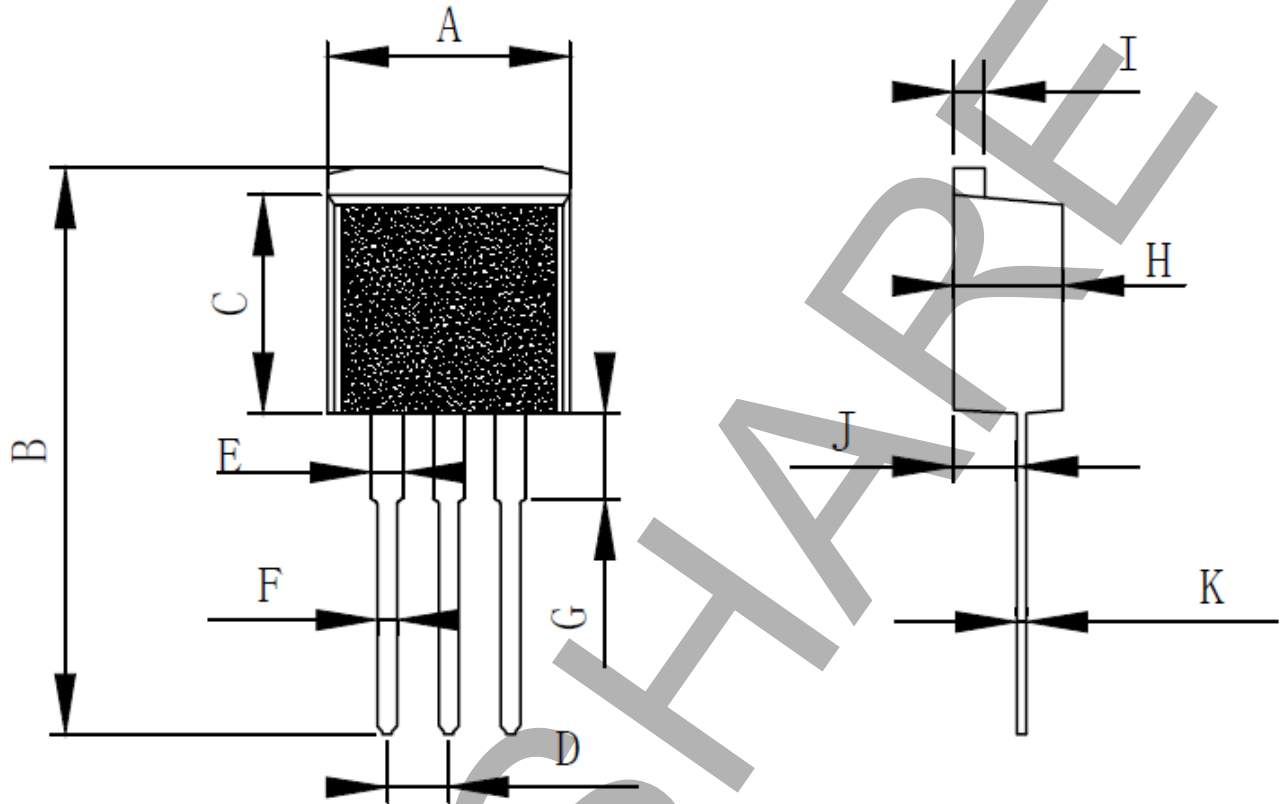


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.7	10.3	E	2.29	2.79	b	12.5	13.5
B	14.7	15.3	E1	2.29	2.79	b1	2.9	3.9
C	4.3	4.7	B1	3.8	4.0	a	0.55	0.75
C1	2.5	2.9	B2	2.9	3.1	c	0.5	0.7
C2	2.5	2.7	R	3.0	3.4			

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

TO-262 Plastic Package

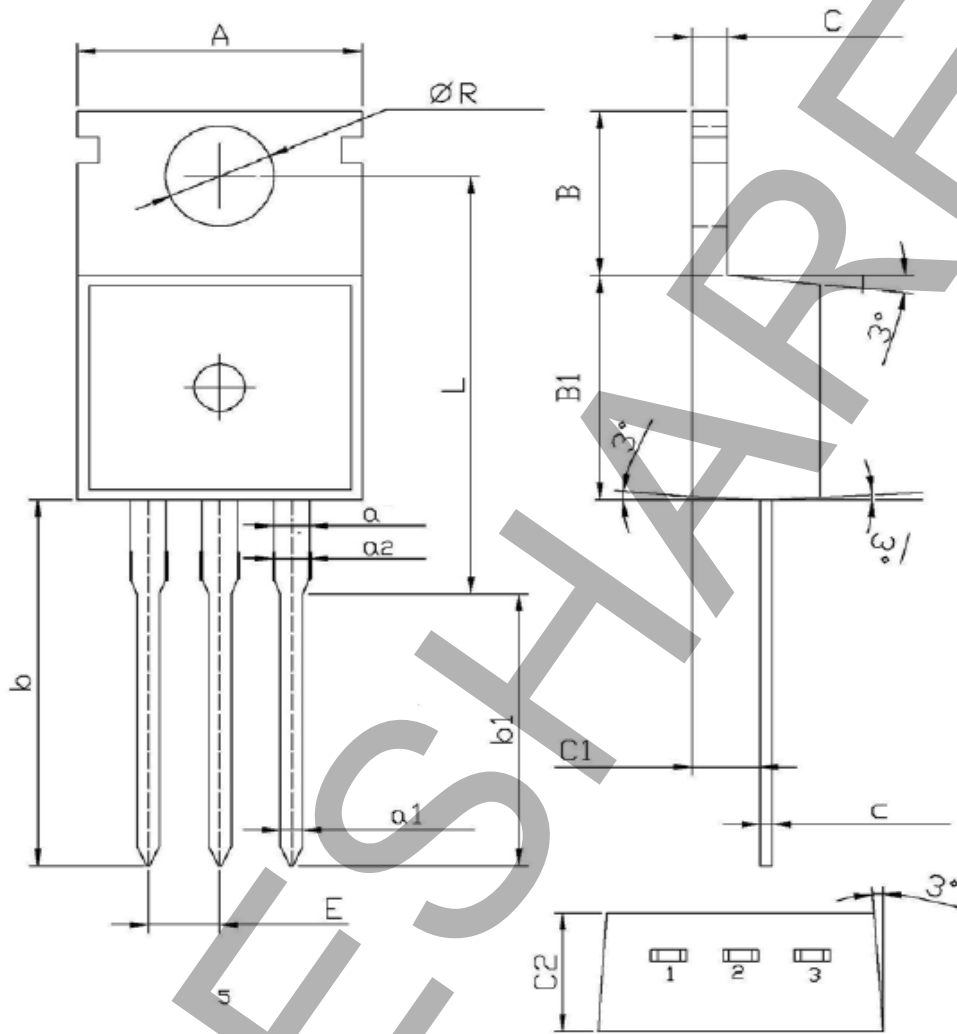


Item	Unit: mm		
	Type	Min	Max
A	10	9.95	10.2
B	23.35	23.25	23.45
C	9	8.9	9.1
D	2.54	2.5	2.6
E	1.27	1.2	1.35
F	0.8	0.75	0.85
G	3.5	3.3	3.6
H	4.5	4.45	4.55
I	1.27	1.25	1.29
J	2.6	2.5	2.7
K	0.4	0.38	0.42

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CHARACTERISTIC & CURVES (T_j = 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

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