

DT1T Series TRIACs

DT1T TRIACs SILICON BIDIRECTIONAL THYRISTORS

General description

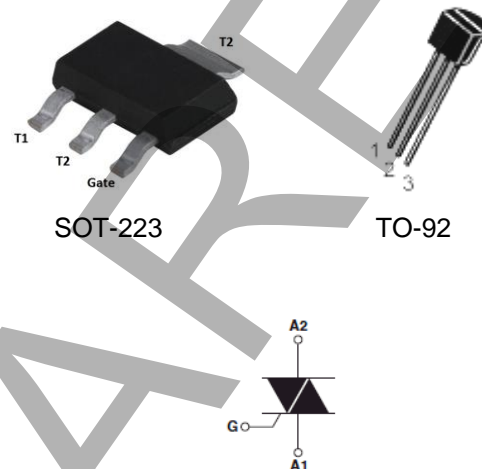
This product TRIAC is a sensitive gate for third quadrant used in TO-92 & SOT-223. These products are high commutation performance without snubber circuit. It can be triggered by logic level input.

FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering TRIAC
- Over 1000V/ 800V V_{DRM}/V_{RRM}
- Low level triggering and holding characteristics
- Logic control compatible
- “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 motor control
- Small loads in fan control
- Solenoid drivers
- LED Dimming
- Digital control drivers



PIN ASSIGNMENT	
1	Main Terminal 1
2	Gate
3	Main Terminal 2

DT1T Series TRIACs ELECTRICAL CHARACTERISTICS (T_j = 25°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}	1000/ 800	V
On-stage RMS current (Full sine wave, T _c = 60°C)	$I_{T(RMS)}$	1	A
Peak non-repetitive surge current (one full cycle 60 Hz, T _j = 25°C)	I_{TSM}	9	A
Circuit fusing consideration (t = 8.3ms)	I^2T	0.6	A ² S
Operating junction temperature range	T _j	-40 to +125	°C
Storage temperature range	T _{STG}	-40 to +150	°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 02, Oct-2020

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



Thermal Characteristics

PARAMETER		SYMBOL	VALUE		UNIT
Thermal resistance from junction to lead (1)	TO-92	Rth(j-c)	Max	50	°C/W
	SOT-223			20	
Junction to ambient (DC) (1)	TO-92	Rth(j-L)	Max	50	
	SOT-223			25	
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 (Tj = 125°C)		V _{to}	--	--	1.1	V
Dynamic resistors (Tj = 125°C)		R _d	--	--	500	mΩ
Peak repetitive forward or reverse blocking current (V _{AK} = rated V _{DRM} and V _{RRM} , gate open)	Tj = 25°C	I _{DRM}	--	--	5	uA
	Tj = 125°C	I _{RRM}	--	--	0.5	mA

ON Characteristics

PARAMETER	SYMBOL	DT1T5X	DT1T10X.		UNIT
Peak forward on-state voltage (I _{TM} = 1.4 A @ Tj = 25°C)	V _{TM}	1.56	--	Max	V
V _D = V _{DRM} , R _L = 100Ω, Tj = 125°C	V _{GD}	0.3	--	Min	V
Gate trigger current (V _{AK} = 12V, R _L = 100Ω)	I _{GT1}	5	10	Max	mA
	I _{GT2}	5	10		
	I _{GT3}	5	10		
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} I _{H3}	5	10	Max	mA
Latching current (V _{AK} = 12V, R _L = 100Ω)	I _{L1}	10	25	Max	mA
	I _{L2}	20	25		
	I _{L3}	10	25		

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Dynamic Characteristics

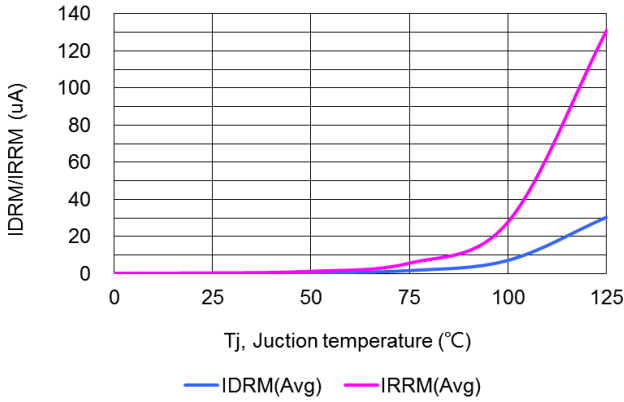
PARAMETER	SYMBOL	DT1T5X	DT1T10X		UNIT
Critical rate of rise of off-stage voltage ($V_{AK} = 67\%$ rated V_{DRM} , $T_j = 125^\circ\text{C}$, gate open)	dv/dt	200	600	Max	V/us
Critical rate of rise of on-state current, (V_{DRM} =maximum V_{DRM} , $T_j = 125^\circ\text{C}$)	di/dt(s)	15	50	Max	A/us
$T_j=125^\circ\text{C}$, gate open, Without Snubber	di/dt(c)	0.3	1	Max	A/ms

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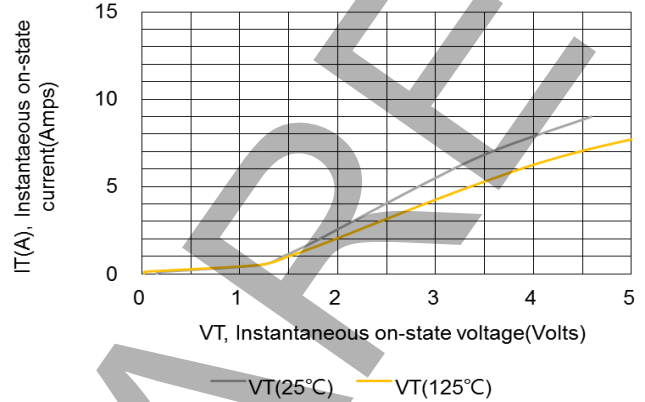
CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)



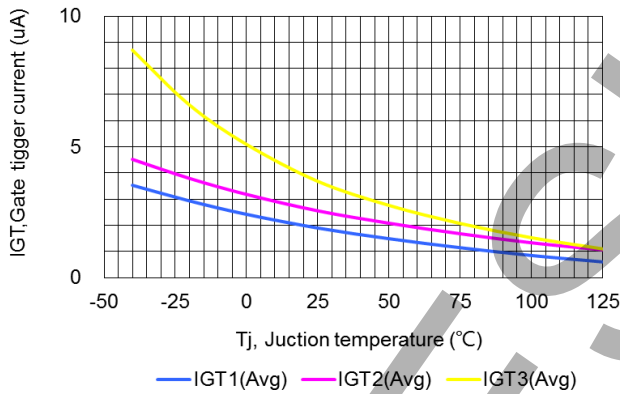
IR VS Temperature



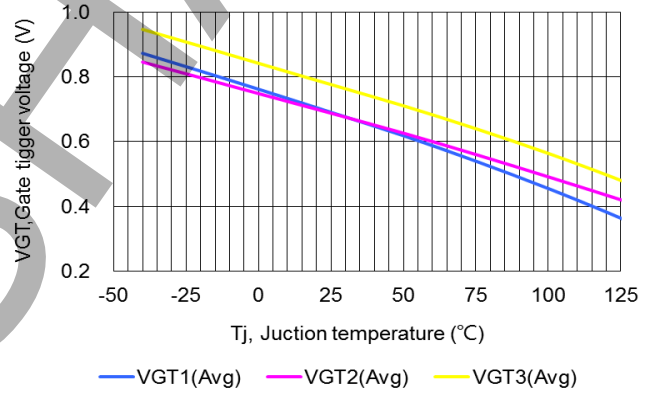
VTM - IT



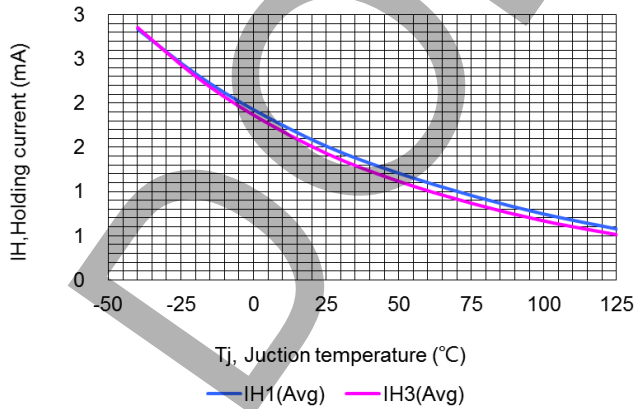
Typical gate trigger current V.S. junction temperature



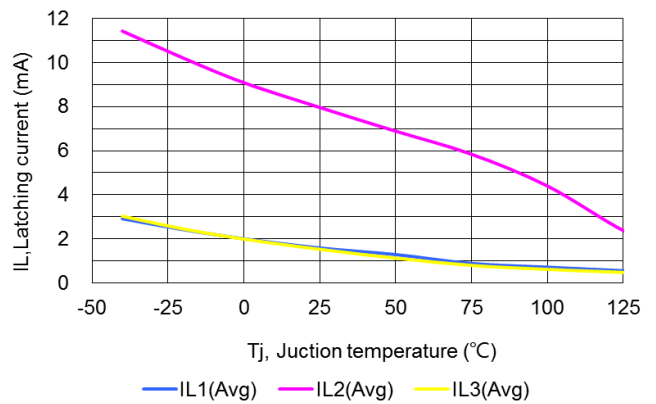
Typical gate trigger voltage V.S. junction temperature



Typical holding current V.S. junction temperature

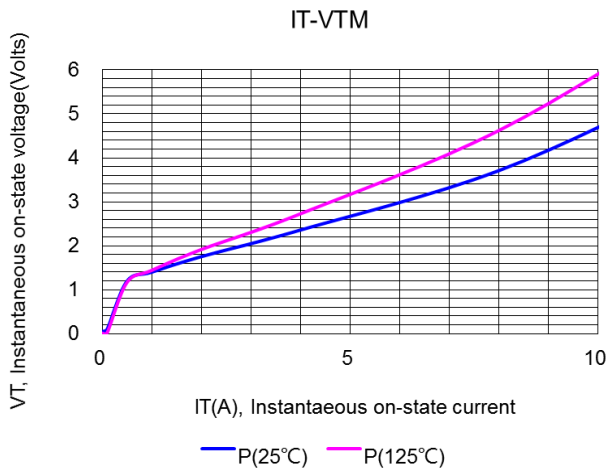


Typical latch current V.S. junction temperature



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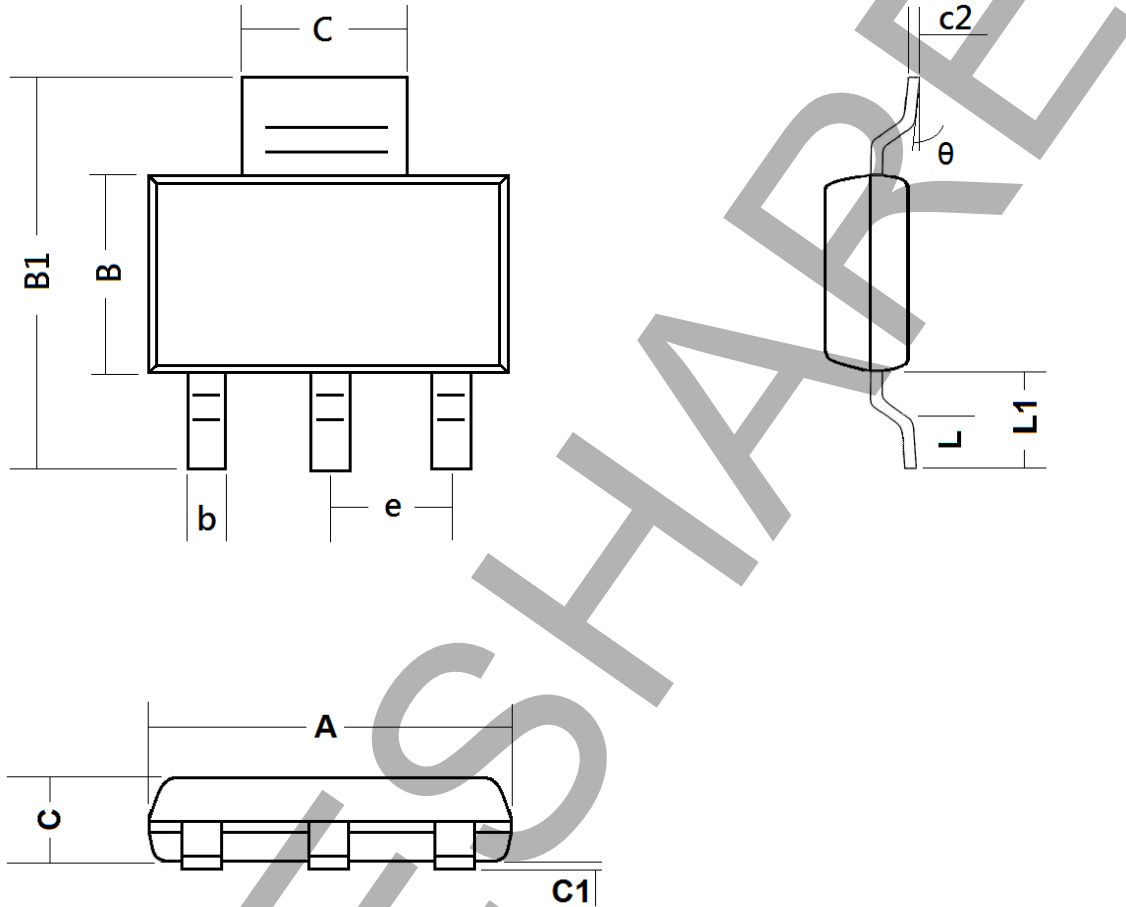


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CHARACTERISTIC & CURVES ($T_j = 25^\circ\text{C}$, unless otherwise specified.)

SOT-223 Plastic Package

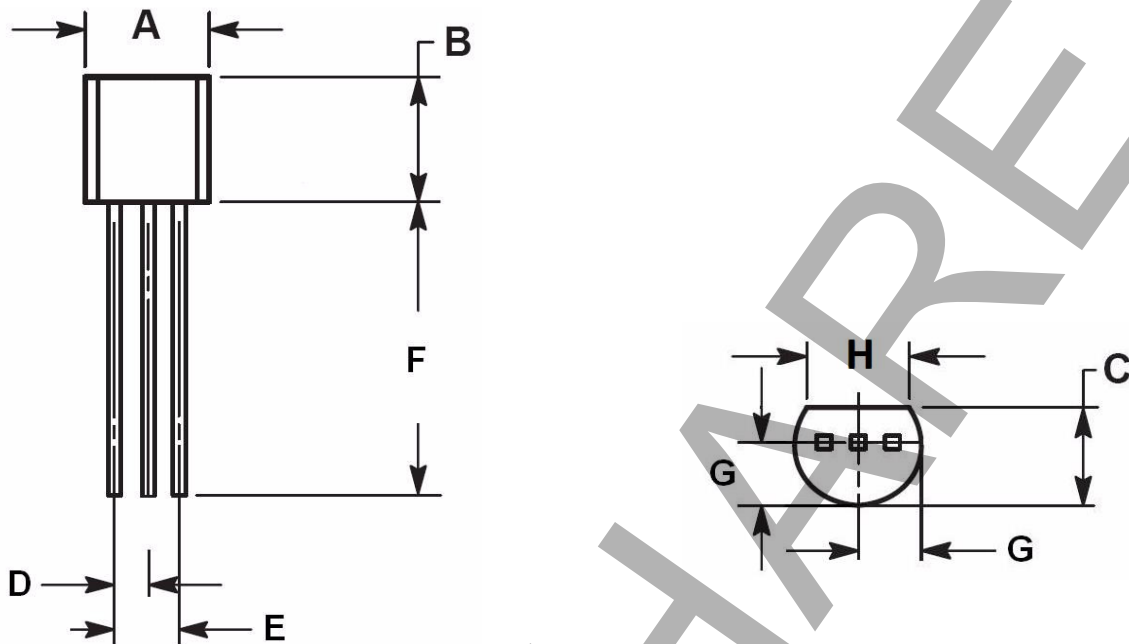


DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	6.40	6.60	c2	0.2	0.35	L	0.76	1.16
B	3.40	3.60	b	0.66	0.76	L1	1.70	1.80
C	1.45	1.65	B1	6.85	7.15	θ	0°	8°
C1	0.03	0.15	e	2.286(BSC)				

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TO-92 Plastic Package



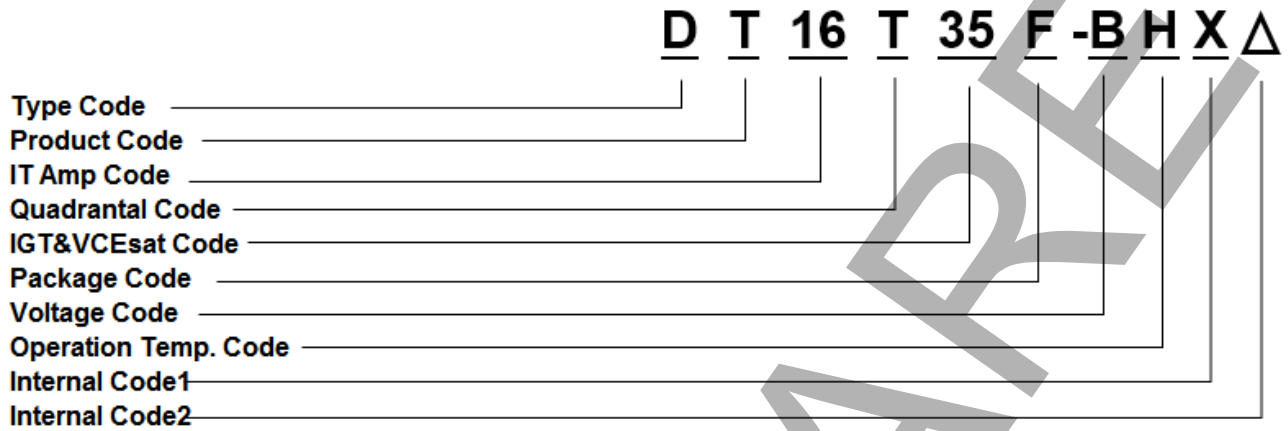
DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.175	0.205	4.45	5.20	E	0.095	0.105	2.413	2.667
B	0.170	0.210	4.32	5.33	F	0.500		12.70	
C	0.125	0.165	3.175	4.191	G	0.080	0.105	2.04	2.66
D	0.045	0.055	1.143	1.397	H	0.135		3.43	

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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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