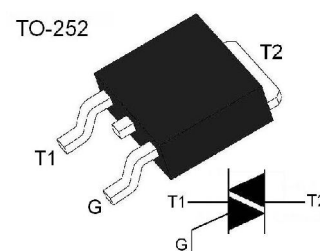


Triacs

General Description

Glass passivated triacs in a plastic envelope, intended for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.



Absolute Maximum Rating (Ta=25°C)

Limiting values in accordance with the Absolute Maximum System

Parameter	Symbol	Conditions		Min	Max			Unit
Repetitive peak off-state voltages	V_{RRM} V_{DRM}			-	-500 500	-600 600	-800 800	V
On-State RMS Current	$I_{T(RMS)}$	full sine wave; $T_{mb} \leq 107\text{ }^{\circ}\text{C}$		-	4			A
Non-repetitive peak on-state current	I_{TSM}	full sine wave; $T_J = 25\text{ }^{\circ}\text{C}$ prior to surge	t = 20 ms	-	25			A
			t = 16.7 ms	-	27			
I^2t for fusing	I^2t	t = 10 ms		-	3.1			A^2s
Repetitive rate of rise of on-state current after triggering	di_T/dt	$I_{TM} = 3\text{ A}$; $I_G = 0.2\text{ A}$; $di_G/dt = 0.2\text{ A}/\mu\text{s}$			50			$\text{A}/\mu\text{s}$
Peak gate current	I_{GM}			-	2			A
Peak Gate Voltage	V_{GM}			-	5			V
Peak gate power	P_{GM}			-	5			W
Average gate power	$P_{G(AV)}$	over any 20 ms period		-	0.5			W
Operating junction temperature	T_J			-	125			$^{\circ}\text{C}$
Storage Temperature	T_{stg}			-40	150			$^{\circ}\text{C}$

Thermal Resistances

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermal resistance junction to solder point	$R_{th\ j-sp}$	full or half cycle	-		3.0	K/W
Thermal resistance junction to ambient	$R_{th\ j-a}$	pcb mounted;	-	75		K/W

Static Characteristics ($T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated)

Snubberless™ and logic level (3 Quadrants)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Gate trigger current	I_{GT}	$V_D = 12\text{ V}$, $I_T = 0.1\text{ A}$			10	mA
Latching current	I_L	$V_D = 12\text{ V}$, $I_{GT} = 0.1\text{ A}$	I - III		15	mA
			II		20	
Holding current	I_H	$V_D = 12\text{ V}$, $I_{GT} = 0.1\text{ A}$	I - III		15	mA
			II		20	
On-state voltage	V_T	$I_T = 5\text{ A}$		1.4	1.7	V
Gate trigger voltage	V_{GT}	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$ $V_D = 400\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$		0.7	1.5	V
			0.25	0.4		
Off-state leakage current	I_D	$V_D = V_{DRM(max)}$; $T_j = 125\text{ }^{\circ}\text{C}$			0.5	mA

Standard (4 Quadrants)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Gate trigger current	I_{GT}	$V_D = 12\text{ V}$, $I_T = 0.1\text{ A}$	I - II - III		10	mA
			IV		15	
Latching current	I_L	$V_D = 12\text{ V}$, $I_{GT} = 0.1\text{ A}$	I - III - IV		15	mA
			II		20	
Holding current	I_H	$V_D = 12\text{ V}$, $I_{GT} = 0.1\text{ A}$	I - III - IV		15	mA
			II		20	
On-state voltage	V_T	$I_T = 5\text{ A}$		1.4	1.7	V
Gate trigger voltage	V_{GT}	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$ $V_D = 400\text{ V}$; $I_T = 0.1\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$		0.7	1.5	V
			0.25	0.4		
Off-state leakage current	I_D	$V_D = V_{DRM(max)}$; $T_j = 125\text{ }^{\circ}\text{C}$			0.5	mA

Dynamic Characteristics $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Critical rate of rise of off-state voltage	dV_D/dt	$V_{DM} = 67\% V_{DRM(max)}$; $T_j = 125\text{ }^{\circ}\text{C}$ exponential waveform; gate open circuit		50	-	V/ μs
Gate controlled turn-on time	t_{gt}	$I_{TM} = 6\text{ A}$; $V_D = V_{DRM(max)}$; $I_G = 0.1\text{ A}$; $dI_G/dt = 5\text{ A}/\mu\text{s}$;		2		μs

Typical Characteristics

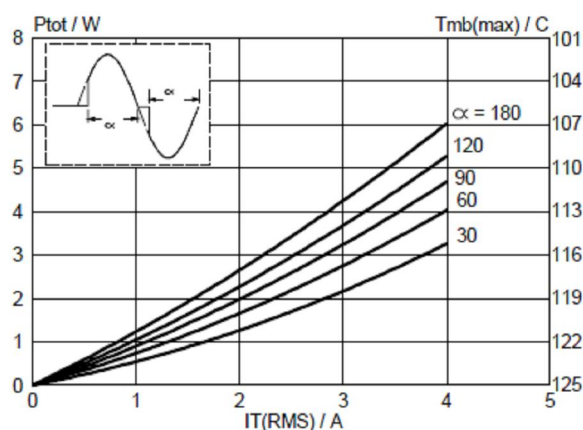


Fig.1. Maximum on-state dissipation, P_{tot} , vs rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

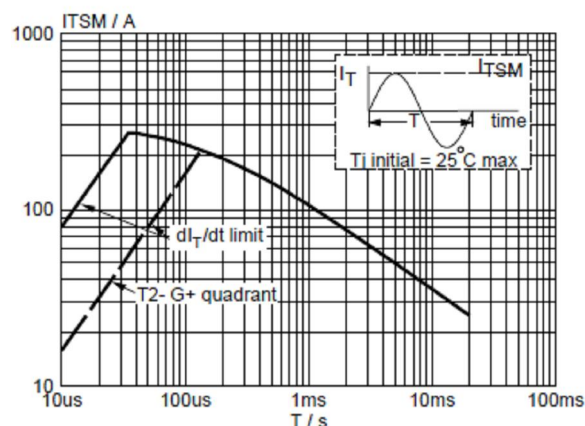


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , vs pulse width t_p , for sinusoidal currents, $t_p \leq 20$ ms.

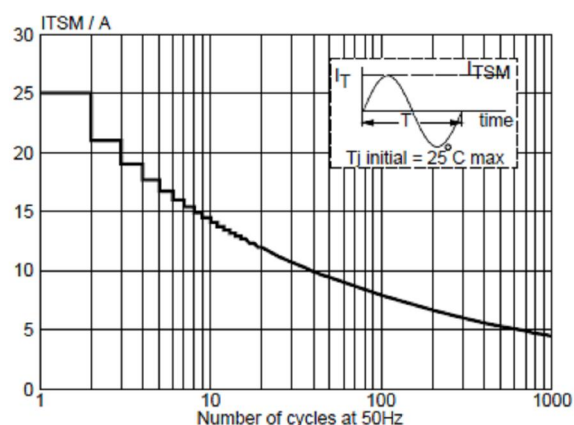


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , vs number of cycles, for sinusoidal currents, $f = 50$ Hz.

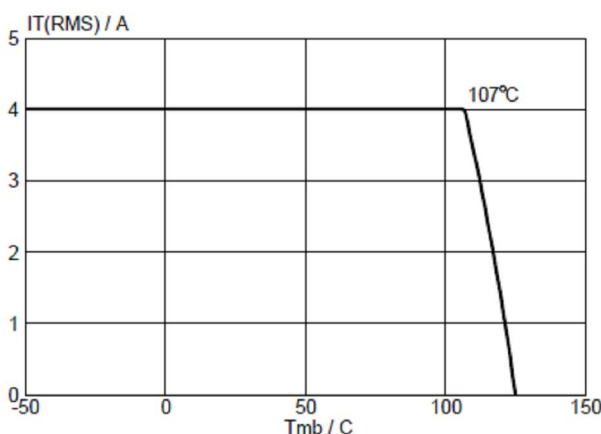


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, vs mounting base temperature T_{mb} .

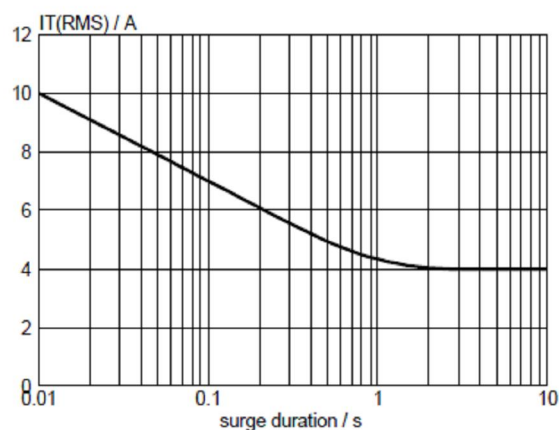


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, vs surge duration, for sinusoidal currents, $f = 50$ Hz; $T_{mb} \leq 107^\circ\text{C}$.

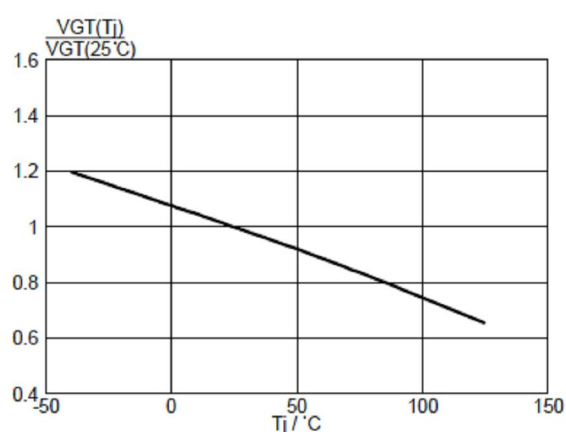


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25^\circ\text{C})$, vs junction temperature T_j .

Typical Characteristics

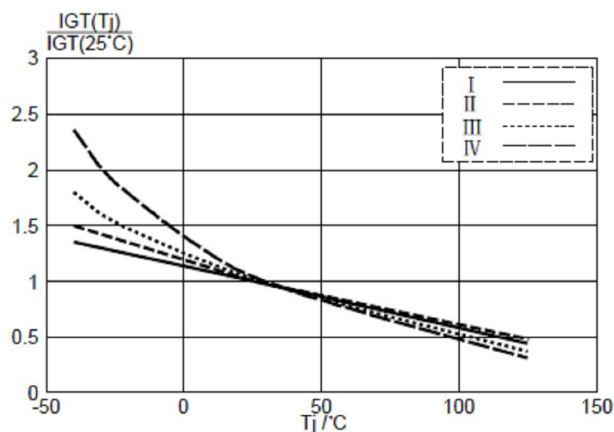


Fig.7. Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25^\circ\text{C})$, vs junction temperature T_j .

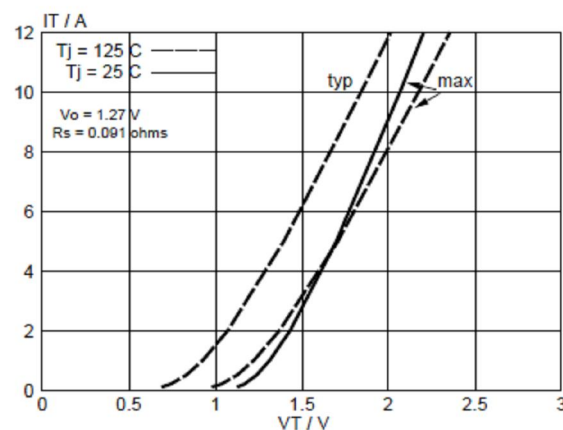


Fig.8. Typical and maximum on-state characteristic.

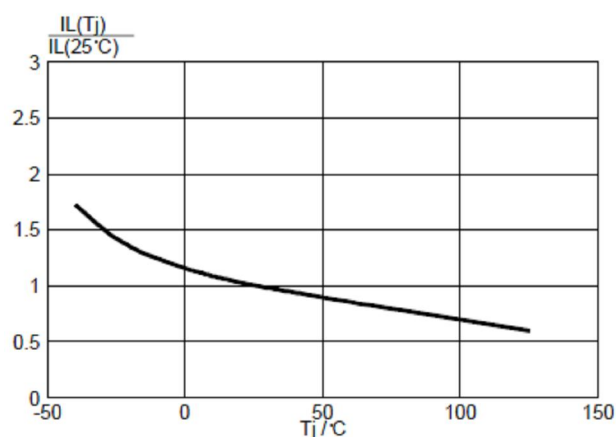


Fig.9. Normalised latching current $I_L(T_j)/I_L(25^\circ\text{C})$, vs junction temperature T_j .

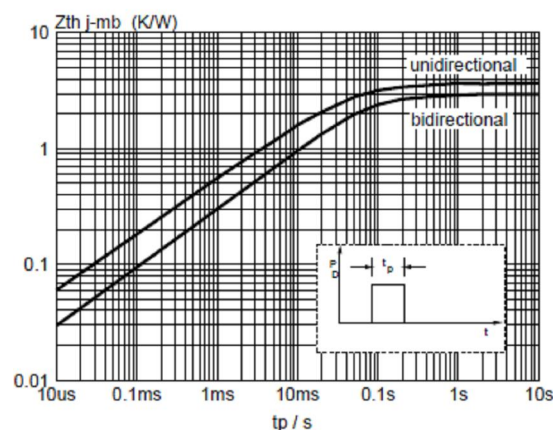


Fig.10. Transient thermal impedance $Z_{th\ j-mb}$, vs pulse width t_p .

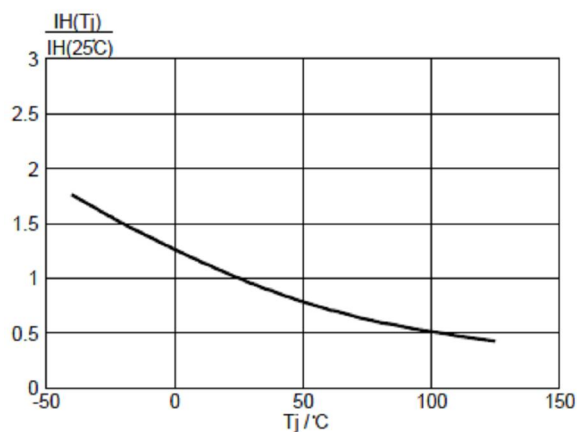


Fig.11. Normalised holding current $I_H(T_j)/I_H(25^\circ\text{C})$, vs junction temperature T_j .

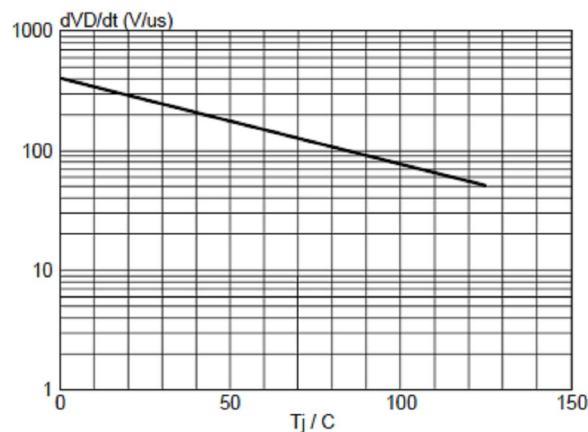
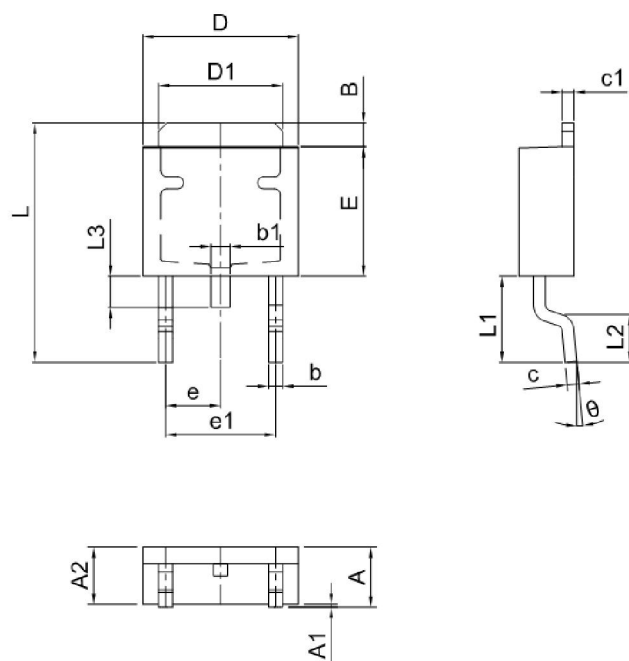


Fig.12. Typical, critical rate of rise of off-state voltage, dV_D/dt vs junction temperature T_j .

Package Dimensions



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.60	10.20	0.378	0.402
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059