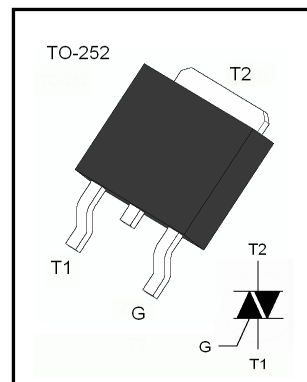


Triacs

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; $T_{mb} \leq 51\text{ }^{\circ}\text{C}$		-	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 = 20ms		-	3.1			A^2s
Repetitive rate of rise of on-state current after triggering	di_T/dt	$I_{TM} = 6\text{ A}; I_G = 0.2\text{ A};$ $di_G/dt = 0.2\text{ A}/\mu s$	T2+ G+	-	50			A/ μs
			T2+ G-	-	50			
			T2- G-	-	50			
			T2- G+	-	10			
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 cycle half cycle	-		3.0 3.7	K/W
Thermal resistance junction to ambient	$R_{th\ j-a}$	in free air	-	100		K/W

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

Parameter	Symbol	Conditions		Min	Typ	Max			Unit	
						...	...F	...G		
Gate trigger current	I _{GT}	V _D = 12 V I _T = 0.1 A	T2+ G+	-		35	25	50	mA	
			T2+ G-	-		35	25	50		
			T2- G-	-		35	25	50		
			T2- G+	-		70	70	100		
Latching current	I _L	V _D = 12 V I _{GT} = 0.1 A	T2+ G+	-		20	20	30	mA	
			T2+ G-	-		30	30	45		
			T2- G-	-		20	20	30		
			T2- G+	-		30	30	45		
Holding current	I _H	V _D = 12 V, I _{GT} = 0.1 A					15	15	30	mA
On-state voltage	V _T	I _T = 5A				1.2	1.7		V	
Gate trigger voltage	V _{GT}	V _D = 12 V; I _T = 0.1 A V _D = 400 V; I _T = 0.1 A; T _j = 125 °C					1.5		V	
					0.25					
Off-state leakage current	I _D	V _D = V _{DRM(max)} ; T _j = 125 °C					0.5		mA	

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

Parameter	Symbol	Conditions	Min			Typ	Max	Unit
			...	...F	...G			
Critical rate of rise of Critical rate of rise of	dV_D/dt	$V_{DM} = 67\% V_{DRM(max)}$; $V_{DM} = 67\% V_{DRM(max)}$; $V_{DM} = 67\% V_{DRM(max)}$; circuit	100	50	200	250	-	V/ μs
Critical rate of change of commutating voltage	dV_{com}/dt	$V_{DM} = 400\text{ V}$; $T_j = 95^\circ\text{C}$; $I_{T(RMS)} = 1\text{ A}$; $dI_{com}/dt = 1.8\text{ A/ms}$; gate open circuit	-	-	10	50	-	V/ μs
Gate controlled turn-on time	tgt	$I_{TM} = 1.5\text{ A}$; $V_D = V_{DRM(max)}$; $I_G = 0.1\text{ A}$; $dI_G/dt = 5\text{ A}/\mu\text{s}$;						μs

Typical Characteristics

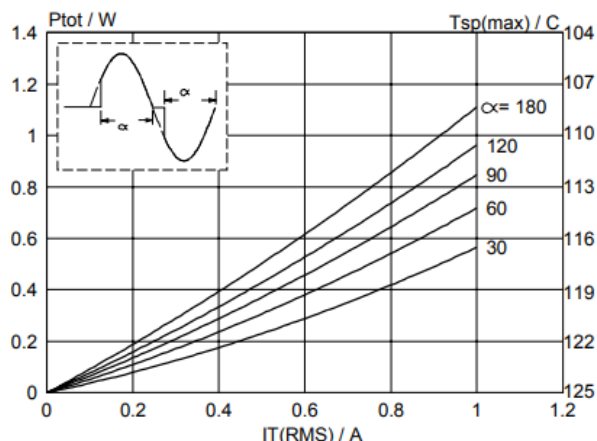


Fig.1. Maximum on-state dissipation, P_{tot} , versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

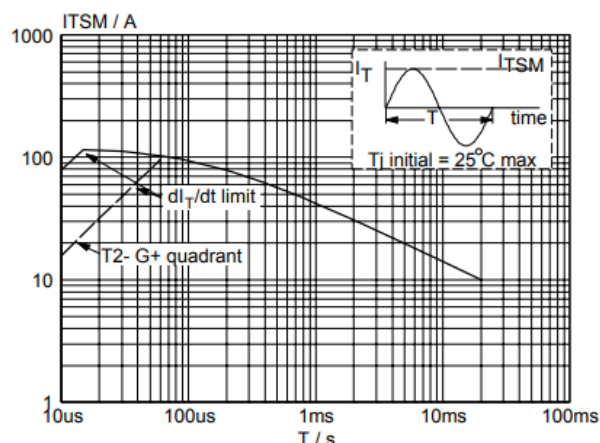


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 20ms$.

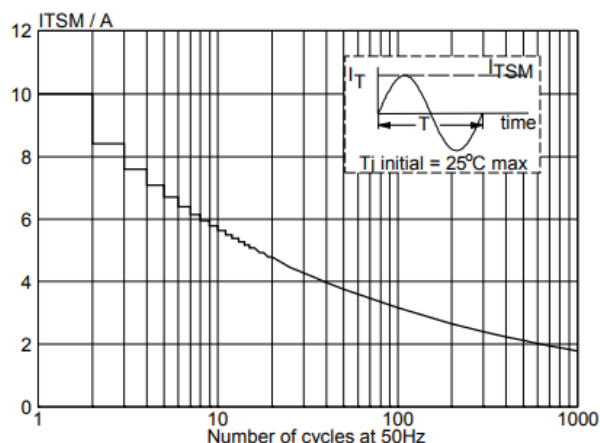


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50$ Hz.

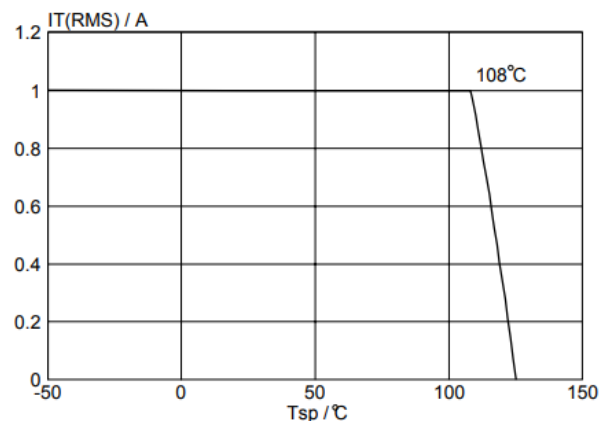


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus solder point temperature T_{sp} .

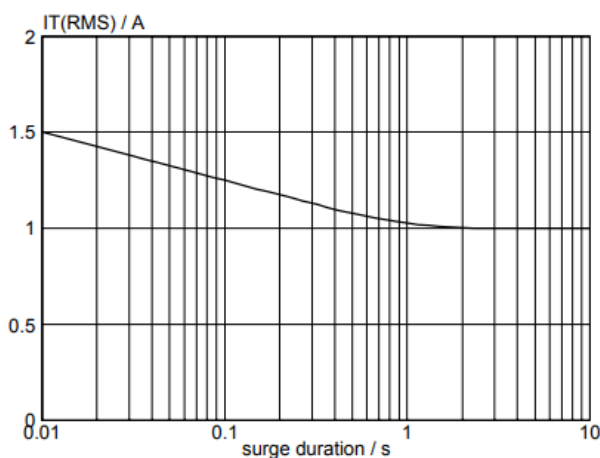


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50Hz$; $T_{sp} \leq 108^\circ C$.

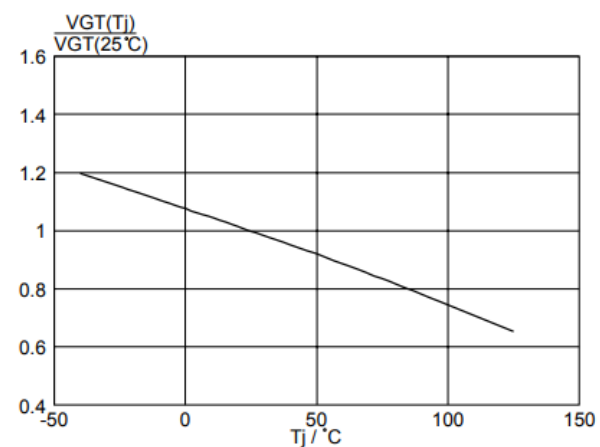


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25^\circ C)$, versus junction temperature T_j .

Typical Characteristics

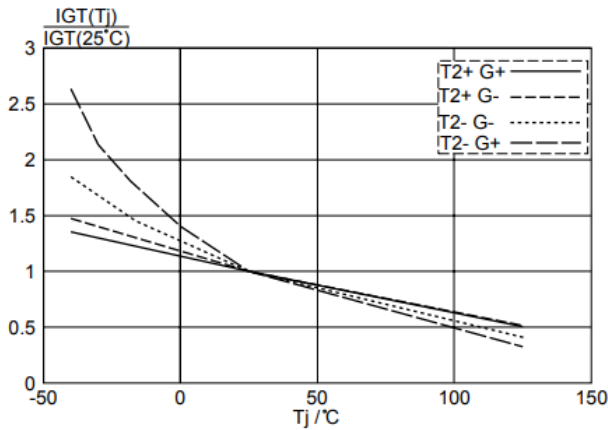


Fig.7. Normalised gate trigger current $I_{GT}(T_j) / I_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

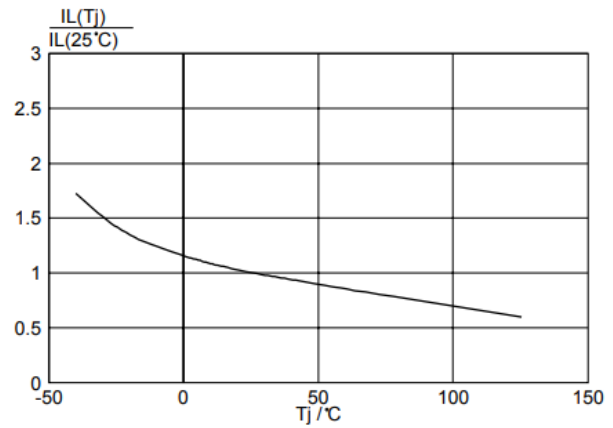


Fig.8. Normalised latching current $I_L(T_j) / I_L(25^\circ\text{C})$, versus junction temperature T_j .

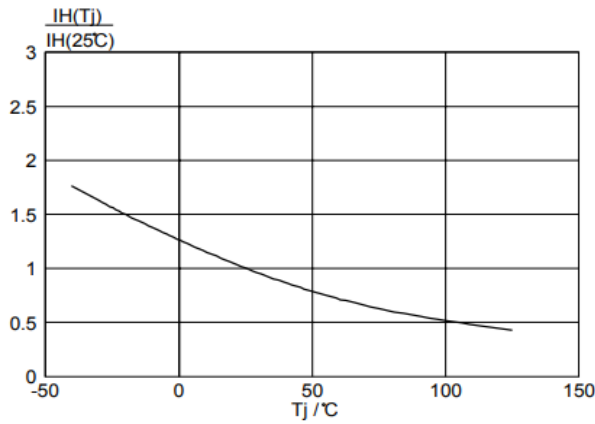


Fig.9. Normalised holding current $I_H(T_j) / I_H(25^\circ\text{C})$, versus junction temperature T_j .

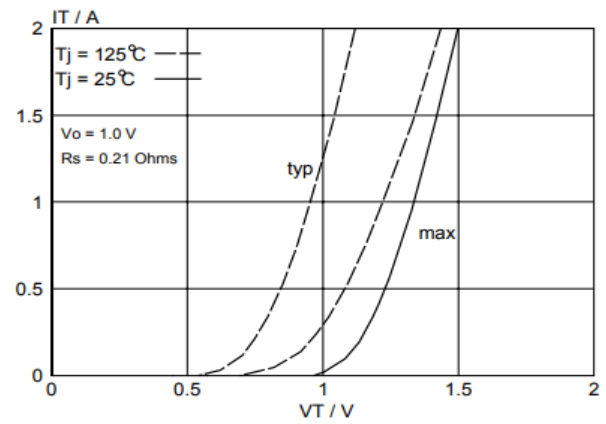


Fig.10. Typical and maximum on-state characteristic.

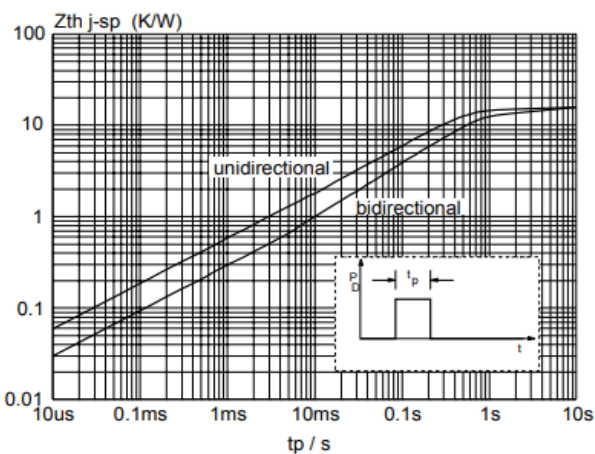


Fig.11. Transient thermal impedance $Z_{th j-sp}$, versus pulse width t_p .

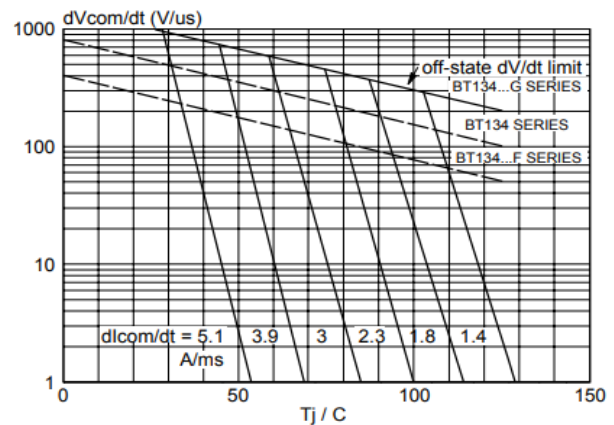
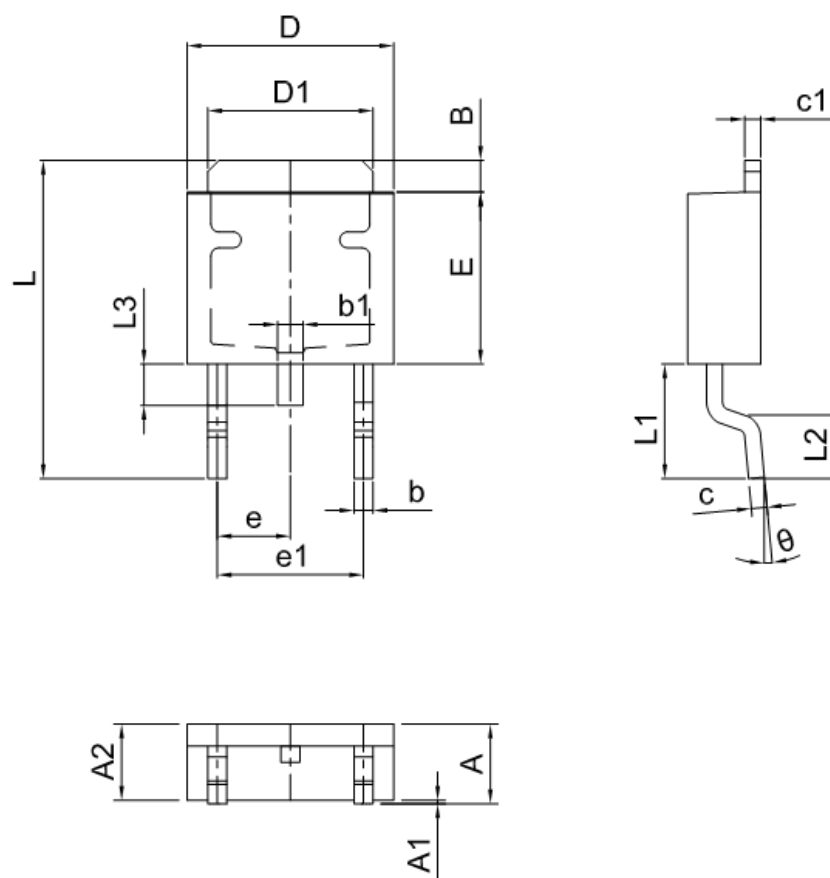


Fig.12. Typical commutation dV/dt versus junction temperature, parameter commutation dI_T/dt . The triac should commute when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt .

Package Dimensions (Unit:mm)



Symbol	TO-252		
	Min.	Typ	Max.
A	2.20	2.35	2.50
A1	0.00	0.05	0.12
A2	2.20	2.30	2.40
B	1.20	1.40	1.60
b	0.50	0.60	0.70
b1	0.70	0.80	0.90
c	0.40	0.50	0.60
c1	0.40	0.50	0.60
D	6.35	6.50	6.65
D1	5.20	5.30	5.40
E	5.40	5.50	5.70
e	2.20	2.30	2.40
e1	4.40	4.60	4.80
L	9.60	9.90	10.20
L1	2.70	2.90	3.10
L2	1.40	1.60	1.80
L3	0.90	1.20	1.50
θ	0°	4°	8°