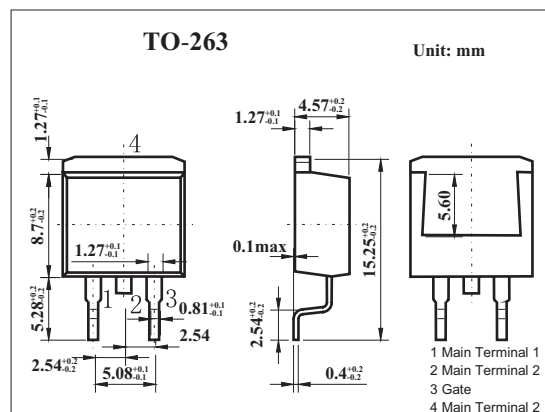
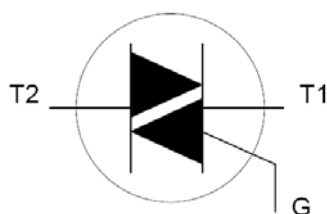


Triacs

BT139B series

■ Features

- RMS on-state current : $I_T(RMS)=16A$
- Non-repetitive peak on-state current: $I_{TSM}=140A$



■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	BT139B series			Unit
		-500	-600	-800	
Peak Repetitive Off-State Voltage	V _{DRM} , V _{RRM}	500	600	800	V
On-State RMS Current	I _{T(RMS)}	16			A
Peak Non-Repetitive Surge Current	I _{TSM}	t = 20 ms			A
t = 16.7 ms		140			
		150			
Circuit Fusing Consideration	I ² t	98			A ² s
Repetitive rate of rise of on-state current after triggering *1	diT/dt	T2+ G+			A/ μ s
T2+ G-		50			A/ μ s
T2- G-		50			A/ μ s
T2- G+		10			A/ μ 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)}	0.5			W
Operating Junction Temperature Range	T _J	125			℃
Storage Temperature Range	T _{stg}	-40 to 150			℃

*1 $I_{TM} = 20\text{ A}$; $I_G = 0.2\text{ A}$; $dI_G/dt = 0.2\text{ A}/\mu s$

BT139B series

■ Static Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Testconditons	Min	Typ	Max			Unit
		BT139B...			...	...F	...G	
Gate Trigger Current (Continuous dc)	I _{GT}	V _D = 12 V, I _T = 0.1 A		5	35	25	50	mA
MT2+, G+				8	35	25	50	
MT2+, G-				10	35	25	50	
MT2-, G+				22	70	70	100	
Latching Current	I _L	V _D = 12 V, I _G = 0.1 A		7	40	40	60	mA
MT2+, G+				20	60	60	90	
MT2+, G-				8	40	40	60	
MT2-, G+				10	60	60	90	
Holding Current	I _H	V _D = 12 V, I _{GT} = 0.1 A		6	30	30	60	
On-state voltage	V _T	I _T = 20 A		1.2	1.6			V
Gate Trigger Voltage	V _{GT}	V _D = 12 V; I _T = 0.1 A	0.25	0.7	1.5			V
		V _D = 400 V; I _T = 0.1 A, T _j = 125 °C		0.4				V
Off-state leakage current	I _D	V _D = V _{DRM(max)} ; T _j = 125 °C		0.1	0.5			mA

■ Dynamic Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Testconditons	Min			Typ	Max	Unit
		BT139B...	...	...F	...G			
Critical rate of rise of off-state voltage	dV _D /dt	V _{DM} = 67% V _{DRM(max)} ; T _j = 125 °C; exponential waveform; gate open circuit	100	50	200	250		V/μs
Critical rate of change of commutating voltage	dV _{com} /dt	V _{DM} = 400 V; T _j = 95 °C; I _{T(RMS)} = 16 A; di _{com} /dt = 7.2 A/ms; gate open circuit			10	20		V/μs
Gate controlled turn-on time	t _{gt}	I _{TM} = 20 A; V _D = V _{DRM(max)} ; I _G = 0.1 A; di _G /dt = 5 A/μs						μs

BT139B series

■ Typical Characteristics

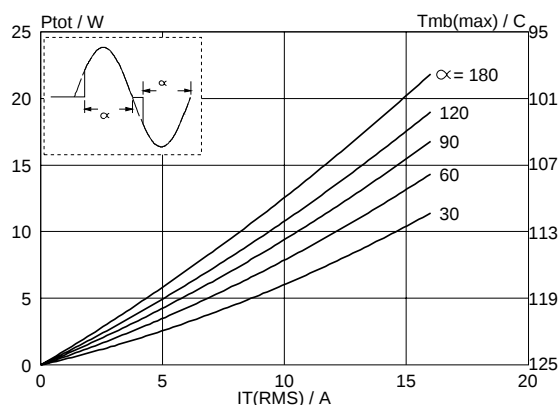


Fig.1. Maximum on-state dissipation, P_{tot} , versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

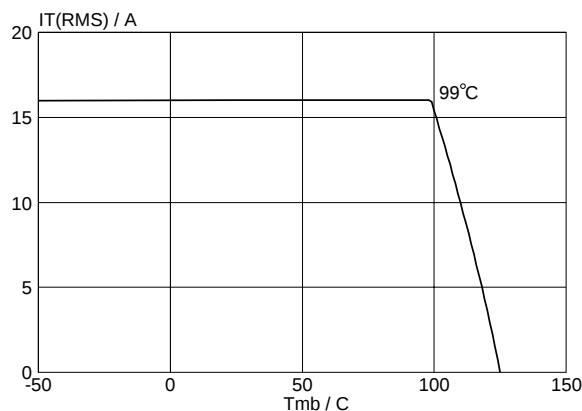


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

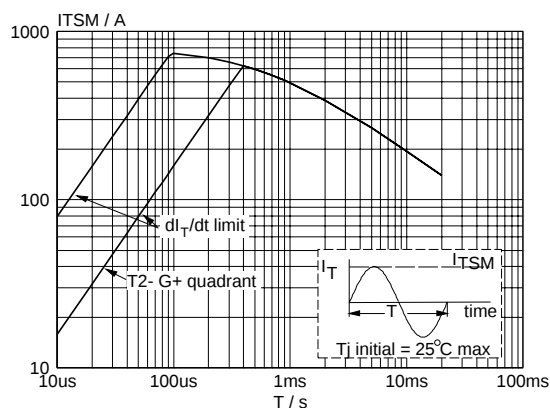


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 20\text{ms}$.

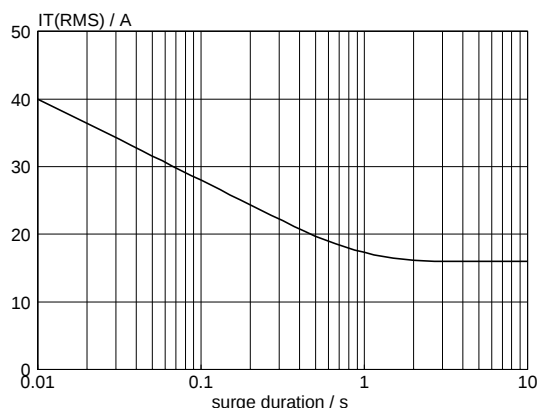


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50\text{ Hz}$; $T_{mb} \leq 99^\circ\text{C}$.

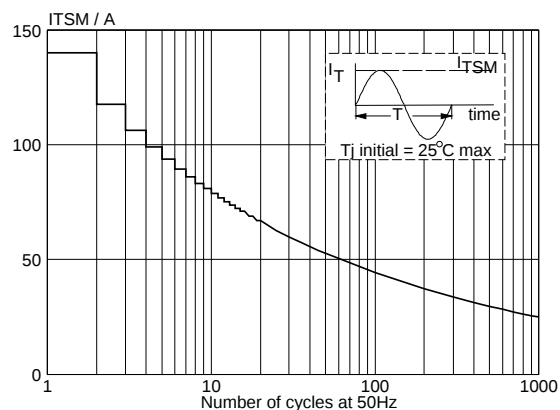


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50\text{ Hz}$.

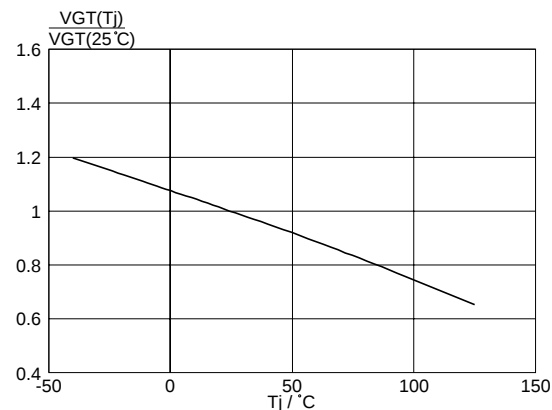


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

BT139B series

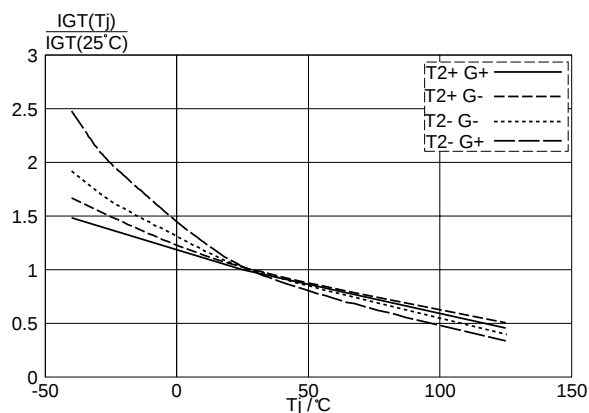


Fig. 7. Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

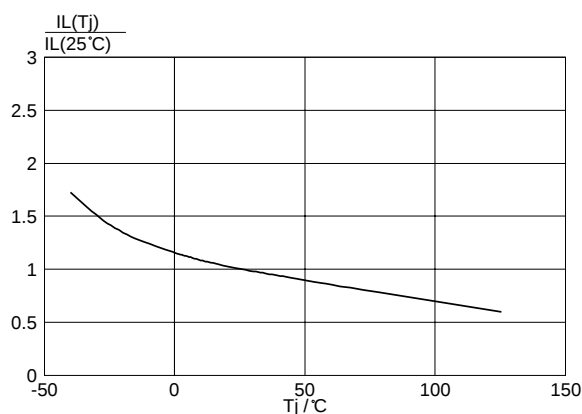


Fig. 8. Normalised latching current $I_L(T_j)/I_L(25^\circ\text{C})$, versus junction temperature T_j .

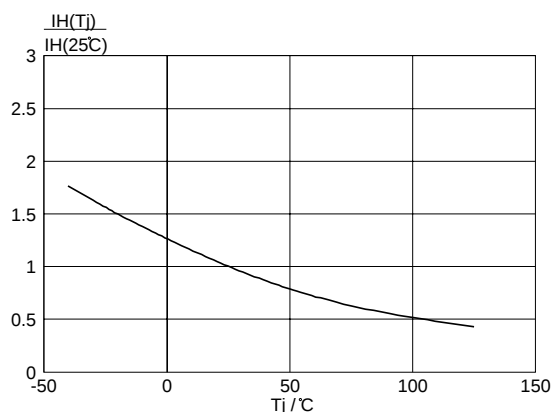


Fig. 9. Normalised holding current $I_H(T_j)/I_H(25^\circ\text{C})$, versus junction temperature T_j .

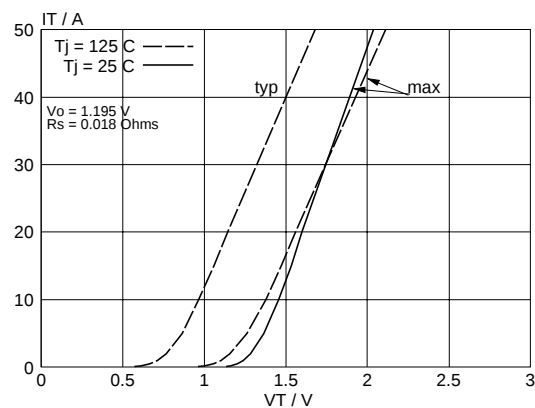


Fig. 10. Typical and maximum on-state characteristic.

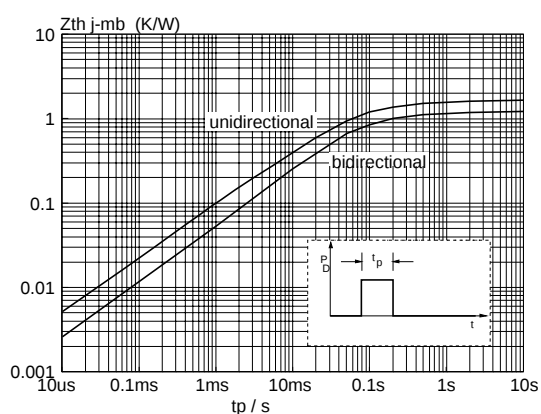


Fig. 11. Transient thermal impedance $Z_{th\ j-mb}$, versus pulse width t_p .

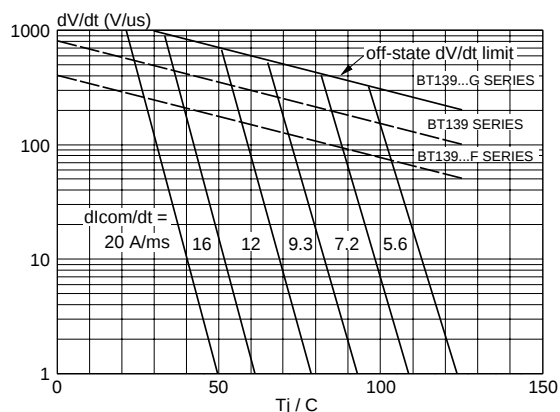


Fig. 12. Typical commutation dV/dt versus junction temperature, parameter commutation dI_T/dt . The triac should commute when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt .