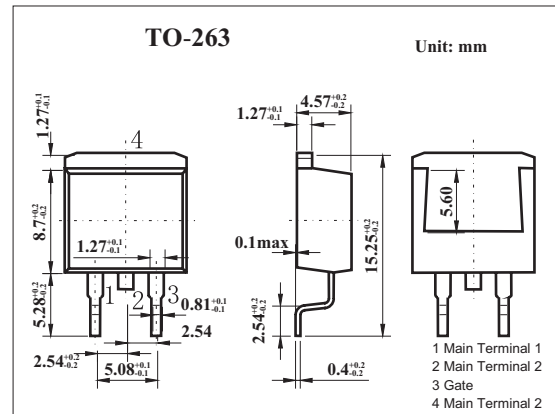
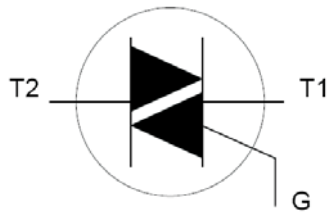


Triacs

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}	140			A
$t = 20 \text{ ms}$					
	$t = 16.7 \text{ ms}$	150			A
Circuit Fusing Consideration	I^2t	98			A^2s
Repetitive rate of rise of on-state current after triggering *1	di_T/dt	50			$A/\mu s$
T2+ G+					
T2+ G-					
T2- G-					
	T2- G+	10			$A/\mu s$
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			$^\circ C$
Storage Temperature Range	T_{stg}	-40 to 150			$^\circ C$

*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	Testconditions BT139B...	Min	Typ	Max			Unit
				F	...G	
Gate Trigger Current (Continuous dc) MT2+, G+ MT2+, G- MT2-, G- MT2-, G+	I_{GT}	$V_D = 12\text{ V}, I_T = 0.1\text{ A}$		5 8 10 22	35 35 35 70	25 25 25 70	50 50 50 100	mA
Latching Current MT2+, G+ MT2+, G- MT2-, G- MT2-, G+	I_L	$V_D = 12\text{ V}, I_G = 0.1\text{ A}$		7 20 8 10	40 60 40 60	40 60 40 60	60 90 60 90	mA
Holding Current	I_H	$V_D = 12\text{ V}, I_{GT} = 0.1\text{ A}$		6	30	30	60	
On-state voltage	V_T	$I_T = 20\text{ A}$		1.2	1.6			V
Gate Trigger Voltage	V_{GT}	$V_D = 12\text{ V}; I_T = 0.1\text{ A}$ $V_D = 400\text{ V}; I_T = 0.1\text{ A}, T_j = 125^\circ\text{C}$	0.25	0.7 0.4	1.5			V V
Off-state leakage current	I_D	$V_D = V_{DRM(max)}; T_j = 125^\circ\text{C}$		0.1	0.5			mA

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

Parameter	Symbol	Testconditions	Min			Typ	Max	Unit
		F	...G			
Critical rate of rise of off-state voltage	dV_D/dt	$V_{DM} = 67\% V_{DRM(max)};$ $T_j = 125^\circ\text{C};$ exponential waveform; gate open circuit	100	50	200	250		V/ μs
Critical rate of change of commutating voltage	dV_{com}/dt	$V_{DM} = 400\text{ V}; T_j = 95^\circ\text{C};$ $I_{T(RMS)} = 16\text{ A};$ $dI_{com}/dt = 7.2\text{ A/ms};$ gate open circuit			10	20		V/ μs
Gate controlled turn-on time	t_{gt}	$I_{TM} = 20\text{ A}; V_D = V_{DRM(max)};$ $I_G = 0.1\text{ A}; dI_G/dt = 5\text{ A}/\mu\text{s}$						μs

BT139B series

■ Typical Characteristics

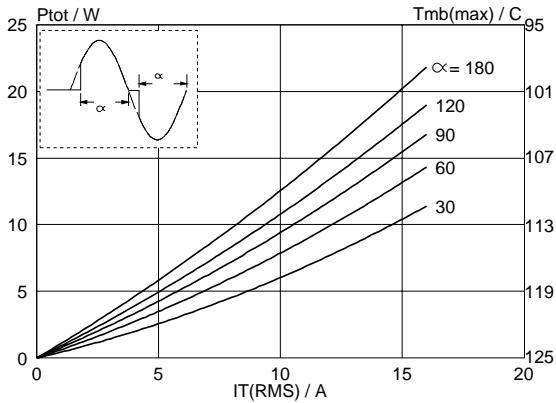


Fig.1. Maximum on-state dissipation, P_{tot} , versus rms on-state current, $I_{T(RMS)}$, where $\alpha =$ conduction angle.

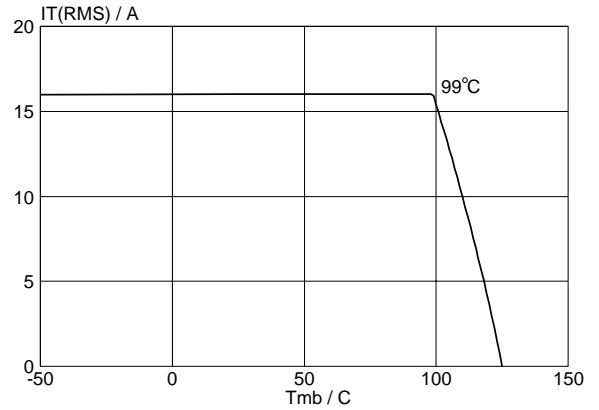


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

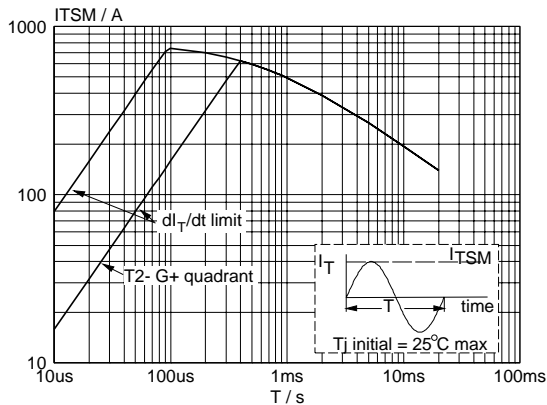


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 20ms$.

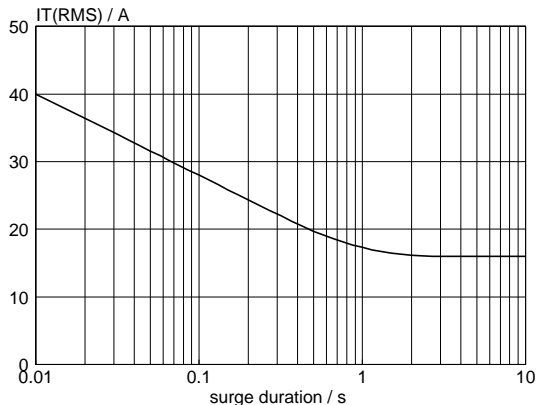


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50$ Hz; $T_{mb} \leq 99^\circ\text{C}$.

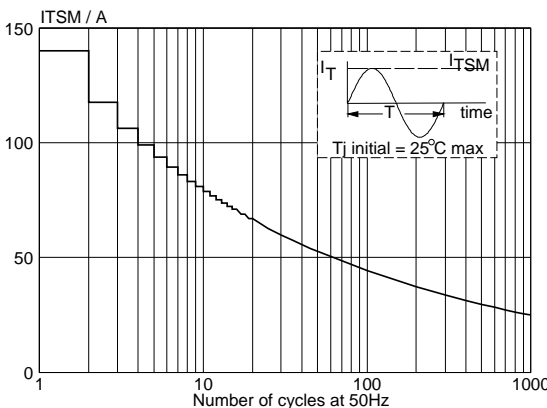


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50$ Hz.

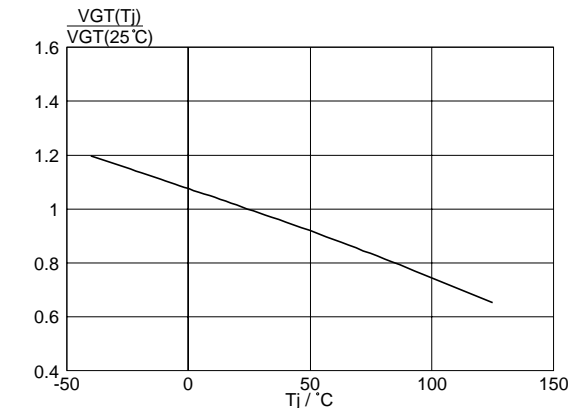


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

BT139B series

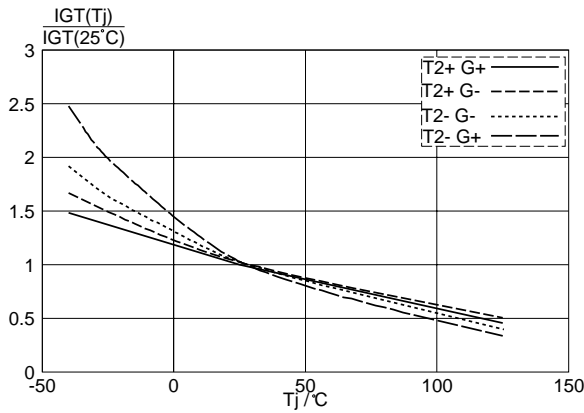


Fig.7. Normalised gate trigger current $I_{GT}(T_j) / I_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

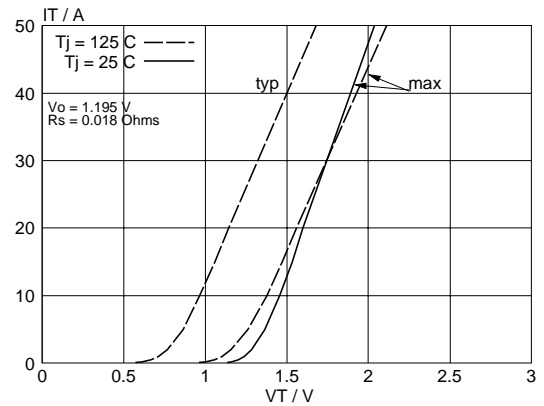


Fig.10. Typical and maximum on-state characteristic.

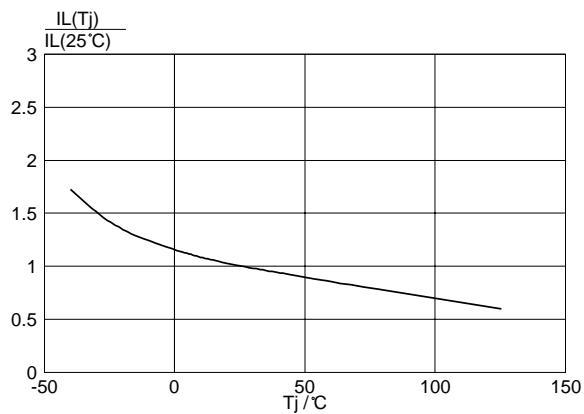


Fig.8. Normalised latching current $I_L(T_j) / I_L(25^\circ\text{C})$, versus junction temperature T_j .

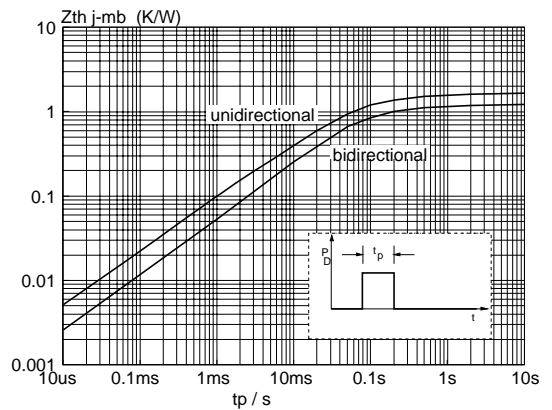


Fig.11. Transient thermal impedance $Z_{th\ j-mb}$, versus pulse width t_p .

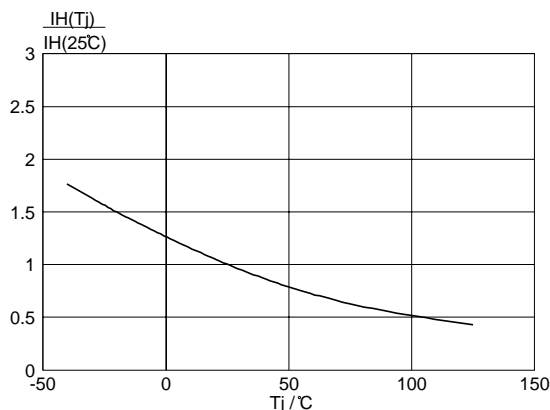


Fig.9. Normalised holding current $I_H(T_j) / I_H(25^\circ\text{C})$, versus junction temperature T_j .

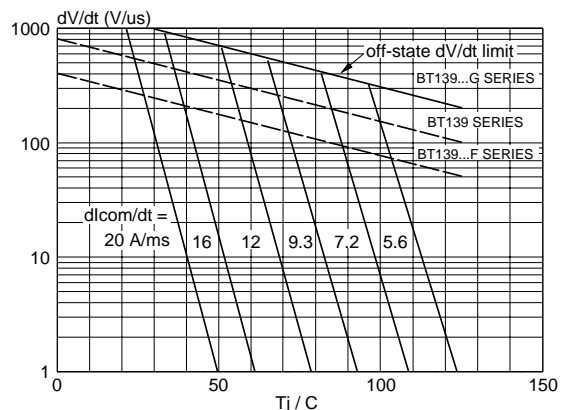


Fig.12. Typical commutation dV/dt versus junction temperature, parameter commutation di_T/dt . The triac should commute when the dV/dt is below the value on the appropriate curve for pre-commutation di_T/dt .