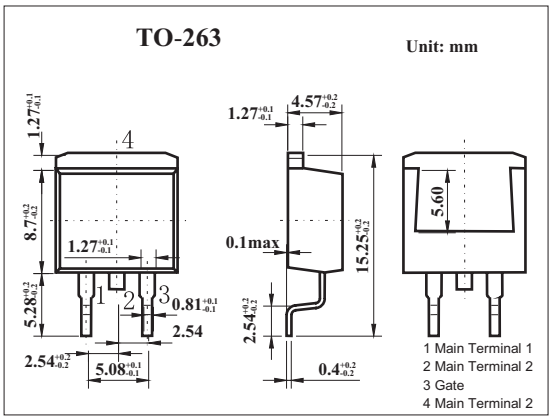
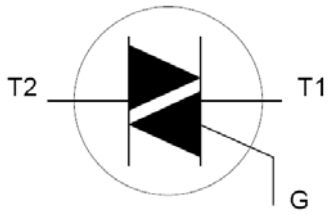
Triacs
BT139B series



Features

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



Absolute Maximum Ratings Ta = 25℃

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					
t = 20 ms	I_{TSM}	140			A
t = 16.7 ms		150			
Circuit Fusing Consideration	I^2t	98			A^2s
Repetitive rate of rise of on-state current after triggering *1					
T2+ G+	dI_T/dt	50			A/μs
T2+ G-		50			A/μs
T2- G-		50			A/μs
T2- G+		10			A/μs
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 A; I_G = 0.2 A;dI_G/dt = 0.2 A/μs

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■ Static Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max			Unit
		BT139B···			···	···F	···.G	
Gate Trigger Current (Continuous dc)								
MT2+, G+	I_{GT}	V_D = 12 V, I_T=0.1A		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								
MT2+, G+	I_L	V_D = 12 V, I_G = 0.1A		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=12V,I_{GT}=0.1A		6	30	30	60	
On-state voltage	V_T	I_T=20A		1.2		1.6		V
Gate Trigger Voltage	V_{GT}	V_D = 12 V; I_T = 0.1 A		0.7		1.5		V
		V_D = 400 V; I_T = 0.1 A,T_j = 125 ℃	0.25	0.4				V
Off-state leakage current	I_D	V_D = $V_{DRM(max)}$;T_j = 125℃		0.1		0.5		mA

■ Dynamic Characteristics Ta = 25℃

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℃; 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℃; $I_{T(RMS)}$ = 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

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■ Typical Characteristics

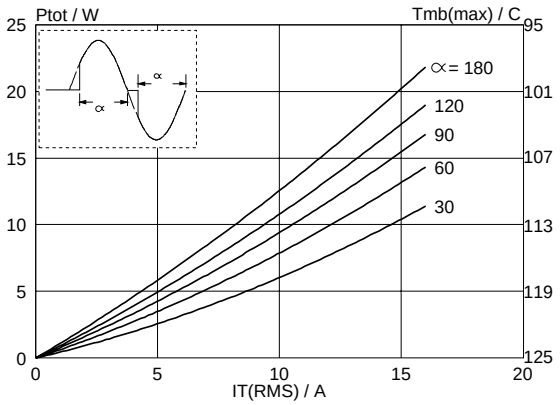

Fig.1. Maximum on-state dissipation, P_{tot}, versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

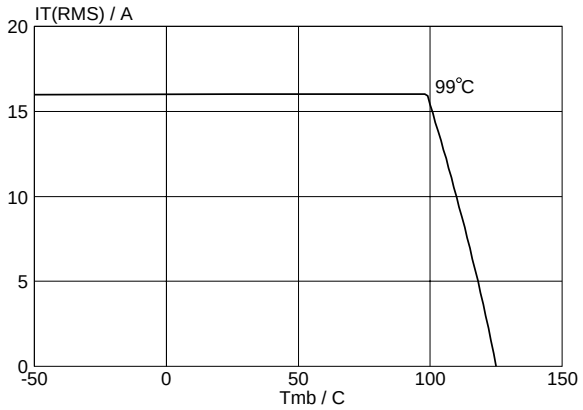

Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb}.

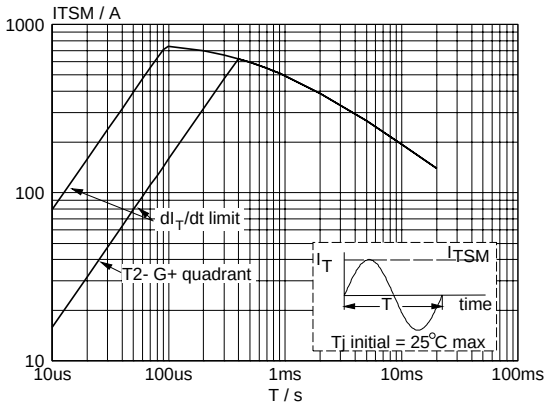

Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width t_p, for sinusoidal currents, $t_p \leq 20ms$.

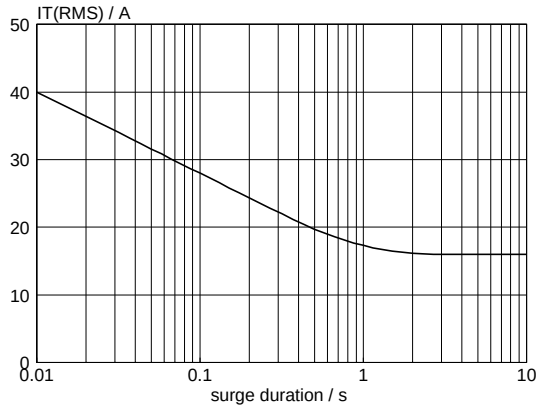

Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \leq 99˚C$.

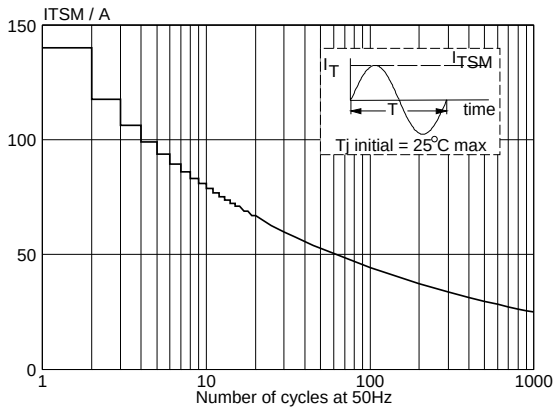

Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50 Hz.

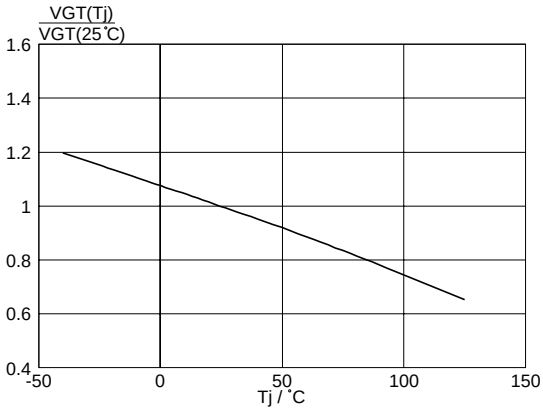

Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/ V_{GT}(25˚C)$, versus junction temperature T_j.

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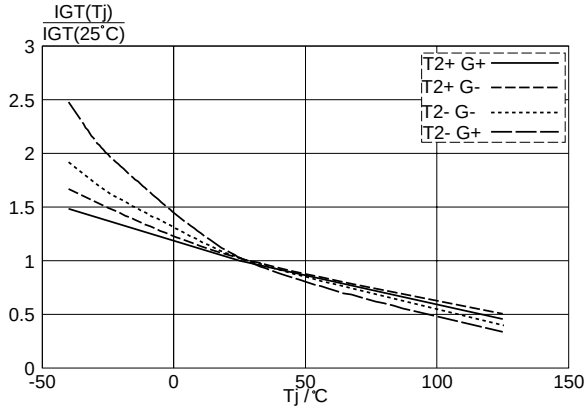

Fig.7. Normalised gate trigger current $I_{GT}(T_j)/ I_{GT}(25^{\circ}C)$, versus junction temperature T_j.

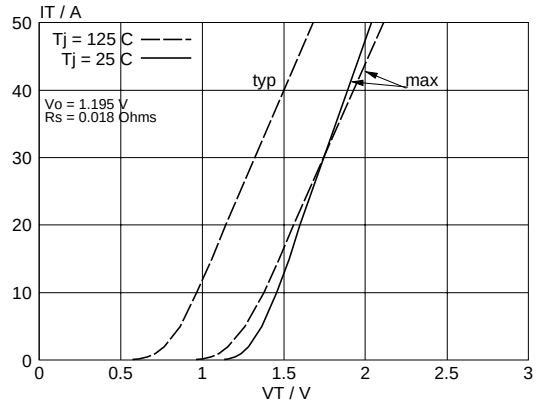

Fig.10. Typical and maximum on-state characteristic.

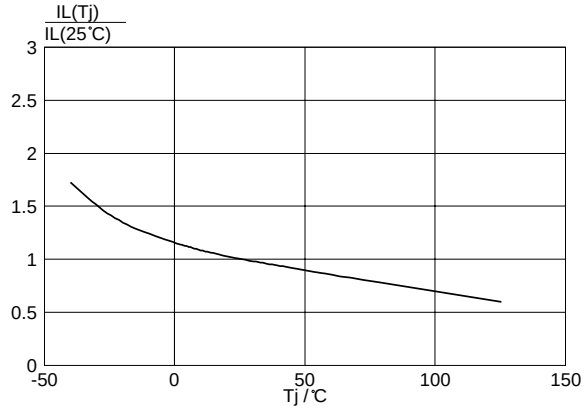

Fig.8. Normalised latching current $I_L(T_j)/ I_L(25^{\circ}C)$, versus junction temperature T_j.

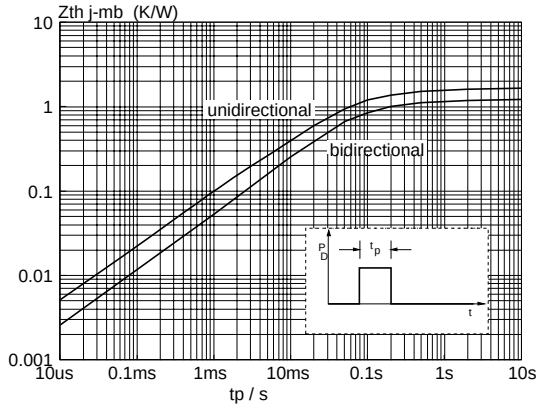

Fig.11. Transient thermal impedance $Z_{th\ j\text{-}mb}$, versus pulse width t_p.

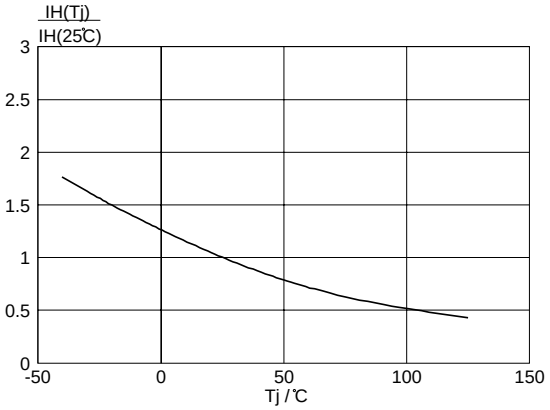

Fig.9. Normalised holding current $I_H(T_j)/ I_H(25^{\circ}C)$, versus junction temperature T_j.

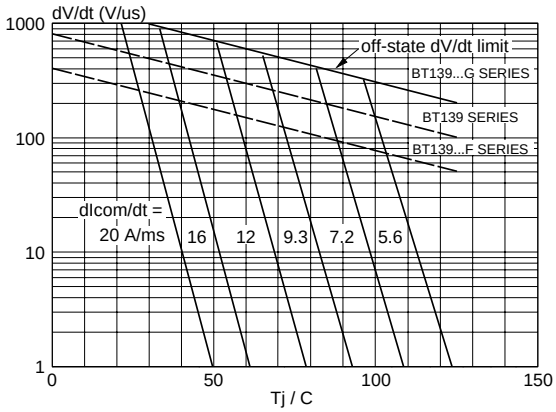

Fig.12. Typical commutation dV/dt versus junction temperature, parameter commutation dI_T/dt. The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt.