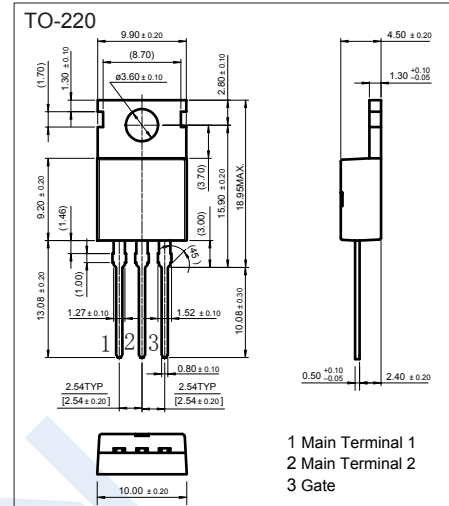
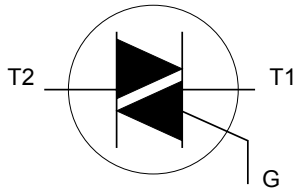


TRIACS Thyristor

BT137-600E

■ Features

- Repetitive peak off-state voltages :600V
- RMS on-state current :8A
- Non-repetitive peak on-state current :65A



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

Parameter	Symbol	Rating	Unit
Peak Repetitive Forward and Reverse Blocking Voltages	V_{DRM} V_{RRM}	600	V
RMS on-state Current @ full sine wave; $T_{mb} \leq 102^\circ\text{C}$	$I_T(\text{RMS})$	8	A
Non-Repetitive Peak on-state Current ($t=20\text{ms}$)	I_{TSM}	65	
Non-Repetitive Peak on-state Current ($t=16.7\text{ms}$)		71	
Circuit Fusing Considerations ($t = 10\text{ms}$)	I^2t	21	A^2s
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	
Thermal Resistance Junction to Ambient	R_{thJA}	60	K/W
Thermal Resistance Junction to Mounting Base @ full cycle	R_{thJB}	2	
Thermal Resistance Junction to Mounting Base @ half cycle		2.4	
junction Temperature	T_J	125	$^\circ\text{C}$
Storage Temperature range	T_{stg}	-40 to 150	

TRIACS Thyristor

BT137-600E

■ Electrical Characteristics (Ta = 25°C, unless otherwise noted.)

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
Repetitive Peak off-state Voltages	V _{DRM}	I _D =I _R =50μA	600			V
Off-state Leakage Current	I _D	V _{DRM(Max)} =V _D , T _J =125°C			0.5	mA
On-state Voltage	V _{TM}	I _T =10A			1.65	V
Gate Trigger Voltage	V _{GT}	V _D =12V, I _T =100mA			1.5	
		V _D =400V, I _T =100mA, T _J =125°C	0.25			
Gate Trigger Current	I _{GT}	V _D =12V, I _T =100mA	T ₂₊ G+		25	mA
			T ₂₊ G-		25	
			T ₂₋ G-		25	
			T ₂₋ G+		70	
Latching Current	I _L	V _D =12V, I _{GT} =100mA	T ₂₊ G+		30	mA
			T ₂₊ G-		45	
			T ₂₋ G-		30	
			T ₂₋ G+		45	
Holding Current	I _H	V _D =12V; I _G =100mA			20	
Repetitive Rate of rise of on-state Current after Triggering	di _T /dt		T ₂₊ G+		50	A/us
			T ₂₊ G-		50	
			T ₂₋ G-		50	
			T ₂₋ G+		10	
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	50	250		V/us
Critical Rate of Change of Commutating Voltage	dV _{com} /dt	V _{DM} =400V; T _J =95°C; I _{T(RMS)} = 8 A; dI _{com} /dt = 3.6 A/ms; gate open circuit		20		
Gate Controlled turn-on time	t _{gt}	I _{TM} =12A; V _D =V _{DRM(max)} ; I _G =100mA; dI _G /dt=5A/us		2		us

TRIACS Thyristor BT137-600E

■ Typical Characteristics

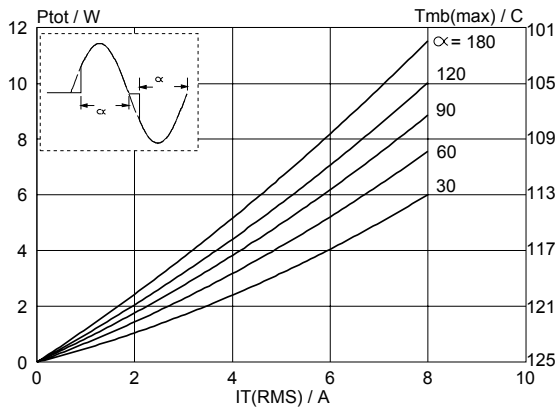


Fig.1. Maximum on-state dissipation, P_{tot} , versus rms on-state current, $I_{T(RMS)}$, where $\alpha =$ conduction angle.

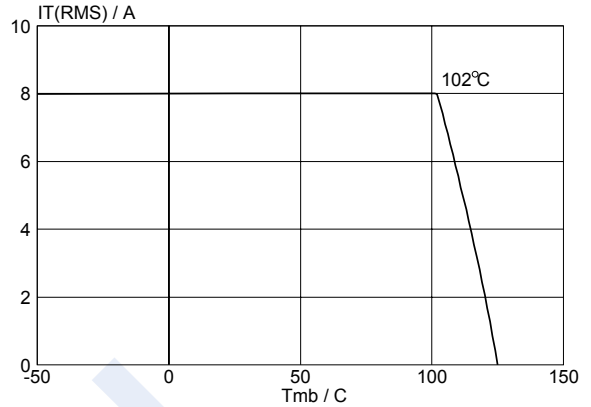


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

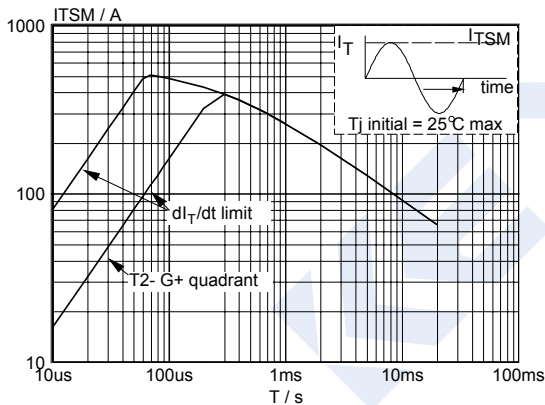


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 20$ ms.

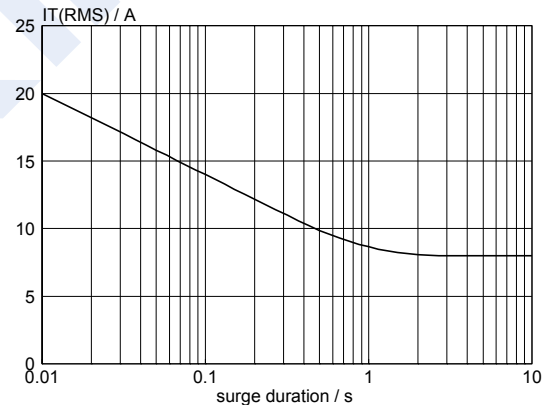


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50$ Hz; $T_{mb} \leq 102$ °C.

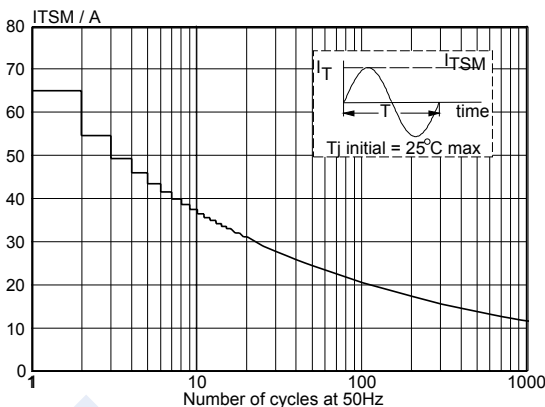


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50$ Hz.

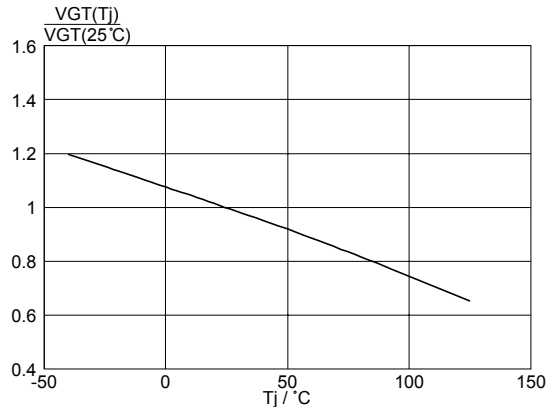


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

TRIACS Thyristor BT137-600E

■ Typical Characteristics

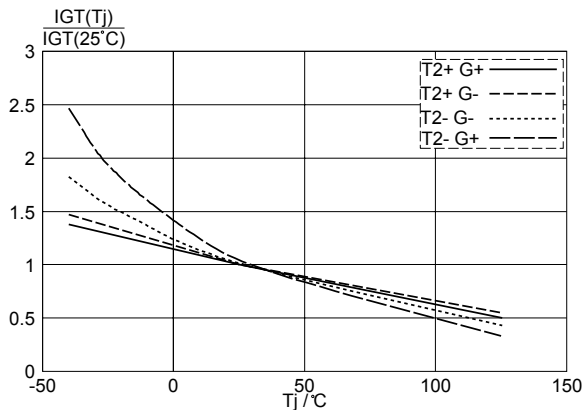


Fig. 7. Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

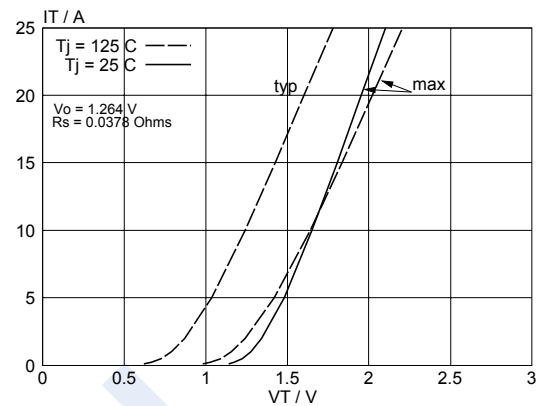


Fig. 10. Typical and maximum on-state characteristic.

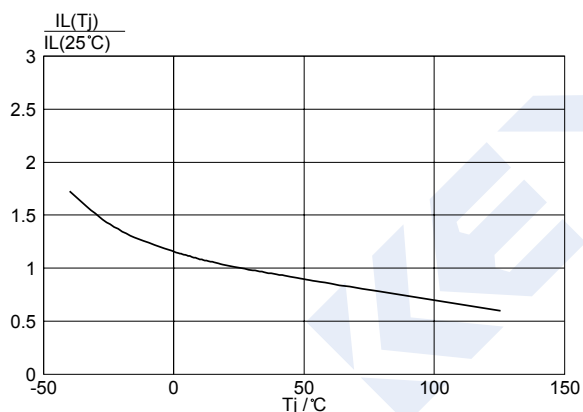


Fig. 8. Normalised latching current $I_L(T_j)/I_L(25^\circ\text{C})$, versus junction temperature T_j .

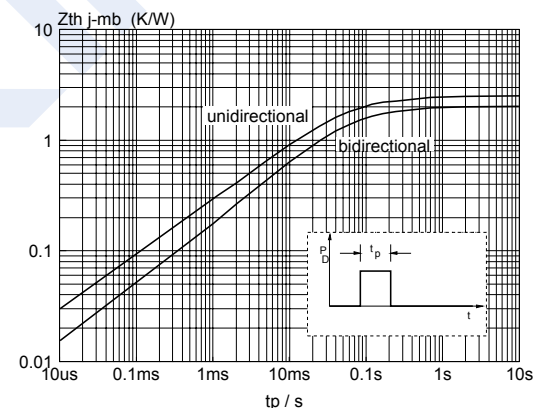


Fig. 11. Transient thermal impedance $Z_{th\ j-mb}$ pulse width t_p .

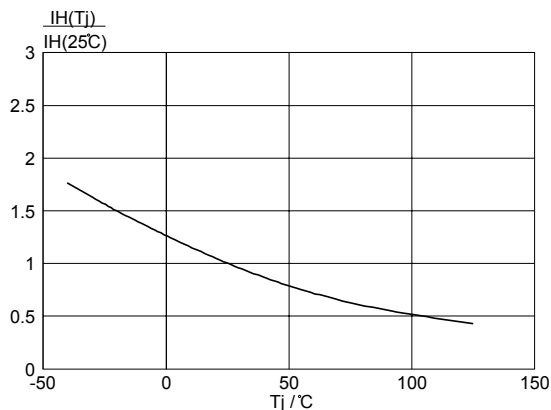


Fig. 9. Normalised holding current $I_H(T_j)/I_H(25^\circ\text{C})$, versus junction temperature T_j .

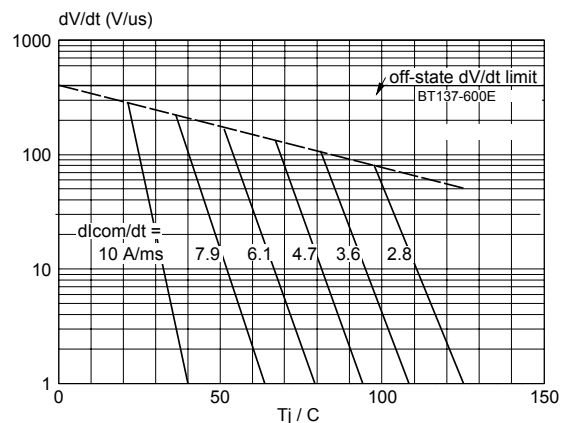


Fig. 12. Typical commutation dV/dt versus junction temperature, parameter commutation dI_T/dt . The triac should commute when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt .