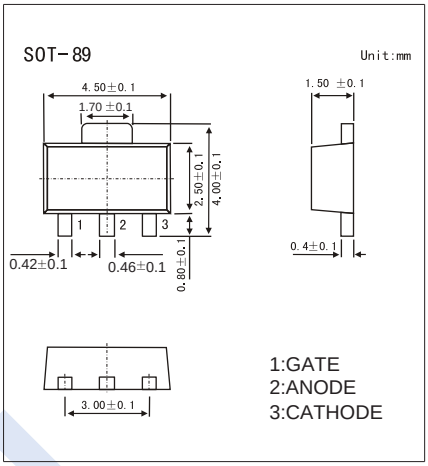
SCR Thyristor
BT169 (KT169)



■ Features

- Repetitive peak off-state voltages :400V
- Average on-state current :0.5A
- RMS on-state current :0.8A
- Non-repetitive peak on-state current :8A

■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Peak Repetitive Forward and Reverse Blocking Voltages	BT169-400	V_{DRM} V_{RRM}	400	V
Average on-state Current		$I_{T(AV)}$	0.5	A
Forward Current RMS		$I_{T(RMS)}$	0.8	
Non-Repetitive Peak on-state Current (t=10ms)		I_{TSM}	8	
Non-Repetitive Peak on-state Current (t=8.3ms)			9	
Circuit Fusing Considerations (t = 10ms)		I^2t	0.32	A^2s
Repetitive Rate of rise of on-state Current after Triggering		dI_T/dt	50	A/us
Peak Gate Current		I_{GM}	1	A
Peak Gate Voltage		V_{GM}	5	V
Peak Gate Voltage — Reverse		V_{GRM}	5	
Peak Gate Power — Forward		P_{GM}	2	W
Average Gate Power — Forward		$P_{GF(AV)}$	0.1	
Thermal Resistance Junction to Ambient		R_{thJA}	150	K/W
Thermal Resistance Junction to Case		R_{thJC}	60	
Junction Temperature		T_J	125	℃
Storage Temperature Range		T_{stg}	-40 to 150	

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

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
Peak Repetitive Forward and Reverse Blocking Voltages	V_{DRM} V_{RRM}	I_{DRM}=I_{RRM}50uA	400			V
Off-state Leakage Current	I_D,I_R	V_{DRM}=V_{RRM}(max);T_j=125℃; R_{GK}=1kΩ			0.1	mA
On-state Voltage	V_{TM}	I_T=1A			1.5	V
Gate Trigger Voltage	V_{GT}	V_D=12V, IT=10mA			0.8	
		V_D= V_{DRM}(max), I_T=10mA; T_j=125℃	0.2			
Gate Trigger Current (Continuous dc)	I_{GT}	V_D=12V, I_T=10mA			200	uA
Latching Current	I_L	V_D=12V, I_{GT}=0.5mA; R_{GK}=1kΩ			6	mA
Holding Current	I_H	V_D=12V, I_{GT}=0.5mA; R_{GK}=1kΩ			5	
Critical Rate of rise of off-state Voltage	dVD/dt	V_{DM}=67% V_{DRM}(max); T_j=125 ℃ exponential waveform; R_{GK}=1kΩ		25		V/us
Gate Controlled turn-on time	tgt	I_{TM}=2A; V_D=V_{DRM}(max),G=10mA; d_{IG}/d_t=0.1A/us		2		us
Circuit Commutated turn-off time	tq	V_D=67% V_{DRM}(max); T_j=125℃, T_M=1.6A; V_R=35V; d_{ITM}/d_t=30A/us,d_{VD}/d_t=2V/us; R_{GK}=1kΩ		100		

■ Classification of I_{GT} (uA)

Type	BT169-400	BT169-400A	BT169-400B
Range	0-200	10-30	30-60
Marking	BT/C39	BT/C35	BT/C36

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■ Typical Characterisitics

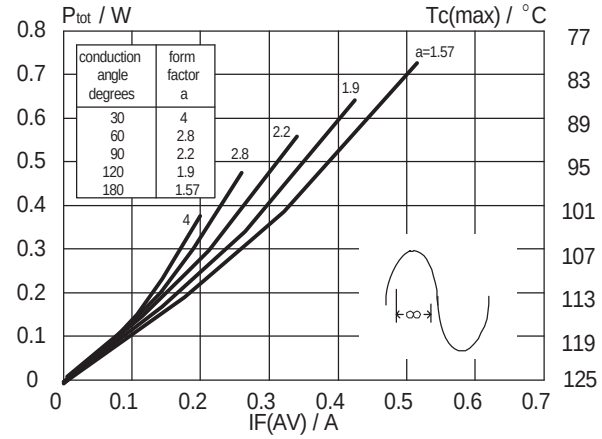

FIG.1 Maximum on-state dissipation, P_{tot}, versus average on-state current, $I_{T(AV)}$, where a=form factor=$I_{T(RMS)}$ / $I_{T(AV)}$

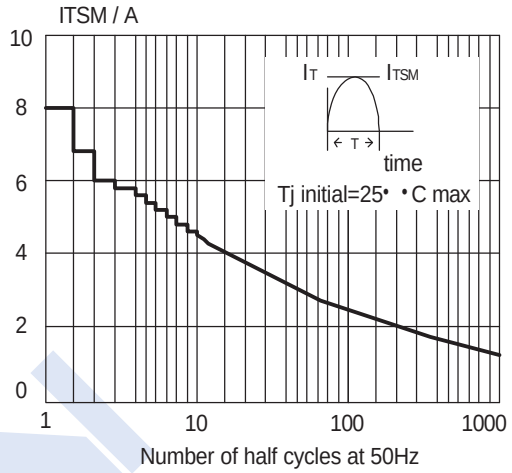

FIG.4 Maximnum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50Hz.

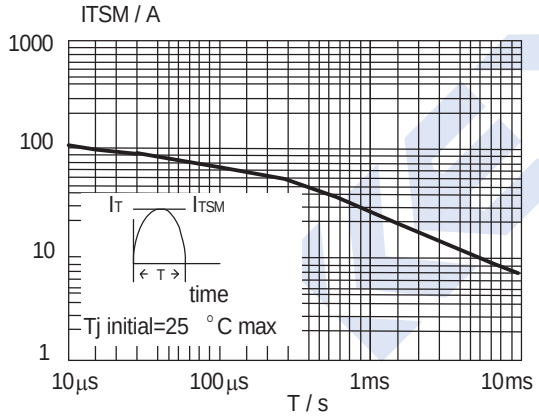

FIG.2 Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width tp, for sinusoidal currents, t_p<=10ms.

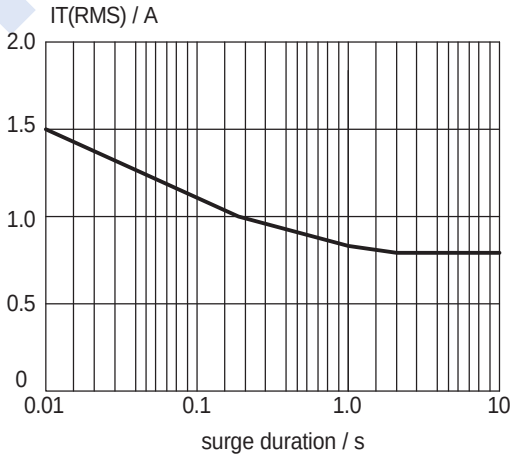

FIG.5 Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f= 50Hz; Tlead<=83 °C

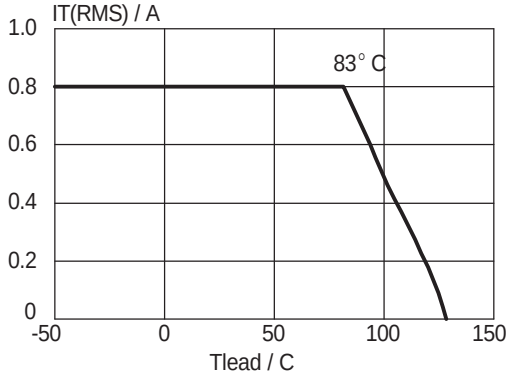

FIG.3 Maximum permissible rms current $I_{T(RMS)}$, versus lead temperature, Tlead

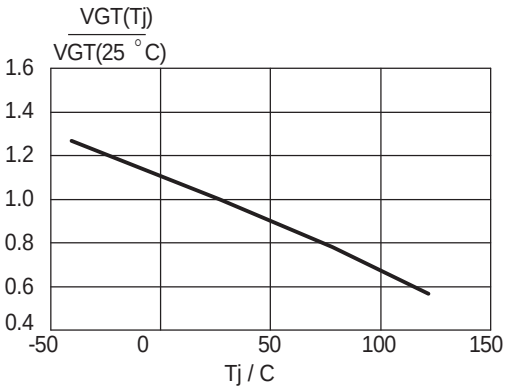

FIG.6 Normalised gate trigger voltage V_{GT}(Tj) /V_{GT}(25° C), versus junction temperature Tj

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■ Typical Characterisitics

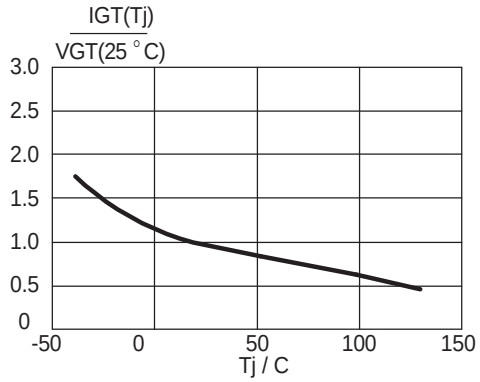

FIG.7 Normalised gate trigger current $I_{GT}(Tj)/I_{GT}(25^{\circ}C)$, versus junction temperature Tj

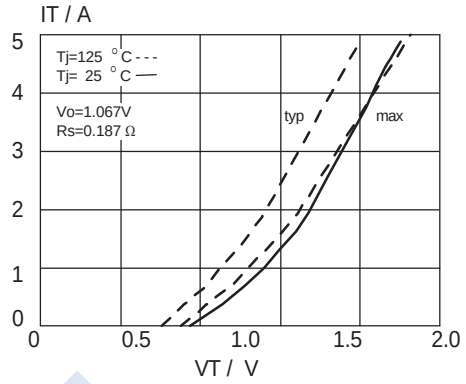

FIG.10 Typical and maximum on-state characteristic.

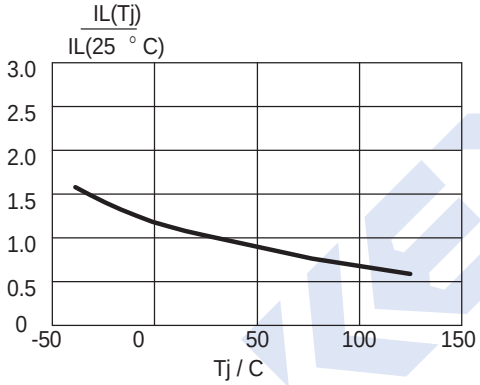

FIG.8 Normalised latching current $I_{L}(Tj)$ /$I_{L}(25^{\circ}C)$,versus junction temperature Tj, R_{GK}= 1KΩ

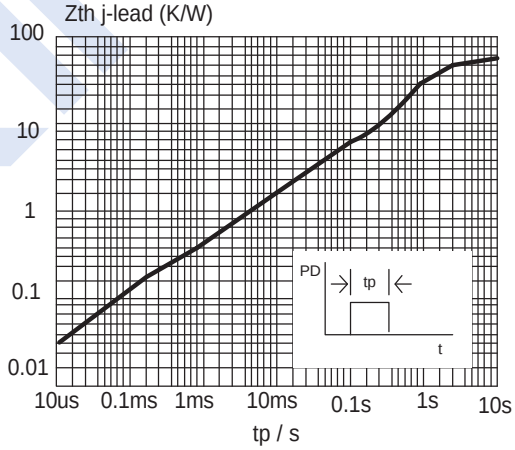

FIG.11 Transient thermal impedance Zth j-lead, versus pulse width tp.

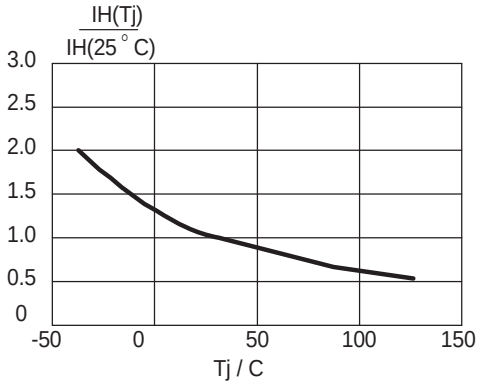

FIG.9 Normalised holding current $I_{H}(Tj)/I_{H}(25^{\circ}C)$,versus junction temperature Tj, R_{GK}=1KΩ

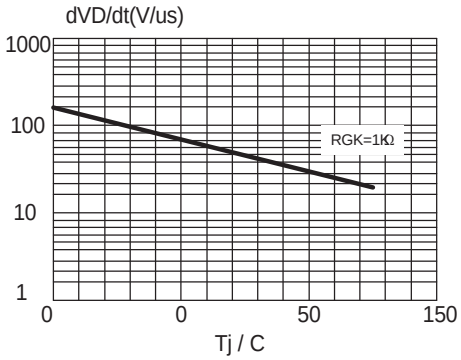

FIG.12 Typical, critical rate of rise of off-state voltage, dV_{D}/dt versus junction temperature Tj.