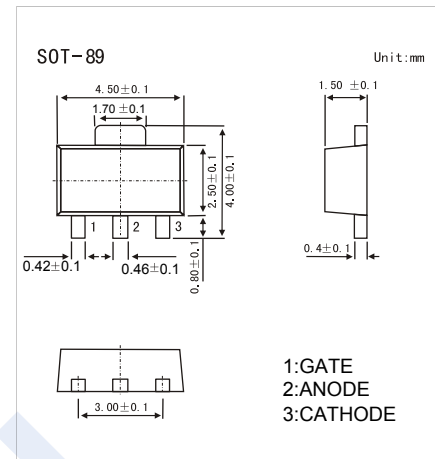


SCR Thyristor

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°C

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 ² t	0.32	A ² s
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	°C
Storage Temperature Range	T _{stg}	-40 to 150	

SCR Thyristor

BT169 (KT169)

■ Electrical Characteristics ($T_a = 25^\circ\text{C}$, unless otherwise noted.)

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
Peak Repetitive Forward and Reverse Blocking Voltages	V_{DRM} V_{RRM}	$I_{DRM}=I_{RRM}50\mu\text{A}$	400			V
Off-state Leakage Current	$I_{D,IR}$	$V_{DRM}=V_{RRM}(\text{max})$; $T_j=125^\circ\text{C}$; $R_{GK}=1\text{k}\Omega$			0.1	mA
On-state Voltage	V_{TM}	$I_T=1\text{A}$			1.5	V
Gate Trigger Voltage	V_{GT}	$V_D=12\text{V}$, $I_T=10\text{mA}$			0.8	
		$V_D=V_{DRM}(\text{max})$, $I_T=10\text{mA}$; $T_j=125^\circ\text{C}$	0.2			
Gate Trigger Current (Continuous dc)	I_{GT}	$V_D=12\text{V}$, $I_T=10\text{mA}$			200	μA
Latching Current	I_L	$V_D=12\text{V}$, $I_{GT}=0.5\text{mA}$; $R_{GK}=1\text{k}\Omega$			6	mA
Holding Current	I_H	$V_D=12\text{V}$, $I_{GT}=0.5\text{mA}$; $R_{GK}=1\text{k}\Omega$			5	
Critical Rate of rise of off-state Voltage	dV_D/dt	$V_{DM}=67\% V_{DRM}(\text{max})$; $T_j=125^\circ\text{C}$ exponential waveform; $R_{GK}=1\text{k}\Omega$		25		V/ μs
Gate Controlled turn-on time	t_{gt}	$I_{TM}=2\text{A}$; $V_D=V_{DRM}(\text{max})$, $G=10\text{mA}$; $dI_G/dt=0.1\text{A}/\mu\text{s}$		2		μs
Circuit Commutated turn-off time	t_q	$V_D=67\% V_{DRM}(\text{max})$; $T_j=125^\circ\text{C}$, $T_M=1.6\text{A}$; $V_R=35\text{V}$; $dI_{TM}/dt=30\text{A}/\mu\text{s}$, $dV_D/dt=2\text{V}/\mu\text{s}$; $R_{GK}=1\text{k}\Omega$		100		

■ Classification of I_{GT} (μA)

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

SCR Thyristor

BT169 (KT169)

■ Typical Characteristics

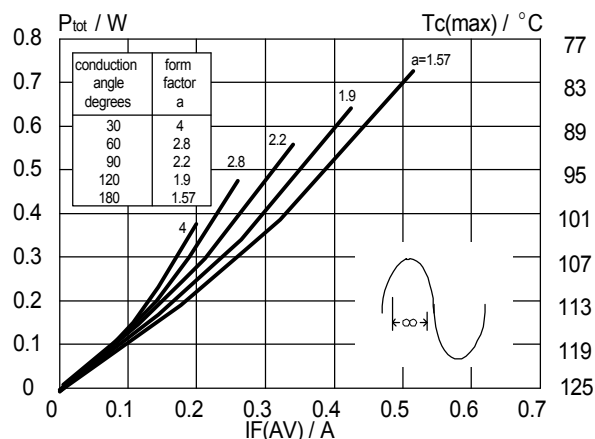


FIG.1 Maximum on-state dissipation, P_{tot} , versus average on-state current, $I_{T(AV)}$, where $a = \text{form factor} = I_{T(RMS)} / I_{T(AV)}$.

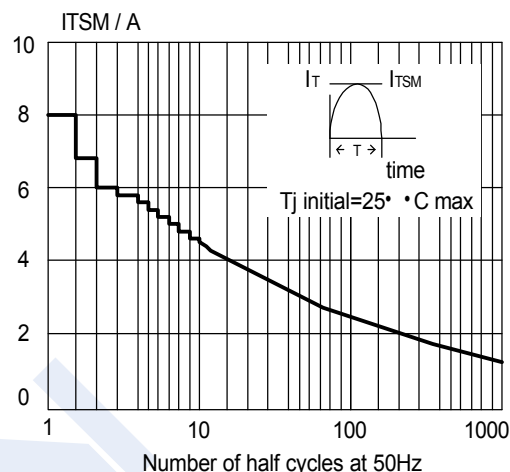


FIG.4 Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50\text{Hz}$.

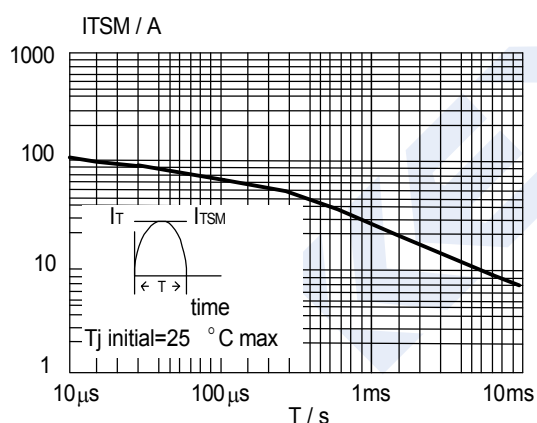


FIG.2 Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 10\text{ms}$.

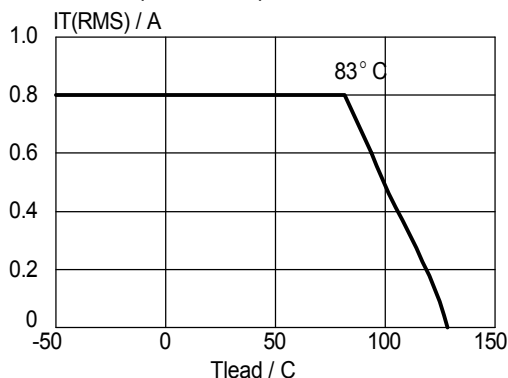


FIG.3 Maximum permissible rms current $I_{T(RMS)}$, versus lead temperature, T_{lead} .

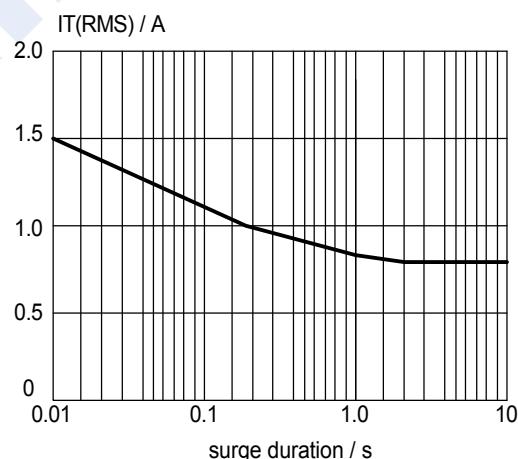


FIG.5 Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50\text{Hz}$; $T_{lead} \leq 83^\circ C$.

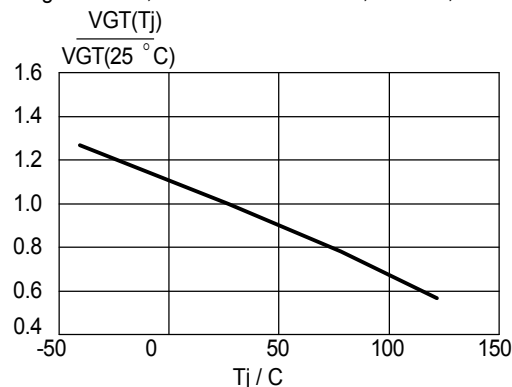


FIG.6 Normalised gate trigger voltage $V_{GT}(T_j) / V_{GT}(25^\circ C)$, versus junction temperature T_j .

SCR Thyristor

BT169 (KT169)

■ Typical Characteristics

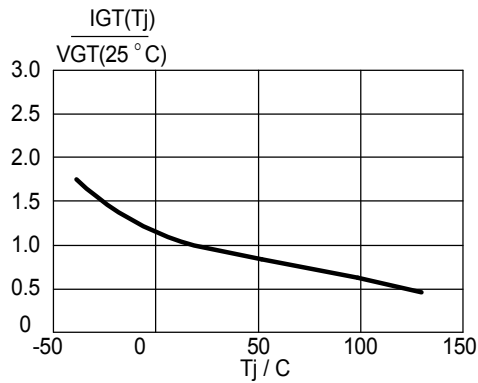


FIG.7 Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25^\circ\text{C})$, versus junction temperature T_j

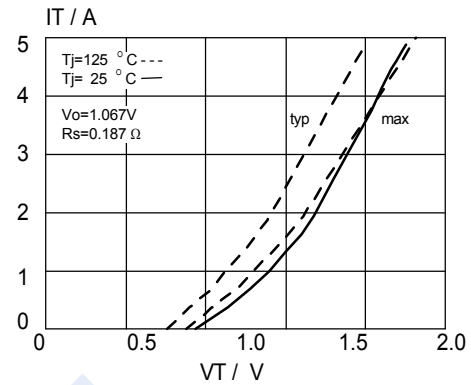


FIG.10 Typical and maximum on-state characteristic.

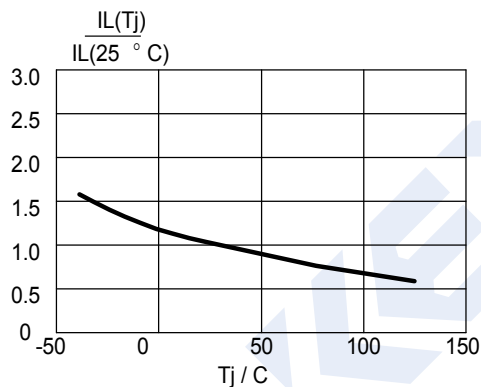


FIG.8 Normalised latching current $I_L(T_j)/I_L(25^\circ\text{C})$, versus junction temperature T_j , $R_{GK} = 1\text{K}\Omega$

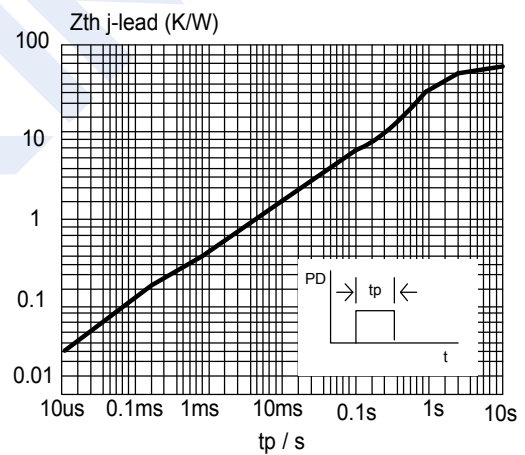


FIG.11 Transient thermal impedance $Z_{th \text{ j-lead}}$, versus pulse width t_p .

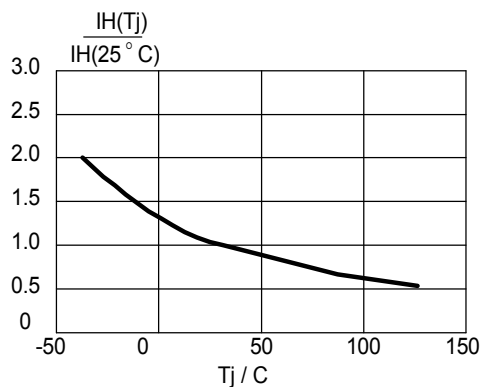


FIG.9 Normalised holding current $I_H(T_j)/I_H(25^\circ\text{C})$, versus junction temperature T_j , $R_{GK} = 1\text{K}\Omega$

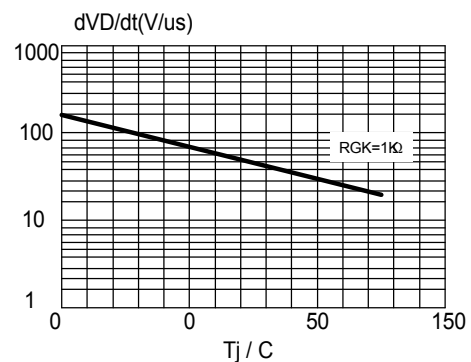


FIG.12 Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_j .