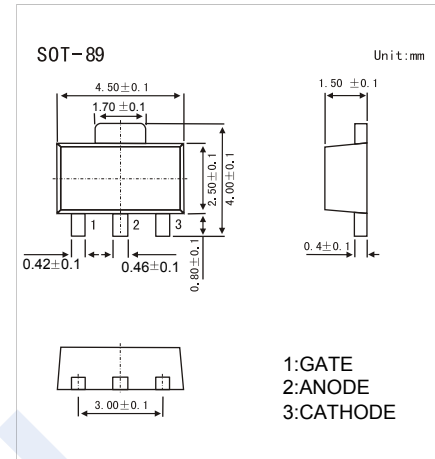


SCR Thyristor

BT169-HF (KT169-HF)

■ 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
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



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

Parameter	Symbol	Rating	Unit
Peak Repetitive Forward and Reverse Blocking Voltages BT169-400-HF	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	V
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	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to 150	

SCR Thyristor

BT169-HF (KT169-HF)

■ Electrical Characteristics (Ta = 25°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} 50μA	400			V
Off-state Leakage Current	I _{D,IR}	V _{DRM} =V _{RRM} (max); T _j =125°C; 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, I _T =10mA			0.8	
		V _D = V _{DRM} (max), I _T =10mA; T _j =125°C	0.2			
Gate Trigger Current (Continuous dc)	I _{GT}	V _D =12V, I _T =10mA			200	μA
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	dV _D /dt	V _{DM} =67% V _{DRM} (max); T _j =125 °C exponential waveform; R _{GK} =1kΩ		25		V/us
Gate Controlled turn-on time	t _{gt}	I _{TM} =2A; V _D =V _{DRM} (max), G=10mA; di _G /dt=0.1A/us		2		us
Circuit Commutated turn-off time	t _q	V _D =67% V _{DRM} (max); T _j =125°C, T _M =1.6A; V _R =35V; di _{TM} /dt=30A/us, dV _D /dt=2V/us; R _{GK} =1kΩ		100		

■ Classification of I_{GT} (μA)

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

SCR Thyristor BT169-HF (KT169-HF)

■ Typical Characteristics

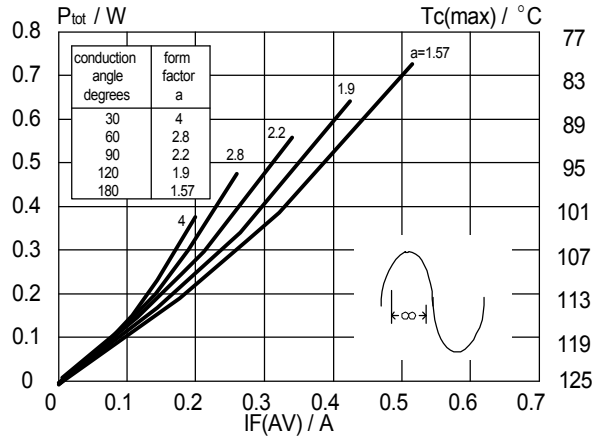


FIG.1 Maximum on-state dissipation, P_{tot} , versus average on-state current, $I_{T(AV)}$, where $a = \text{form factor} = I_{T(RMS)} / I_{T(AV)}$

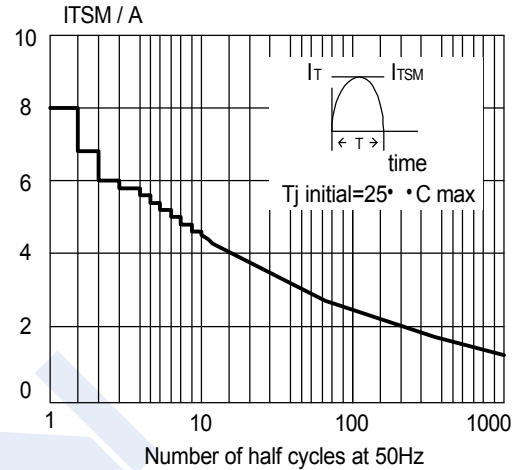


FIG.4 Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50\text{Hz}$.

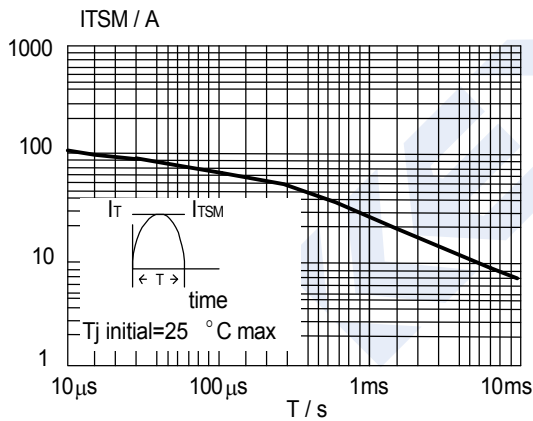


FIG.2 Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 10\text{ms}$.

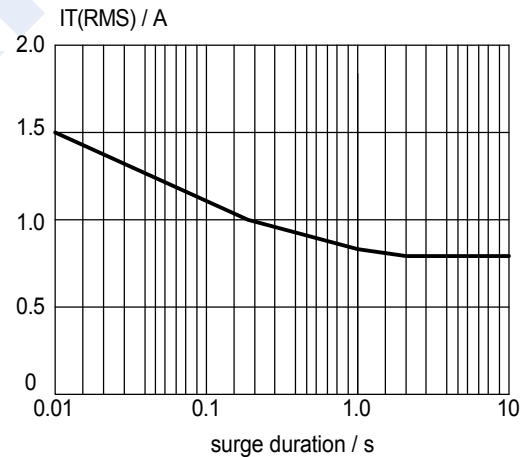


FIG.5 Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50\text{Hz}$; $T_{lead} \leq 83^\circ\text{C}$

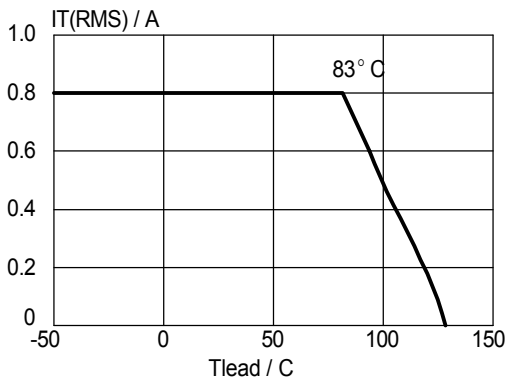


FIG.3 Maximum permissible rms current $I_{T(RMS)}$, versus lead temperature, T_{lead}

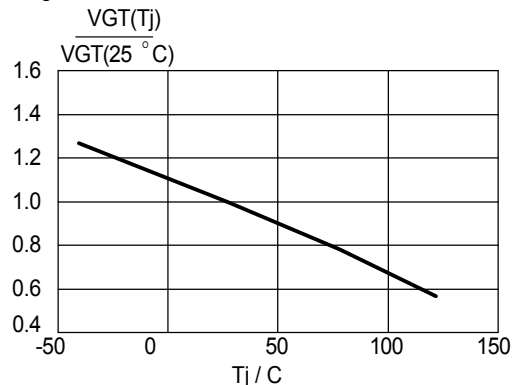


FIG.6 Normalised gate trigger voltage $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$, versus junction temperature T_j

SCR Thyristor BT169-HF (KT169-HF)

■ Typical Characteristics

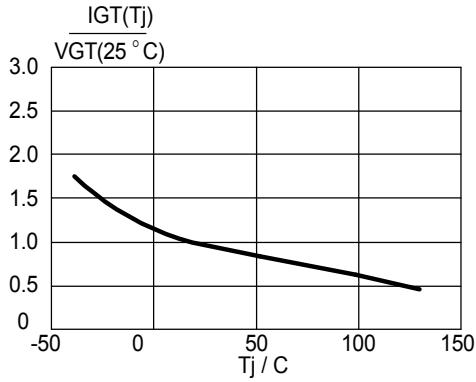


FIG.7 Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25^\circ\text{C})$, versus junction temperature T_j

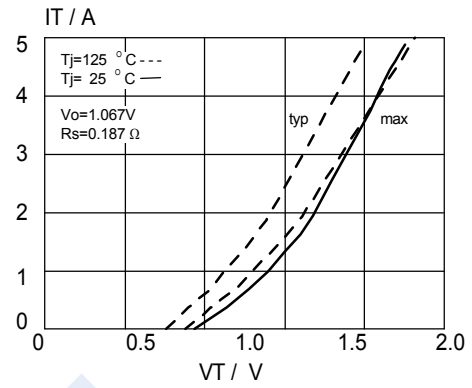


FIG.10 Typical and maximum on-state characteristic.

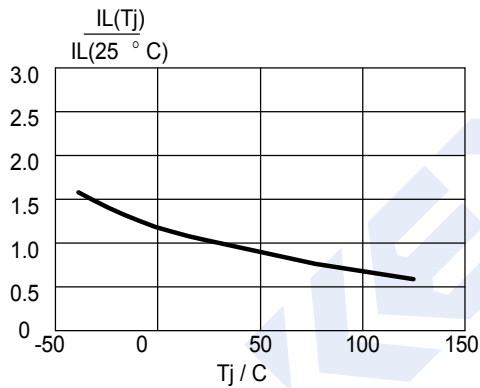


FIG.8 Normalised latching current $I_L(T_j) / I_L(25^\circ\text{C})$, versus junction temperature T_j , $R_{GK} = 1\text{K}\Omega$

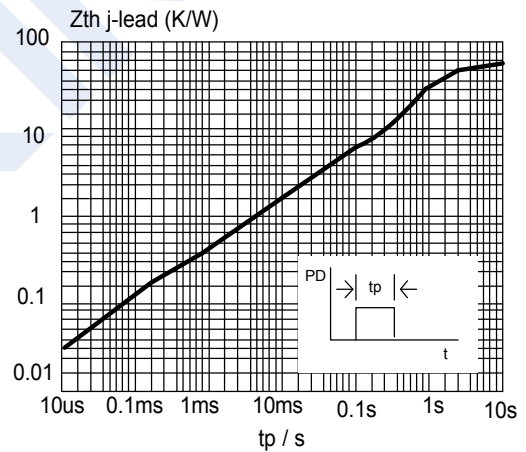


FIG.11 Transient thermal impedance $Z_{th\ j\text{-lead}}$, versus pulse width t_p .

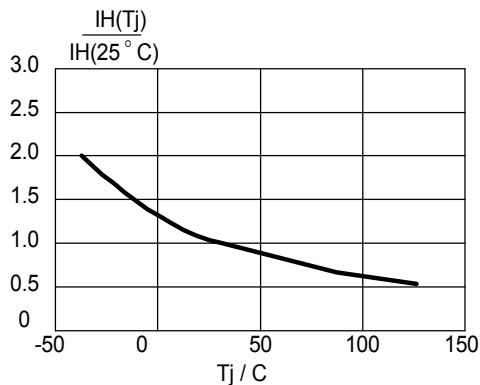


FIG.9 Normalised holding current $I_H(T_j)/I_H(25^\circ\text{C})$, versus junction temperature T_j , $R_{GK} = 1\text{K}\Omega$

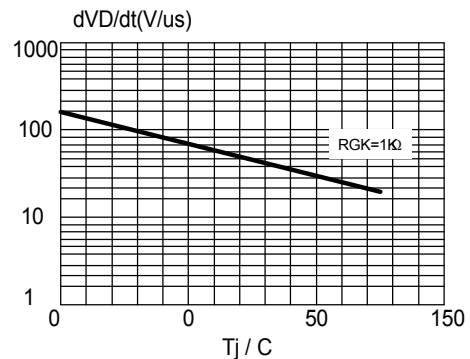


FIG.12 Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_j .