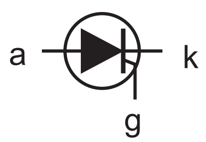
BT150

SCRs

HAOPIN MICROELECTRONICS CO.,LTD.

Description

Glass passivated, sensitive gate thyristors in a plastic envelope, intended for use in general purpose switching and phase control applications. These devices are intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits.

Symbol	Simplified outline
	

Pin	Description
1	Cathode
2	Anode
3	Gate

Applications:

- Motor control
- Industrial and domestic lighting
- Heating
- Static switching

Features

- Blocking voltage to 800 V
- On-state RMS current to 4 A
- Ultra low gate trigger current

SYMBOL	PARAMETER		Value	Unit
V_{DRM} V_{RRM}	Repetitive peak off-state voltages Voltages	500R 600R 800R	500 600 800	V
$I_{T(RMS)}$	RMS on-state current		4	A
I_{TSM}	Non-repetitive peak on-state current		35	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Rth j-mb	Thermal resistance Junction to mounting base		-	-	2.5	K/W
Rth j-a	Thermal resistance Junction to ambient	In free air	-	60	-	K/W

Limiting values in accordance with the Maximum system(IEC 134)

SYMBOL	PARAMETER	CONDITIONS		MIN	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state Voltages		500R 600R 800R	-	500 600 800	V
I_{TAV}	Average on-state current	Half sine wave;Tmb<=113℃		-	2.5	A
$I_{T(RMS)}$	RMS on-state current	All conduction angles			4	A
I_{TSM}	Non-repetitive peak On-state current	half sine wave; Tj = 25°C prior to surge	T=10ms	-	35	A
			T=8.3ms	-	38	A
I^2t	I^2t for fusing	T=10ms		-	6.1	A^2S
DI_T/dt	Repetitive rate of vise of on-state current after trigering	I_{TM}=10A; I_G=50mA; D_{IG}/dt=50mA/μs		-	50	A/μs
I_{GM}	Peak gate current			-	2	A
V_{GM}	Peak gate voltage			-	5	V
P_{GM}	Peak gate power			-	5	W
$P_{G(AV)}$	Average gate power	Over any 20 ms period		-	0.5	W
T_{stg}	Storage temperature			-40	150	℃
T_j	Operating junction Temperature			-	125^2	℃

$T_J=25^{O}C$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	Gate trigger current	V_D=12V; I_T=0.1A	-	15	200	µA
I_L	Latching current	V_D=12V; I_{GT}=0.1A	-	0.17	10	mA
I_H	Holding current	V_D=12V; I_{GT}=0.1A	-	0.10	6	mA
V_T	On-state voltage	I_T=5A	-	1.23	1.8	V
V_{GT}	Gate trigger voltage	V_D=12V;I_T=0.1A $V_D=V_{DRM(max)}$;I_T=0.1A;T_J=110℃	- 0.1	0.4 0.2	1.5 -	V V
I_D	Off-state leakage current	$V_D=V_{DRM(max)}$;$V_R=V_{RRM(max)}$ T_J=125℃	-	0.1	0.5	mA

Dynamic Characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
D_{VD}/dt	Critical rate of rise of Off-state voltage	V_{DM}=67% $V_{DRM(max)}$;Tj=125℃; Exponential wave form;R_{GK}=100Ω	-	50	-	V/µs
t_{gt}	Gate controlled turn-on time	I_{TM}=10A;$V_D=V_{DRM(max)}$; I_G=5mA; dI_G/dt=0.2A/us	-	2	-	µs
t_g	Crcuit commutated tum-off time	V_{DM}=67% $V_{DRM(max)}$;Tj=125℃;I_{TM}=8A V_R=10V;dI_{TM}/dt=10A/μS DI_G/dt=2V/μs;RGK=1kΩ	-	100	-	µs

Description

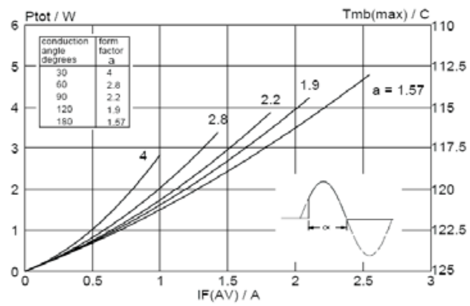


Fig.1. Maximum on-state dissipation, P_{tot}, versus average on-state current, $I_{T(AV)}$, where a = form factor = $I_{T(RMS)}$/ $I_{T(AV)}$.

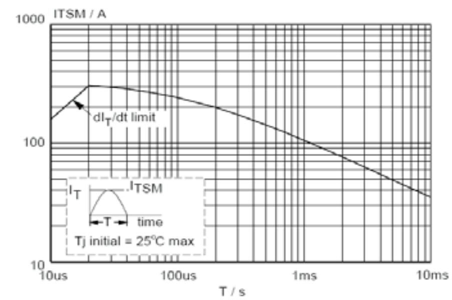


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width t_p, for sinusoidal currents, $t_p \leq$ 10ms.

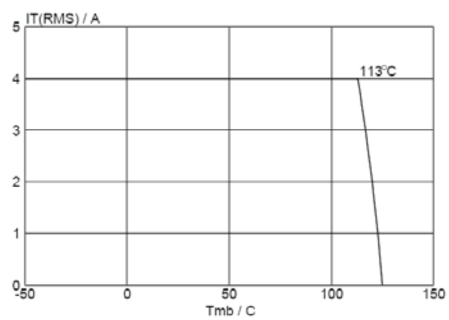


Fig.3. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb}.

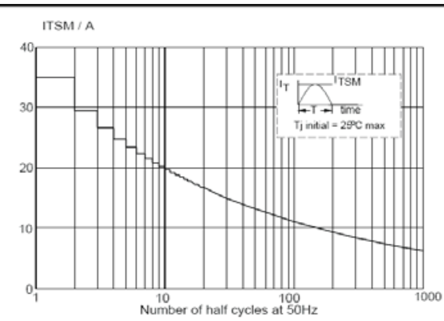


Fig.4. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50 Hz.

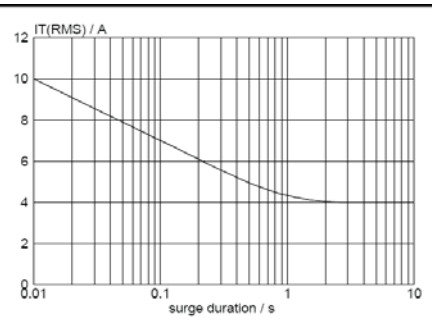


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \leq$ 113˚C.

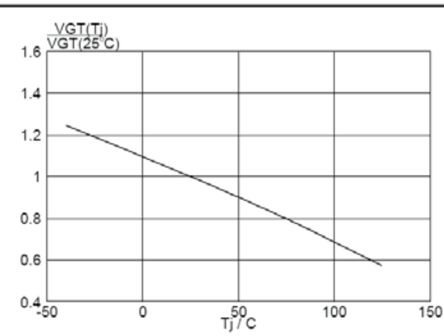


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)$/ V_{GT}(25˚C), versus junction temperature T_j.

Description

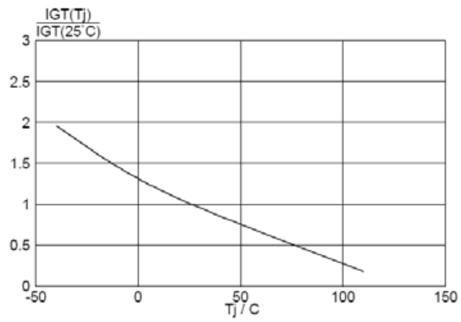


Fig.7. Normalised gate trigger current $I_{GT}(T_j)/ I_{GT}(25^{\circ}C)$, versus junction temperature T_j.

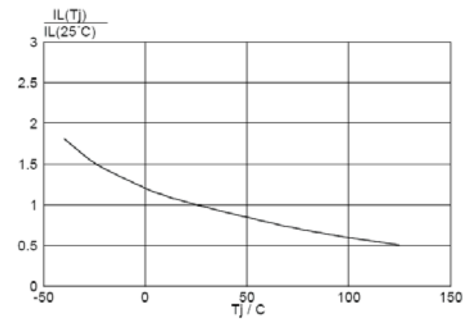


Fig.8. Normalised latching current $I_L(T_j)/ I_L(25^{\circ}C)$, versus junction temperature T_j.

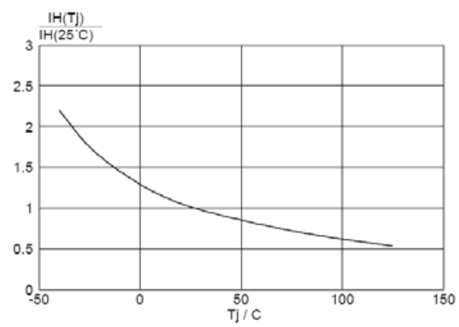


Fig.9. Normalised holding current $I_H(T_j)/ I_H(25^{\circ}C)$, versus junction temperature T_j.

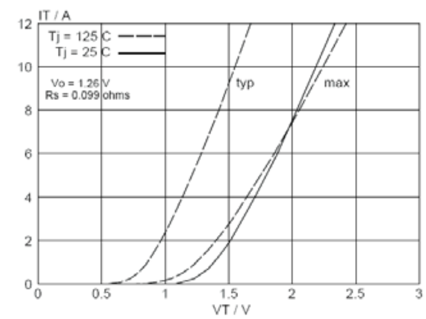


Fig.10. Typical and maximum on-state characteristic.

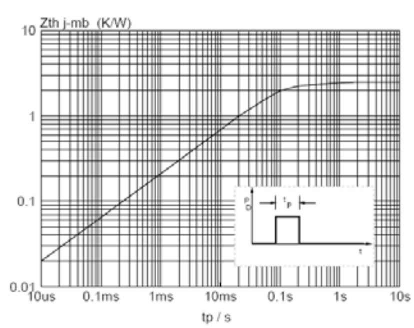


Fig.11. Transient thermal impedance $Z_{th\ j\text{-}mb}$, versus pulse width t_p.

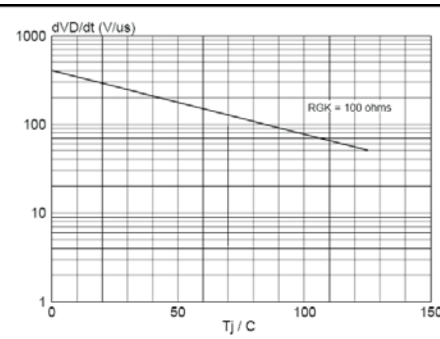


Fig.12. Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_j.

MECHANICAL DATA

Dimensions in mm
Net Mass: 2 g