
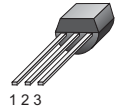


### HAOPIN MICROELECTRONICS CO.,LTD.

#### 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	
		 TO-92	
Pin	Description		
1	Cathode		
2	anode		
3	gate		
TAB	anode		

#### Applications:

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

#### Features

- ◆ Blocking voltage to 600 V
- ◆ On-state RMS current to 0.8 A
- ◆ Ultra low gate trigger current

SYMBOL	PARAMETER	Value	Unit
$V_{DRM}$	Repetitive peak off-state voltages	BT169D 400 BT169G 600	V
$I_T (RMS)$	RMS on-state current (full sine wave)	0.8	A
$I_{TSM}$	Non-repetitive peak on-state current (full cycle, $T_j$ initial=25°C)	8	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{th j-lead}$	Thermal resistance Junction to mounting base		-	-	60	K/W
$R_{th j-a}$	Thermal resistance Junction to ambient	pcb mounted; lead length=4mm	-	150	-	K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{DRM}$	Repetitive peak off-state Voltages	BT169D BT169G	-	400 600	V
$I_{T(RMS)}$	RMS on-state current	Half sine wave; $T_{mb} \leq 83^{\circ}C$ all conduction angles	-	0.8	A
$I_{TSM}$	Non-repetitive peak On-state current	half sine wave; $T_j = 25^{\circ}C$ prior to surge	-	8	A
		T=10ms T=8.3ms	-	9	A
$I^2t$	$I^2t$ for fusing	T=10ms	-	0.32	A <sup>2</sup> S
$di_T/dt$	Repetitive rate of rise of on-state current after triggering	$I_{TM}=2A$ ; $I_G=10mA$ ; $D_{IG}/dt=100mA/\mu s$	-	50	A/ $\mu S$
$I_{GM}$	Peak gate current		-	1	A
$V_{GM}$	Peak gate voltage		-	5	V
$P_{GM}$	Peak gate power		-	2	W
$P_{G(AV)}$	Average gate power	Over any 20 ms period	-	0.1	W
$T_{stg}$	Storage temperature		-40	150	$^{\circ}C$
$T_j$	Operating junction Temperature		-	125	$^{\circ}C$

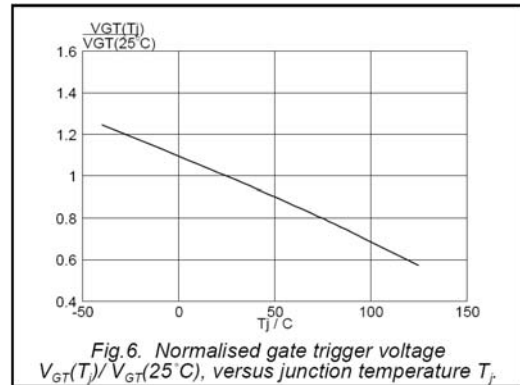
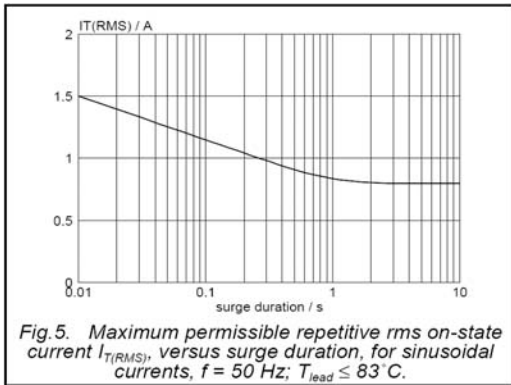
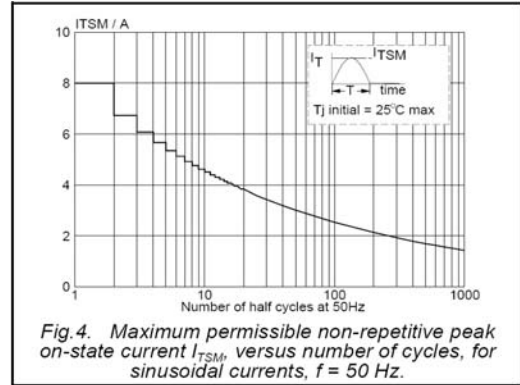
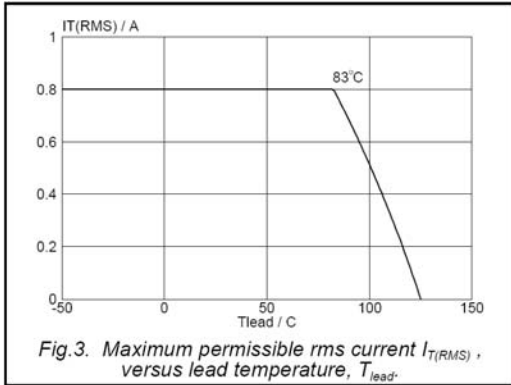
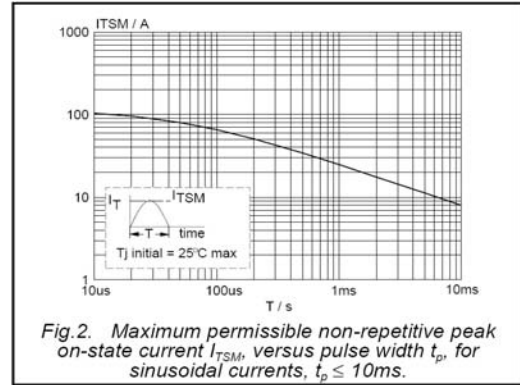
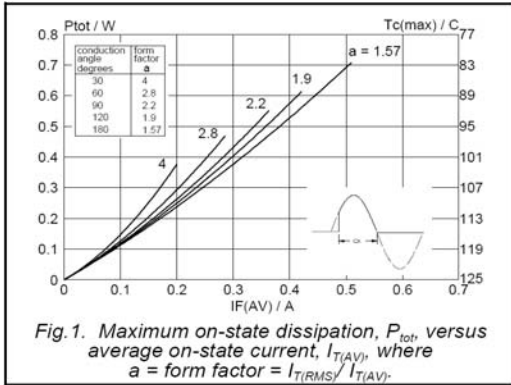
$T_j=25^{\circ}C$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
$I_{GT}$	Gate trigger current	$V_D=12V$ ; $I_T=10mA$ ; gate open circuit	-	50	200	$\mu A$
$I_L$	Latching current	$V_D=12V$ ; $I_{GT}=0.5mA$ ; $R_{GK}=1k\Omega$	-	2	6	mA
$I_H$		$V_D=12V$ ; $I_{GT}=0.5mA$ ; $R_{GK}=1k\Omega$	-	2	5	mA
$V_T$	On-state voltage	$I_T=1A$	-	1.2	1.35	V
$V_{GT}$	Gate trigger voltage	$V_D=12V$ ; $I_T=10mA$ ; gate open circuit $V_D=V_{DRM(max)}$ ; $I_T=10mA$ ; $T_j=125^{\circ}C$ ; gate open circuit	-	0.5	0.8	V
			0.2	0.3	-	V
$I_D$	Off-state leakage current	$V_D=V_{DRM(max)}$ ; $V_R=V_{RRM(max)}$ ; $T_j=125^{\circ}C$ ; $R_{GK}=1k\Omega$	-	0.05	0.1	mA

### Dynamic Characteristics

$dV_D/dt$	Critical rate of rise of Off-state voltage	$V_{DM}=67\% V_{DRM(max)}$ ; $T_j=125^{\circ}C$ ; exponential wave form; Gate open circuit $R_{GK}=1k\Omega$	-	25	-	V/ $\mu S$
$t_{gt}$	Gate controlled turn-on time	$I_{TM}=2A$ ; $V_D=V_{DRM(max)}$ ; $dI_G/dt=0.1A/\mu s$ $I_G=10mA$ ;	-	2	-	$\mu S$
$t_q$	Crcuit commutated tum-off time	$V_{DM}=67\% V_{DRM(max)}$ ; $T_j=125^{\circ}C$ ; $I_{TM}=1.6A$ $V_R=35V$ ; $dI_{TM}/dt=30A/\mu S$ $dI_G/dt=2V/\mu s$ ; $R_{GK}=1k\Omega$	-	100	-	$\mu S$

### Description

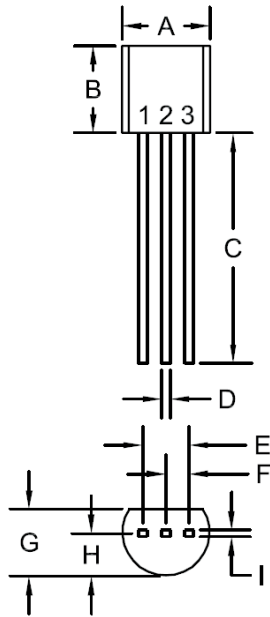


MECHANICAL DATA

Dimensions in mm

Net Mass:0.2 g

TO-92



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.175	0.205	4.45	5.21
B	0.170	0.210	4.32	5.33
C	0.500	-	12.70	-
D	0.016	0.022	0.41	0.56
E	0.100		2.54	
F	0.050		1.27	
G	0.125	0.165	3.18	4.19
H	0.080	0.105	2.03	2.67
I	0.015		0.38	

TO-92 (REV: R1)

R1