
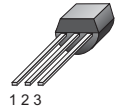


### HAOPIN MICROELECTRONICS CO.,LTD.

#### 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 4 A
- ◆ Ultra low gate trigger current

SYMBOL	PARAMETER	Value	Unit
$V_{DRM}$	Repetitive peak off-state voltages	600	V
$I_T (RMS)$	RMS on-state current (full sine wave)	4	A
$I_{TSM}$	Non-repetitive peak on-state current (full cycle, $T_j$ initial=25°C)	25	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Thermal resistance, Junction to Case		-	-	3.0	°C/W
$R_{\theta JA}$	Thermal resistance, Junction to Ambient		-	-	75	°C/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	$T_j = -40$ to $110^\circ\text{C}$ , sine wave 50 to 60 Hz, gate open	-	600	V	
$I_{T(RMS)}$	RMS on-state current	$180^\circ$ conduction angles $TC=93^\circ\text{C}$	-	4	A	
$I_{T(AV)}$	Average On-state current	$180^\circ$ conduction angles $TC=93^\circ\text{C}$	-	2.55	A	
$I^2t$	Circuit Fusing considerations	$t=8.3\text{ms}$	-	2.6	$\text{A}^2\text{S}$	
$I_{DRM}$ $I_{RRM}$	Peak repetitive forward or reverse blocking current	$V_{AK}=\text{Rated } V_{DRM} \text{ or } V_{RRM};$ $R_{GK}=1000 \text{ Ohms}$	$T_j=25^\circ\text{C}$	-	10	$\mu\text{A}$
			$T_j=110^\circ\text{C}$	-	200	$\mu\text{A}$
				-	-	
				-	-	
$I_{GM}$	Forward peak gate current	$T_c=93^\circ\text{C}$ , Pulse Width $\leq 1.0 \mu\text{s}$	-	0.2	A	
$V_{RGM}$	Peak Reverse gate voltage	$T_c=93^\circ\text{C}$ , Pulse Width $\leq 1.0 \mu\text{s}$	-	6	V	
$P_{GM}$	Peak gate power	$T_c=93^\circ\text{C}$ , Pulse Width $\leq 1.0 \mu\text{s}$	-	0.5	W	
$P_{G(AV)}$	Average gate power	$T_c=93^\circ\text{C}$ , $t=8.3\text{ms}$	-	0.1	W	
$T_{stg}$	Storage temperature		-40	150	$^\circ\text{C}$	
$T_j$	Operating junction Temperature range		-40	110	$^\circ\text{C}$	

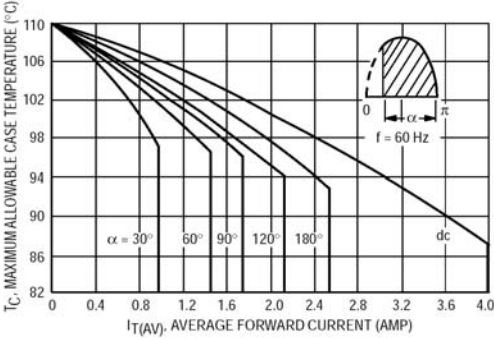
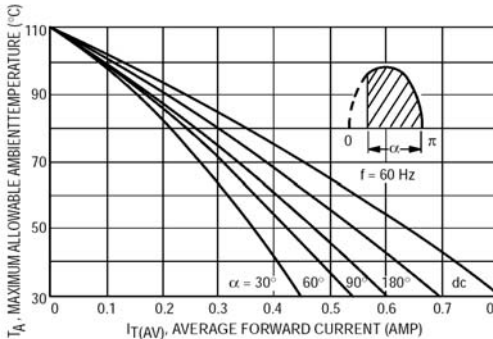
$T_j=25^\circ\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
$I_{GT}$	Gate trigger current	$V_{AK}=7.0\text{Vdc}$ , $R_L=100 \text{ Ohms}$ $TC=-40^\circ\text{C}$	-	-	200 500	$\mu\text{A}$
$V_{TM}$	Peak Forward on-state voltage	$I_{TM}=4\text{A}$ Peak	-	-	2.0	V
$I_H$	Holding current	$V_{AK}=7.0\text{Vdc}$ , Initiating Current=20mA gate open	-	-	5.0	mA
$V_{GD}$	Non-trigger voltage	$V_{AK}=12\text{Vdc}$ , $R_L=100 \text{ Ohms}$ , $T_j=110^\circ\text{C}$	0.2	-	-	V
$V_{GT}$	Gate trigger voltage	$V_{AK}=7.0\text{Vdc}$ , $R_L=100 \text{ Ohms}$	-	-	1	V

#### Dynamic Characteristics

$d_v/dt$	Critical rate of rise of Off-state voltage	$T_j=110^\circ\text{C}$	-	10	-	$\text{V}/\mu\text{s}$
$di/dt$	Critical Rate-of-Rise of Off State Current	$I_{pk}=20\text{A}$ ; $PW=10 \mu\text{sec}$ ; $di/dt=1\text{A}/\mu\text{sec}$ , $I_{gt}=20\text{mA}$	-	-	50	$\text{A}/\mu\text{s}$

Description

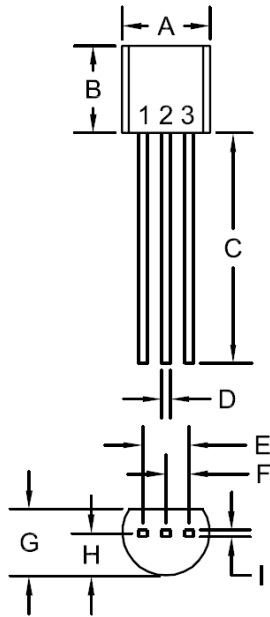
 <p><b>Figure 1. Maximum Case Temperature</b></p>	 <p><b>Figure 2. Maximum Ambient Temperature</b></p>

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