
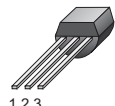


Description

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.

<p>Symbol</p> 		<p>Simplified outline</p>  <p>TO-92</p>	
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 1.25 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)	1.25	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
$R_{th j-l}$	Junction to leads		-	-	60	°C/W
$R_{th j-a}$	Junction to Ambient		-	-	150	°C/W

HAOPIN MICROELECTRONICS CO.,LTD.

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

SYMBOL	PARAMETER	CONDITIONS	MIN	Value	UNIT
V_{DRM}	Repetitive peak off-state Voltages		-	600	V
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_I=55^{\circ}C$	-	1.25	A
$I_{T(AV)}$	Average On-state current (180° conduction angle)	$T_I=55^{\circ}C$	-	0.8	A
di/dt	Critical rate of rise of on-state current	$I_G=2 * I_{GT}$, $tr \leq 100 ns$ $F=60 Hz$ $T_j=125^{\circ}C$	-	50	A/ μs
I_{TSM}	Non repetitive surge peak on-state current	$tp=8.3ms$ $T_j=25^{\circ}C$	-	25	A
		$tp=10ms$ $T_j=25^{\circ}C$	-	22.5	A
I^2t	I^2t Value for fusing	$tp=10ms$ $T_j=25^{\circ}C$	-	2.5	A ² s
I_{GM}	Peak gate current	$T_p=20 \mu s$ $T_j=125^{\circ}C$	-	1.2	A
$P_{G(AV)}$	Average gate power dissipation	$T_j=125^{\circ}C$	-	0.2	W
T_j	Operating junction temperature range		-40	125	$^{\circ}C$
T_{stg}	Storage junction temperature range		-40	150	$^{\circ}C$

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

SYMBOL	TEST	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	$V_D=12V$ $R_L=140 \Omega$		-	-	200	μA
V_{GT}	$V_D=12V$ $R_L=140 \Omega$		-	-	0.8	V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3 K \Omega$ $R_{GK}=1K \Omega$	$T_j=125^{\circ}C$	0.1	-	-	V
V_{RG}	$I_{RG}=10 \mu A$		8	-	-	V
I_L	$I_G=1 mA$ $R_{GK}=1K \Omega$		-	-	6	mA
I_{DRM} I_{RRM}	$V_D=V_{DRM}$ $R_{GK}=1K \Omega$ $V_R=V_{RRM}$	$T_j=25^{\circ}C$	-	-	5	μA
		$T_j=125^{\circ}C$	-	-	500	μA
I_H	$I_T=50 mA$ $R_{GK}=1K \Omega$		-	-	5	mA
V_{TM}	$V_{TM}=2.5 A$ $tp=380 \mu s$	$T_j=25^{\circ}C$	-	-	1.45	V

Dynamic Characteristics

Dv/dt	$V_D=67\%V_{DRM}$ $R_{GK}=1K \Omega$	$T_j=110^{\circ}C$	10	-	-	V/ μs
V_{to}	Threshold voltage	$T_j=125^{\circ}C$	-	-	0.9	V
R_d	Dynamic resistance	$T_j=125^{\circ}C$	-	-	200	m Ω

Description

Fig. 1: Maximum average power dissipation versus average on-state current.

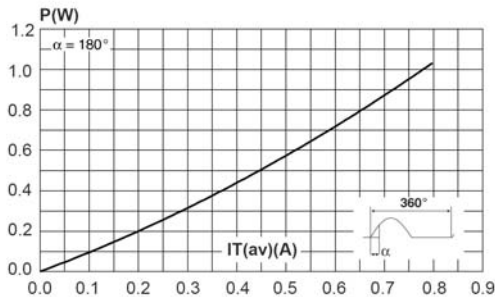


Fig. 2-1: Average and D.C. on-state current versus lead temperature (SOT-223/TO-92).

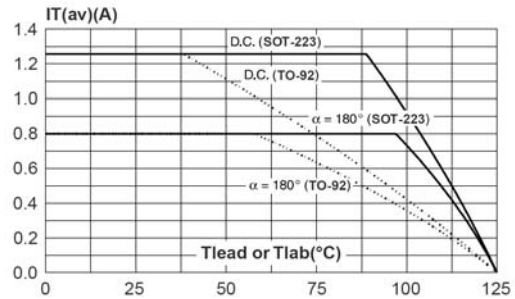


Fig. 2-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout) (SOT-223/TO-92).

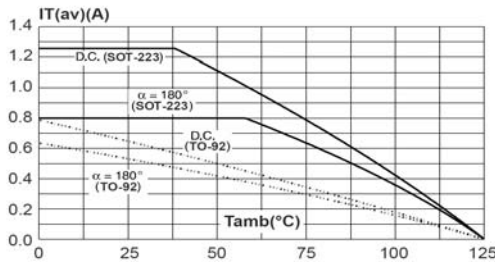


Fig. 3: Relative variation of thermal impedance junction to ambient versus pulse duration (SOT-223/TO-92).

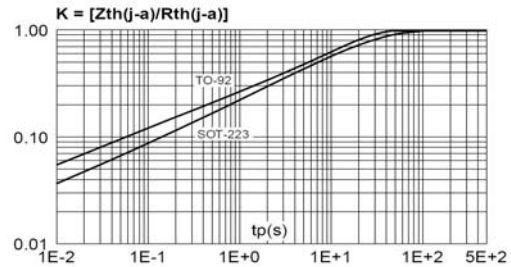


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

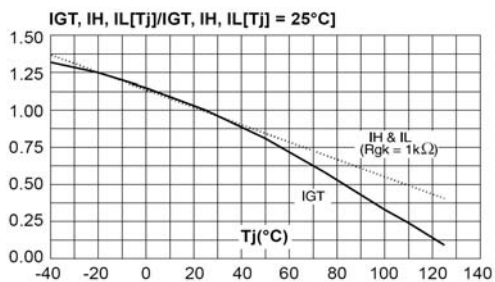
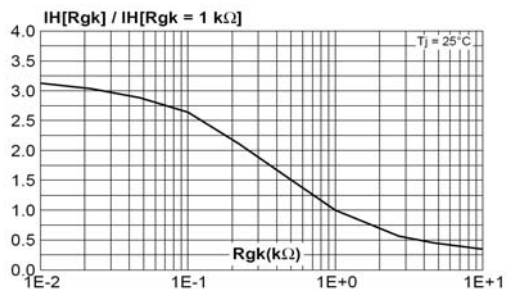


Fig. 5: Relative variation of holding current versus gate-cathode resistance (typical values).



Description

Fig. 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).

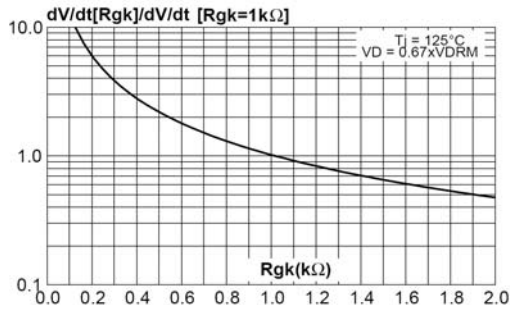


Fig. 7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values).

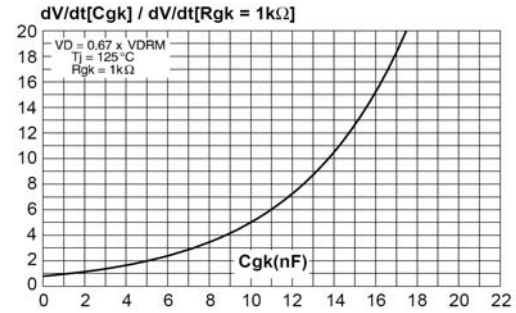


Fig. 8: Surge peak on-state current versus number of cycles.

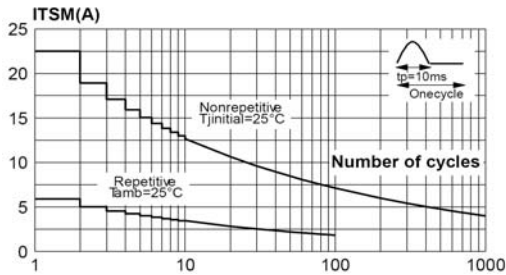


Fig. 9: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t .

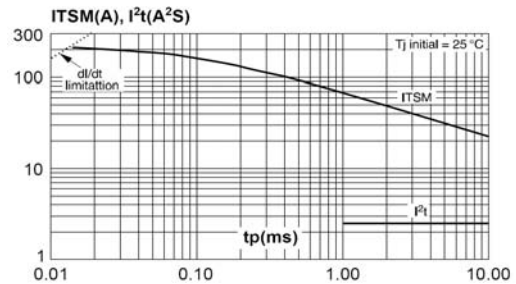


Fig. 10: On-state characteristics (maximum values).

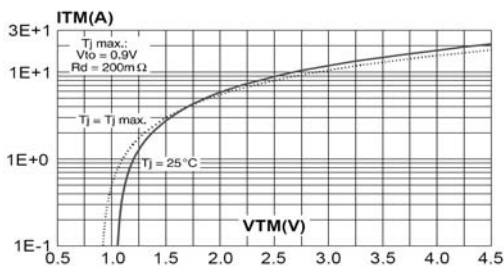
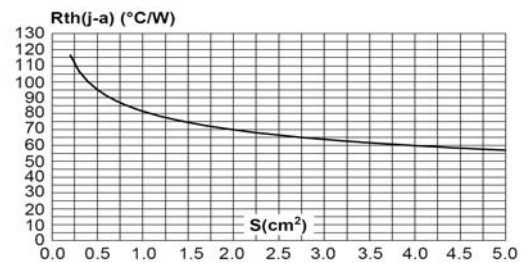


Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35 \mu m$) (SOT-223).

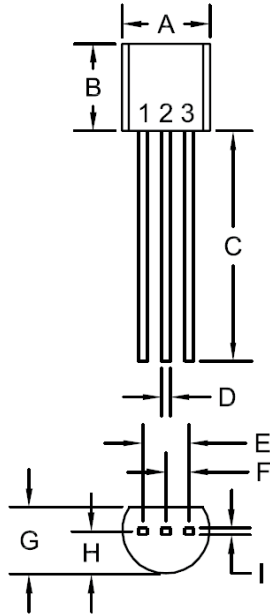


Description

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