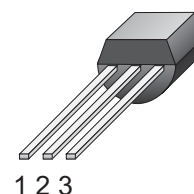


Description

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.

Simplified outline

TO-92



Features

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

Symbol



Applications

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

Pin	Description
1	cathode
2	anode
3	gate
TAB	anode

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	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)	10	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ $R_{\theta JA}$	Thermal resistance, Junction to Case Junction to Ambient		-	-	75 200	°C/W
T_L	Lead Solder Temperature	<1/16 from case, 10 secs max	-	260	-	°C

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{DRM}, V_{RRM}	Peak repetitive off-state Voltages	$T_j = -40$ to 110°C sine wave, 50 to 60 Hz, gate open MCR100-6 MCR100-8	-	400 600	V
$I_{T(RMS)}$	RMS on-state current 180° conduction angles	$T_c = 80^{\circ}\text{C}$	-	0.8	A
I_{TSM}	Peak non-repetitive surge current	1/2cycle, sine wave, 60Hz, $T_j = 25^{\circ}\text{C}$	-	10	A
I^2t	circuit fusing consideration	$t = 8.3\text{ms}$	-	0.415	A^2S
I_{DRM}, I_{RRM}	Peak repetitive forward or reverse blocking current	$V_D = \text{rated } V_{DRM} \text{ and } V_{RRM};$ $R_{GK} = 1\text{k}\Omega$ $T_c = 25^{\circ}\text{C}$ $T_c = 110^{\circ}\text{C}$	- -	10 100	μA μA
I_{GFM}	Forward peak gate current	$T_A = 25^{\circ}\text{C}$, Pulse Width $\leq 1.0\mu\text{s}$	-	1	A
V_{GRM}	Reverse peak gate voltage	$T_A = 25^{\circ}\text{C}$, Pulse Width $\leq 1.0\mu\text{s}$	-	5	V
P_{GM}	Forward peak gate power	$T_A = 25^{\circ}\text{C}$, Pulse Width $\leq 1.0\mu\text{s}$	-	0.1	W
$P_{G(AV)}$	Forward average gate power	$T_A = 25^{\circ}\text{C}$, $t = 8.3\text{ms}$	-	0.01	W
T_{slg}	Storage temperature range		-40	150	$^{\circ}\text{C}$
T_j	Operating junction temperature range @ rate V_{RRM} and V_{DRM}		-40	125	$^{\circ}\text{C}$

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	Gate trigger current	$V_{AK} = 7.0\text{Vdc}$, $R_L = 100\Omega$ $T_c = 25^{\circ}\text{C}$	-	40	200	μA
I_L	Latch current	$V_{AK} = 7.0\text{V}$, $I_G = 200\mu\text{A}$ $T_c = 25^{\circ}\text{C}$ $T_c = -40^{\circ}\text{C}$	- -	0.6 -	10 15	mA mA
I_H	Holding current	$V_{AK} = 7.0\text{Vdc}$, Initiating Current = 20mA $T_c = 25^{\circ}\text{C}$ $T_c = -40^{\circ}\text{C}$	- -	0.5 -	5.0 10	mA mA
V_{TM}	Peak forward on-state voltage	$I_{TM} = 1.0\text{A Peak}$; @ $T_A = 25^{\circ}\text{C}$	-	-	1.7	V
V_{GT}	Gate trigger voltage	$V_{AK} = 7.0\text{Vdc}$, $R_L = 100\Omega$ $T_c = 25^{\circ}\text{C}$ $T_c = -40^{\circ}\text{C}$	- -	0.62 -	0.8 1.2	V V

Dynamic Characteristics

dv/dt	Critical rate of rise of off-state voltage	$V_D = \text{Rated } V_{DRM}$, Exponential Waveform, $R_{GK} = 1\text{k}\Omega$ $T_j = 110^{\circ}\text{C}$	20	35	-	$\text{V}/\mu\text{s}$
di/dt	Critical rate-of-rise of on-state current	$I_{PK} = 20\text{A}$; $P_W = 10\mu\text{sec}$; $diG/dt = 1\text{A}/\mu\text{sec}$, $I_{GT} = 20\text{mA}$	-	-	50	$\text{A}/\mu\text{s}$

Description

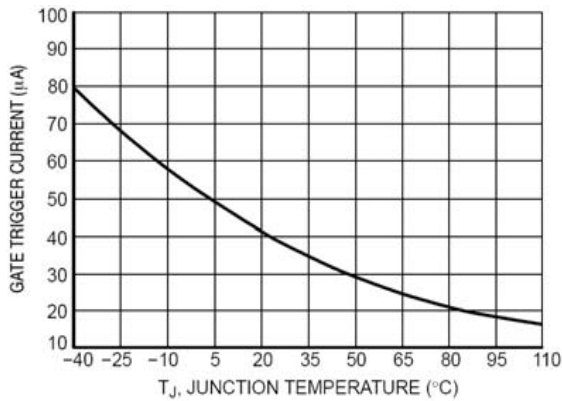


Figure 1. Typical Gate Trigger Current versus Junction Temperature

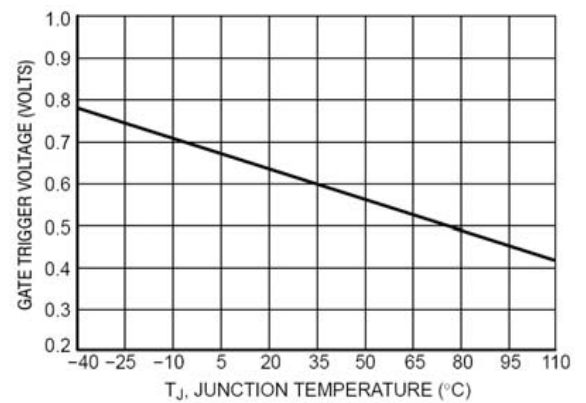


Figure 2. Typical Gate Trigger Voltage versus Junction Temperature

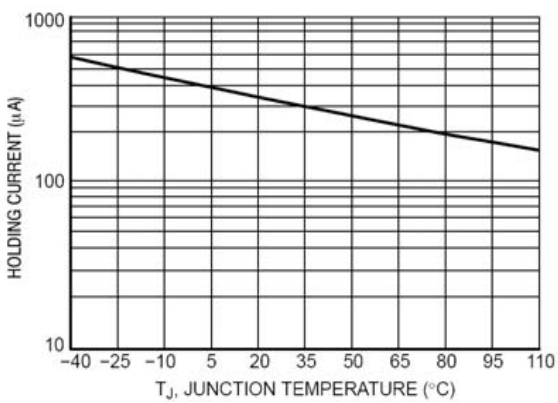


Figure 3. Typical Holding Current versus Junction Temperature

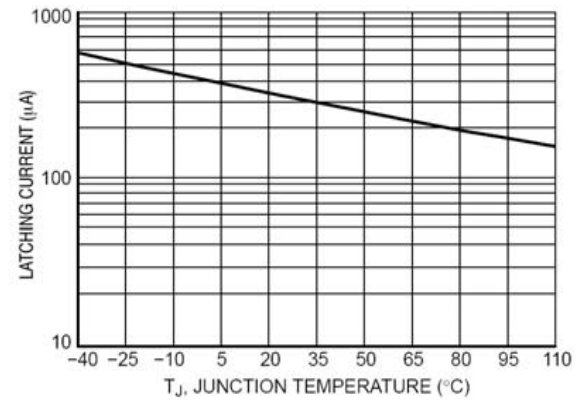


Figure 4. Typical Latching Current versus Junction Temperature

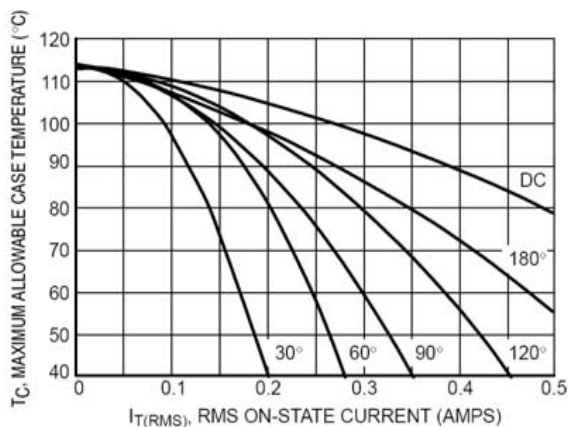


Figure 5. Typical RMS Current Derating

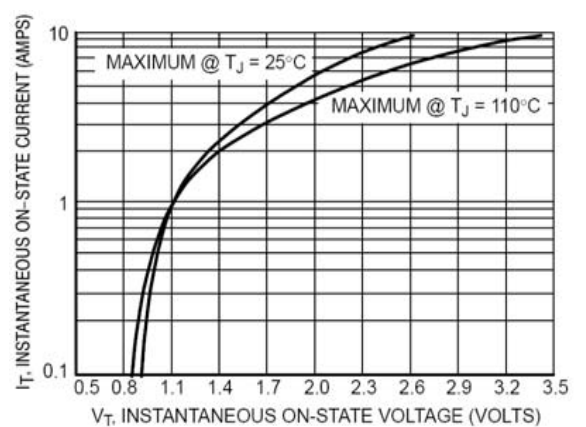
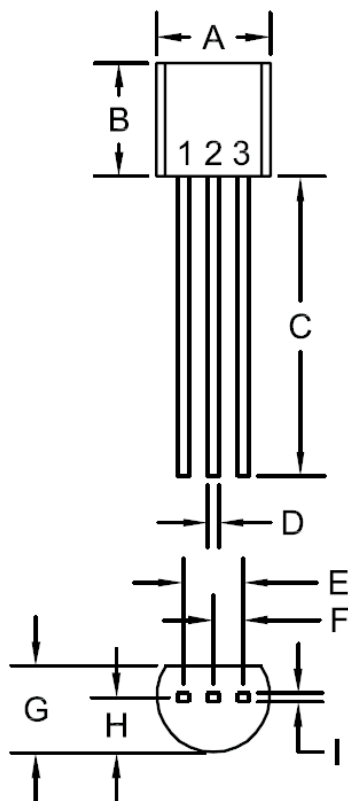


Figure 6. Typical On-State Characteristics

Mechanical Data

Dimensions in mm

Net Mass:0.2 g

TO-92


DIMENSIONS				
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	