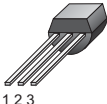


Description

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 1.5 A
- ◆ Ultra low gate trigger current

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages MCR22-6 MCR22-8	400 600	V
$I_T (RMS)$	RMS on-state current (full sine wave)	1.5	A
I_{TSM}	Non-repetitive peak on-state current (full cycle, T_j initial=25°C)	15	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Thermal resistance, Junction to Case		-	-	50	°C/W
$R_{\theta JA}$	Thermal resistance, Junction to Ambient		-	-	160	°C/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	$R_{GK}=1K, T_J=-40$ to $+110^{\circ}C$ MCR22-6 Sine wave, 50to60 Hz, gate open MCR22-8	-	400 600	V
$I_{T(RMS)}$	RMS on-state current	180° Conduction Angles, $T_c=80^{\circ}C$	-	1.5	A
I_{TSM}	Non-repetitive peak Current	1/2Cycle, sine wave, 60 Hz	-	15	A
I^2t	Circuit fusing considerations	$t=8.3ms$	-	0.9	A^2S
I_{DRM} I_{RRM}	Peak repetitive forward or reverse blocking current	$V_{AK}=\text{Rated } V_{DRM} \text{ or } V_{RRM}$ $T_C=25^{\circ}C$ $R_{GK}=1000\Omega$ $T_C=110^{\circ}C$	-	10 200	μA μA
I_{FGM}	Forward Peak gate current	$T_A=25^{\circ}C$, Pulse Width $\leq 1.0 \mu s$	-	0.2	A
V_{RGM}	Reverse Peak gate voltage	$T_A=25^{\circ}C$, Pulse Width $\leq 1.0 \mu s$	-	5	V
P_{GM}	Peak gate power	$T_A=25^{\circ}C$, Pulse Width $\leq 1.0 \mu s$	-	0.5	W
$P_{G(AV)}$	Average gate power	$T_A=25^{\circ}C$, Pulse Width $\leq 1.0 \mu s$	-	0.1	W
T_{stg}	Storage temperature		-40	150	$^{\circ}C$
T_J	Operating junction Temperature Range		-	110	$^{\circ}C$

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	Gate trigger current	$V_{AK}=6.0Vdc, R_L=100 \Omega$ $T_c=25^{\circ}C$ $T_c=-40^{\circ}C$	-	30 -	200 500	μA
T_L	Lead solder Temperature	Lead Length $\geq 1/16$ from case, 10s Max	-	-	260	$^{\circ}C$
I_H	Holding current	$V_{AK}=12Vdc$, Initiating Current=200mA $T_C=25^{\circ}C$ $T_C=-40^{\circ}C$	-	2.0 -	5.0 10	mA mA
V_{TM}	On-state voltage	$I_{TM}=1.0A$ Peak	-	1.2	1.7	V
V_{GT}	Gate trigger voltage	$V_{AK}=7.0Vdc, R_L=100 \Omega$ $T_C=25^{\circ}C$ $T_C=-40^{\circ}C$	- -	- -	0.8 1.2	V V

Dynamic Characteristics

D_v/dt	Critical rate of rise of Off-state voltage	$T_c=110^{\circ}C$	-	25	-	V/ μs
di/dt	Critical Rate-of-Rise of Off State Current		-	-	-	A/ μs

Description

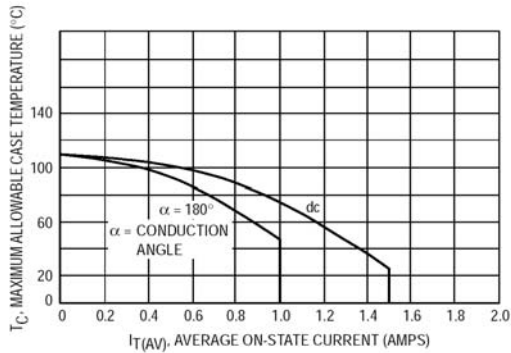


Figure 1. Maximum Case Temperature

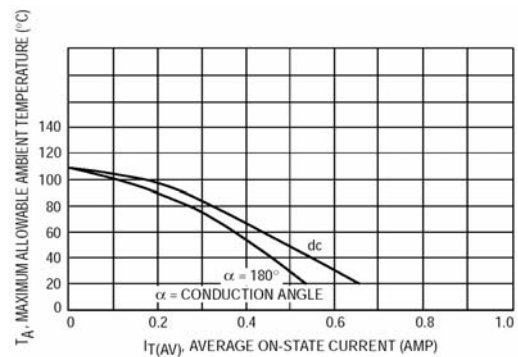


Figure 2. Maximum Ambient Temperature

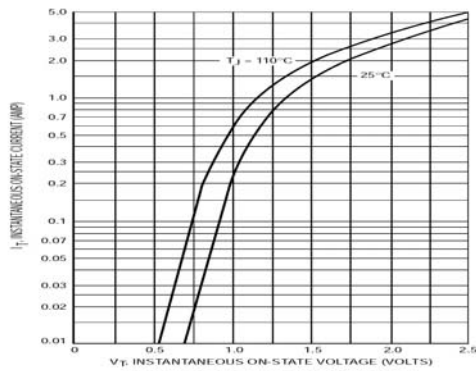


Figure 3. Typical Forward Voltage

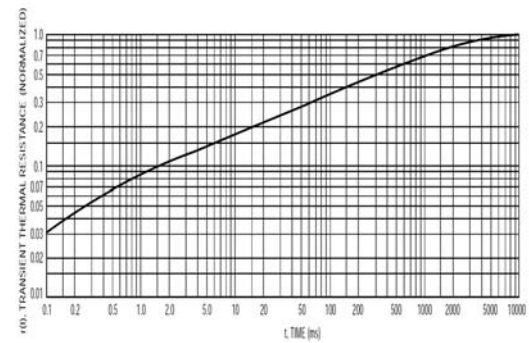


Figure 4. Thermal Response

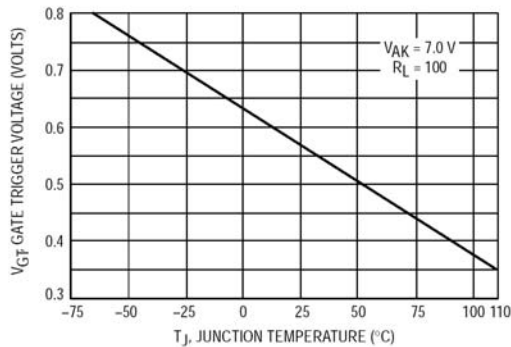


Figure 5. Typical Gate Trigger Voltage

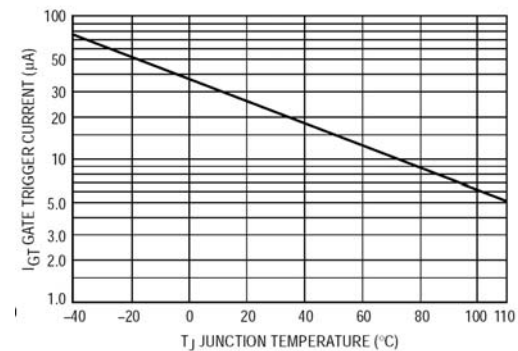


Figure 6. Typical Gate Trigger Current

Description

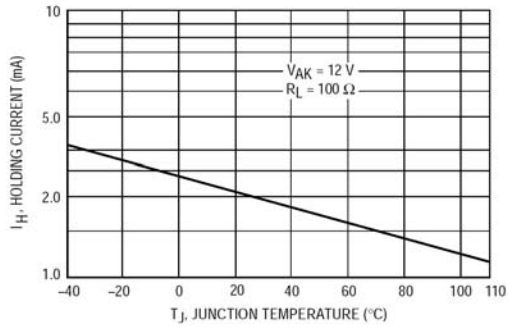


Figure 7. Typical Holding Current

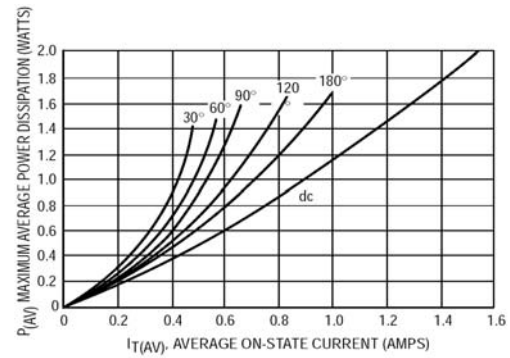


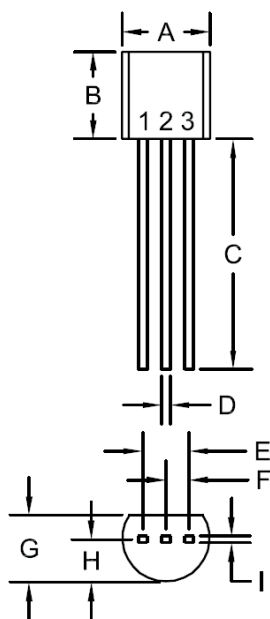
Figure 8. Power Dissipation

MECHANICAL DATA

Dimensions in mm

Net Mass:0.2 g

TO-92



R1

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)