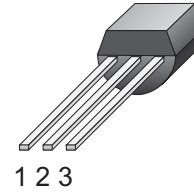


## Description

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

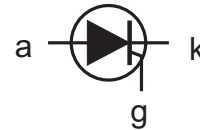
### TO-92



## Features

- Blocking voltage to 600 V
- On-state RMS current to 1.5 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 MCR22-6G MCR22-8G	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 $+110^{\circ}C$ MCR22-6G Sine wave, 50to60 Hz, gate open MCR22-8G	-	400 600	V
$I_{T(RMS)}$	RMS on-state current	$180^{\circ}$ 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	$V_{AK}=\text{Rated } V_{DRM} \text{ or } V_{RRM}$ $T_C=25^{\circ}C$ $R_{gk}=1000\text{Ohms}$ $T_C=110^{\circ}C$	-	10 200	$\mu A$
$I_{FGM}$	Forward Peak gate current	$T_A=25^{\circ}C, \text{Pulse Width} \leq 1.0 \mu s$	-	0.2	A
$V_{RGM}$	Reverse Peak gate voltage	$T_A=25^{\circ}C, \text{Pulse Width} \leq 1.0 \mu s$	-	5	V
$P_{GM}$	Peak gate power	$T_A=25^{\circ}C, \text{Pulse Width} \leq 1.0 \mu s$	-	0.5	W
$P_{G(AV)}$	Average gate power	$T_A=25^{\circ}C, \text{Pulse Width} \leq 1.0 \mu s$	-	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	$V_{AK}=6.0Vdc, R_L=100 \text{ Ohms}$ $T_c=25^{\circ}C$ $T_c=-40^{\circ}C$	-	30 -	200 500	$\mu A$
$T_L$	Lead solder Temperature	Lead Length $\geq 1/16$ from case, 10s Max	-	-	260	$^{\circ}C$
$I_H$	Holding current	$V_{AK}=12Vdc, \text{Initiating Current}=200mA$ $T_C=25^{\circ}C$ $T_C=-40^{\circ}C$	-	2.0 -	5.0 10	mA mA
$V_{TM}$	On-state voltage	$I_{TM}=1.0A \text{ Peak}$	-	1.2	1.7	V
$V_{GT}$	Gate trigger voltage	$V_{AK}=7.0Vdc, R_L=100 \text{ Ohms}$ $T_C=25^{\circ}C$ $T_C=-40^{\circ}C$	- -	- -	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/ $\mu s$
$di/dt$	Critical Rate-of-Rise of Off State Current		-	-	-	A/ $\mu s$

## Description

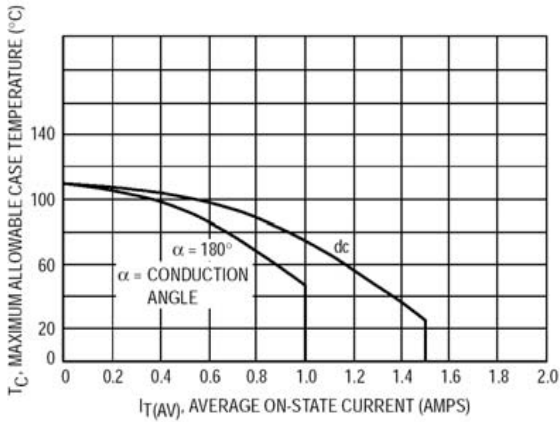


Figure 1. Maximum Case Temperature

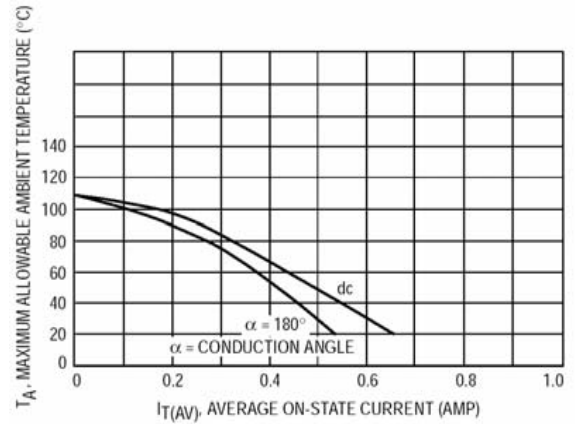


Figure 2. Maximum Ambient Temperature

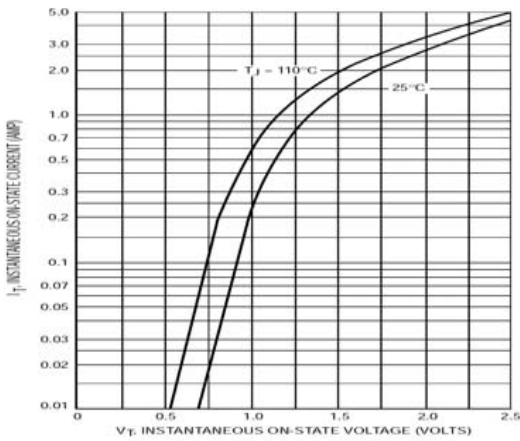


Figure 3. Typical Forward Voltage

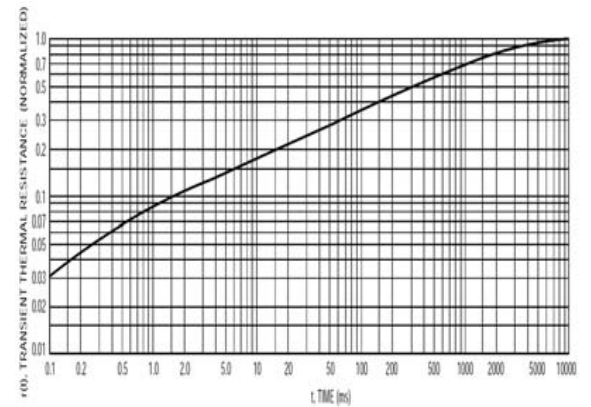


Figure 4. Thermal Response

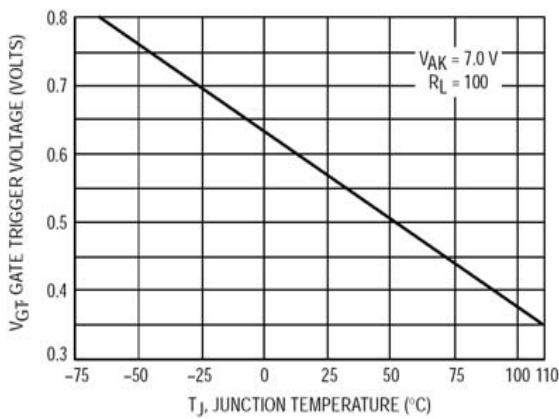


Figure 5. Typical Gate Trigger Voltage

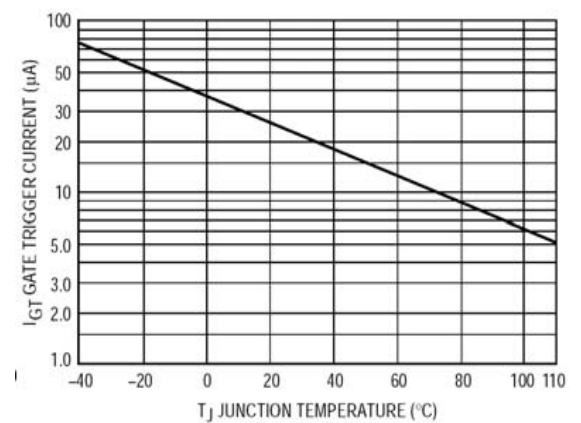


Figure 6. Typical Gate Trigger Current

## Description

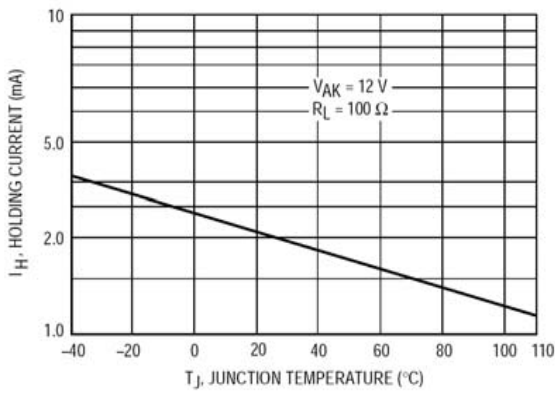


Figure 7. Typical Holding Current

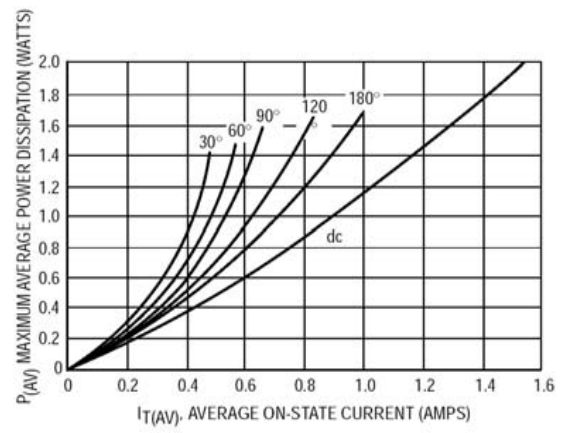


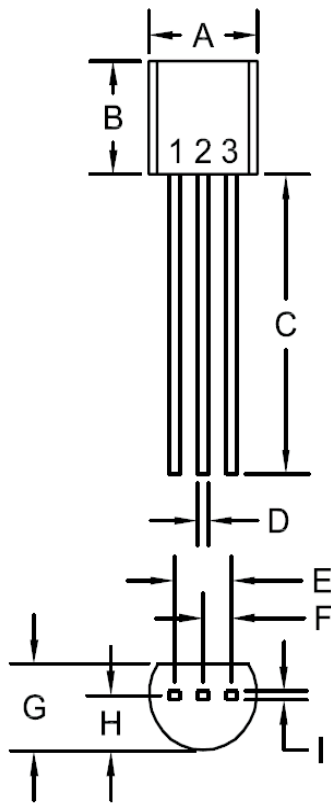
Figure 8. Power Dissipation

## Mechanical Data

Dimensions in mm

Net Mass: 0.2 g

## TO-92



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	