

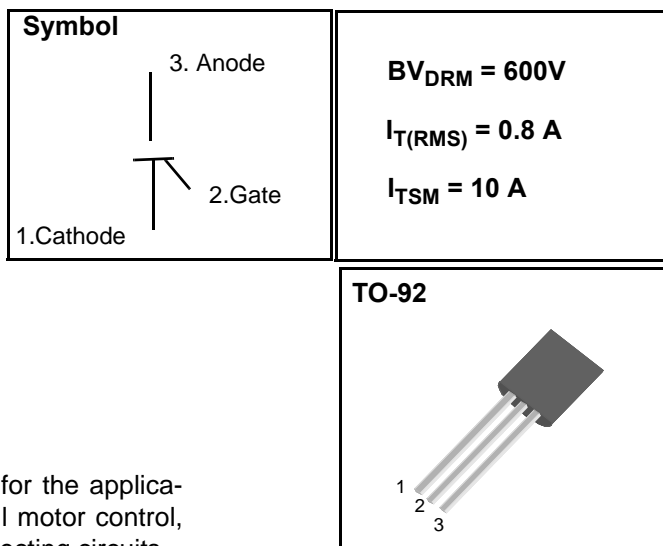
## Sensitive Gate Silicon Controlled - Rectifiers

### Features

Repetitive Peak Off-State Voltage : 600V  
R.M.S On-State Current (  $I_{T(RMS)} = 0.8 \text{ A}$  )  
Low On-State Voltage (1.2V(Typ.)@  $I_{TM}$ )  
Pb - Free Packages are available

### General Description

Sensitive-gate triggering thyristor is suitable for the application where gate current limited such as small motor control, gate driver for large thyristor, sensing and detecting circuits.



### Absolute Maximum Ratings ( $T_J = 25^\circ\text{C}$ unless otherwise specified )

Symbol	Parameter	Condition	Ratings	Units
$V_{DRM}$	Repetitive Peak Off-State Voltage	sine wave, 50 to 60Hz, gate open	600	V
$I_{T(AV)}$	Average On-State Current	half sine wave : $T_C = 74^\circ\text{C}$	0.5	A
$I_{T(RMS)}$	R.M.S On-State Current	all conduction angle	0.8	A
$I_{TSM}$	Surge On-State Current	1/2 Cycle, 60Hz, sine wave non-repetitive , $t = 8.3\text{ms}$	10	A
$I^2t$	$I^2t$ for Fusing	$t = 8.3\text{ms}$	0.415	$\text{A}^2\text{s}$
$P_{GM}$	Forward Peak Gate Power Dissipation	$T_A = 25^\circ\text{C}$ , pulse width $1.0\mu\text{s}$	2	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	$T_A = 25^\circ\text{C}$ , $t = 8.3\text{ms}$	0.1	W
$I_{FGM}$	Forward Peak Gate Current	$T_A = 25^\circ\text{C}$ , pulse width $1.0\mu\text{s}$	1	A
$V_{RGM}$	Reverse Peak Gate Voltage	$T_A = 25^\circ\text{C}$ , pulse width $1.0\mu\text{s}$	5.0	V
$T_J$	Operating Junction Temperature		- 40 ~ 125	$^\circ\text{C}$
$T_{STG}$	Storage Temperature		- 40 ~ 125	$^\circ\text{C}$

# MCR100-6A

## Electrical Characteristics ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted )

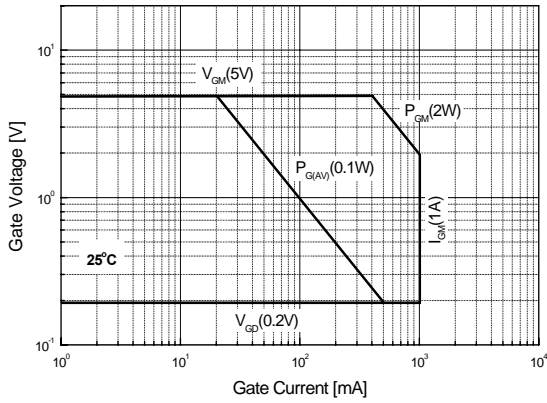
Symbol	Items	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
$I_{DRM}$	Repetitive Peak Off-State Current	$V_{AK} = V_{DRM}$ or $V_{RRM}$ ; $R_{GK} = 1000$ $T_C = 25\text{ }^\circ\text{C}$ $T_C = 125\text{ }^\circ\text{C}$			10 200	$\mu\text{A}$
$V_{TM}$	Peak On-State Voltage (1)	( $I_{TM} = 1\text{ A}$ , Peak )		1.2	1.7	V
$I_{GT}$	Gate Trigger Current (2)	$V_{AK} = 6\text{ V}$ , $R_L = 100$ $T_C = 25\text{ }^\circ\text{C}$ $T_C = -40\text{ }^\circ\text{C}$			200 500	$\mu\text{A}$
$V_{GT}$	Gate Trigger Voltage (2)	$V_D = 7\text{ V}$ , $R_L = 100$ $T_C = 25\text{ }^\circ\text{C}$ $T_C = -40\text{ }^\circ\text{C}$			0.8 1.2	V
$V_{GD}$	Non-Trigger Gate Voltage (1)	$V_{AK} = 12\text{ V}$ , $R_L = 100$ $T_C = 125\text{ }^\circ\text{C}$	0.2			V
dv/dt	Critical Rate of Rise Off-State Voltage	$V_D = \text{Rated } V_{DRM}$ , Exponential waveform, $R_{GK} = 1000$ $T_J = 125\text{ }^\circ\text{C}$	20	35		V/ $\mu\text{s}$
di/dt	Critical Rate of Rise Off-State Voltage	$I_{PK} = 20\text{ A}$ ; $P_W = 10\text{ }\mu\text{s}$ ; $diG/dt = 1\text{ A}/\mu\text{s}$ $I_{gt} = 20\text{ mA}$			50	A/ $\mu\text{s}$
$I_H$	Holding Current	$V_{AK} = 12\text{ V}$ , Gate Open Initiating Current = 20mA $T_C = 25\text{ }^\circ\text{C}$ $T_C = -40\text{ }^\circ\text{C}$		2	5.0 10	mA
$R_{th(j-c)}$	Thermal Impedance	Junction to case			60	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Thermal Impedance	Junction to Ambient			150	$^\circ\text{C}/\text{W}$

### Notes :

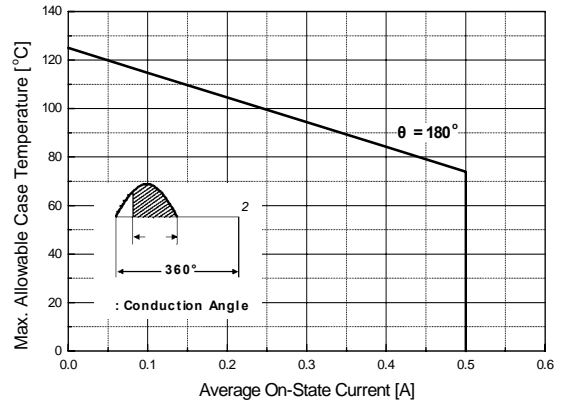
1. Pulse Width 1.0 ms , Duty cycle 1%
2. Does not include  $R_{GK}$  in measurement.

# MCR100-6A

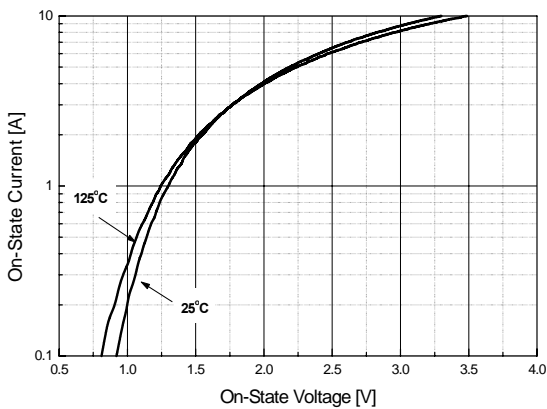
**Fig 1. Gate Characteristics**



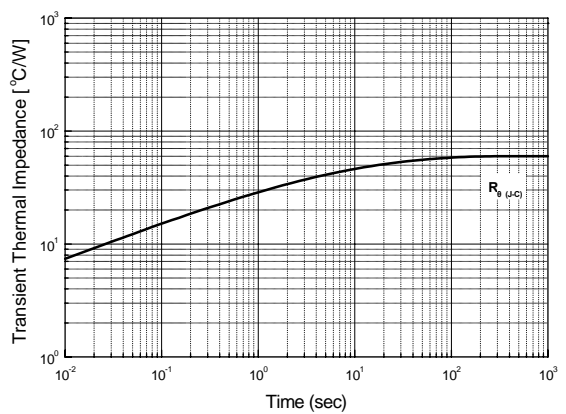
**Fig 2. Maximum Case Temperature**



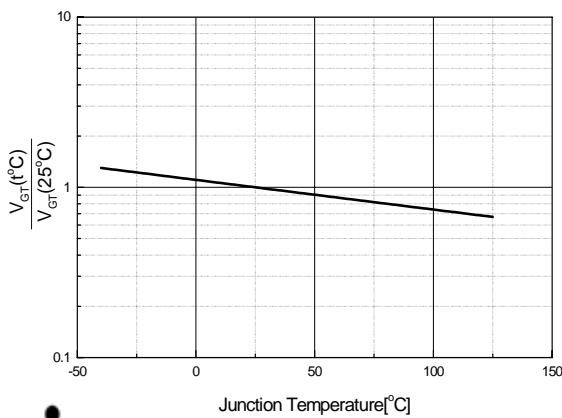
**Fig 3. Typical Forward Voltage**



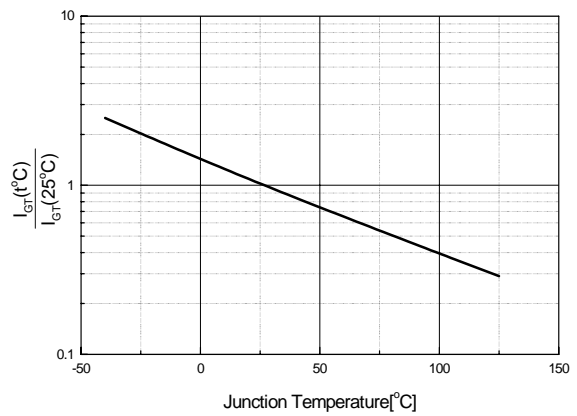
**Fig 4. Thermal Response**



**Fig 5. Typical Gate Trigger Voltage vs. Junction Temperature**



**Fig 6. Typical Gate Trigger Current vs. Junction Temperature**



# MCR100-6A

Fig 7. Typical Holding Current

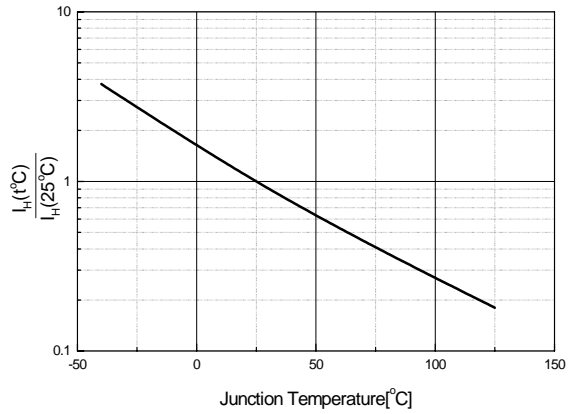
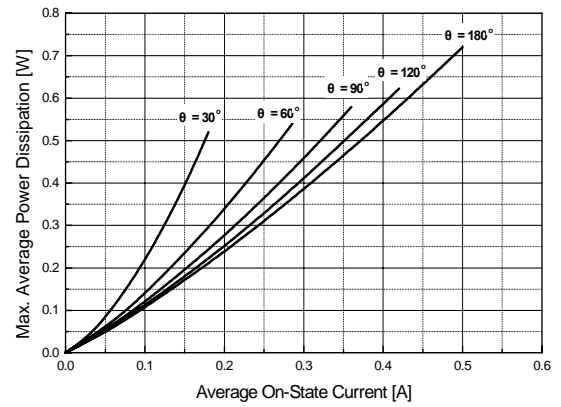


Fig 8. Power Dissipation



# MCR100-6A

## TO-92 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		4.2			0.165	
B			3.7			0.146
C	4.43		4.83	0.174		0.190
D	14.07		14.87	0.554		0.585
E			0.4			0.016
F	4.43		4.83	0.174		0.190
G			0.45			0.017
H		2.54			0.100	
I		2.54			0.100	
J	0.33		0.48	0.013		0.019

