

## Sensitive Gate Silicon Controlled Rectifiers

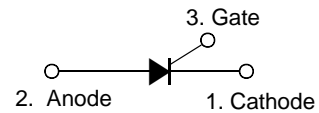
### Features

- ◆ Repetitive Peak Off-State Voltage : 600V
- ◆ R.M.S On-State Current (  $I_{T(RMS)} = 1.5 \text{ A}$  )
- ◆ Low On-State Voltage (1.2V(Typ.)@ $I_{TM}$ )

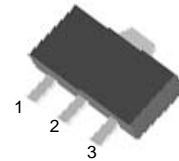
### General Description

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

#### Symbol



#### SOT-89



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

Symbol	Parameter	Condition	Ratings	Units
$V_{DRM}$	Repetitive Peak Off-State Voltage		600	V
$I_{T(AV)}$	Average On-State Current	Half Sine Wave : $T_C = 99^\circ\text{C}$	1.0	A
$I_{T(RMS)}$	R.M.S On-State Current	All Conduction Angle	1.5	A
$I_{TSM}$	Surge On-State Current	1/2 Cycle, 60Hz, Sine Wave Non-Repetitive	15	A
$I^2t$	$I^2t$ for Fusing	$t = 8.3\text{ms}$	0.9	$\text{A}^2\text{s}$
$P_{GM}$	Forward Peak Gate Power Dissipation	$T_A = 25^\circ\text{C}$ , Pulse Width $\leq 1.0\mu\text{s}$	0.5	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		0.2	A
$V_{RGM}$	Reverse Peak Gate Voltage		5.0	V
$T_J$	Operating Junction Temperature		- 40 ~ 125	$^\circ\text{C}$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^\circ\text{C}$

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

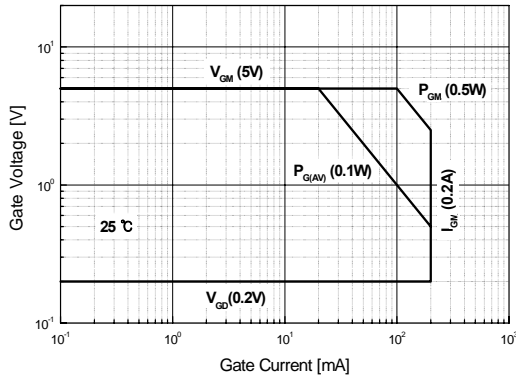
Symbol	Items	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
$I_{\text{DRM}}$	Repetitive Peak Off-State Current	$V_{\text{AK}} = V_{\text{DRM}}$ or $V_{\text{RRM}}$ ; $R_{\text{GK}} = 1000\ \Omega$ $T_C = 25\text{ }^\circ\text{C}$ $T_C = 125\text{ }^\circ\text{C}$	— —	— —	10 200	$\mu\text{A}$
$V_{\text{TM}}$	Peak On-State Voltage (1)	( $I_{\text{TM}} = 3\text{ A}$ , Peak )	—	1.2	1.7	V
$I_{\text{GT}}$	Gate Trigger Current (2)	$V_{\text{AK}} = 6\text{ V}$ , $R_L = 100\ \Omega$ $T_C = 25\text{ }^\circ\text{C}$ $T_C = -40\text{ }^\circ\text{C}$	— —	— —	200 500	$\mu\text{A}$
$V_{\text{GT}}$	Gate Trigger Voltage (2)	$V_D = 7\text{ V}$ , $R_L = 100\ \Omega$ $T_C = 25\text{ }^\circ\text{C}$ $T_C = -40\text{ }^\circ\text{C}$	— —	— —	0.8 1.2	V
$V_{\text{GD}}$	Non-Trigger Gate Voltage (1)	$V_{\text{AK}} = 12\text{ V}$ , $R_L = 100\ \Omega$ $T_C = 125\text{ }^\circ\text{C}$	0.2	—	—	V
dv/dt	Critical Rate of Rise Off-State Voltage	$V_{\text{GM}} = 0.67V_{\text{DRM}}$ , Exponential waveform, $R_{\text{GK}} = 1000\ \Omega$ $T_J = 125\text{ }^\circ\text{C}$	200	—	—	$\text{V}/\mu\text{s}$
di/dt	Critical Rate of Rise On-State Current	$I_{\text{TM}} = 3\text{ A}$ , $I_g = 10\text{ mA}$			50	$\text{A}/\mu\text{s}$
$I_{\text{H}}$	Holding Current	$V_{\text{AK}} = 12\text{ V}$ , Gate Open $T_C = 25\text{ }^\circ\text{C}$ $T_C = -40\text{ }^\circ\text{C}$	— —	2 —	5.0 10	mA
$R_{\text{th(j-c)}}$	Thermal Impedance	Junction to case	—	—	15	$^\circ\text{C}/\text{W}$
$R_{\text{th(j-a)}}$	Thermal Impedance	Junction to Ambient	—	—	125	$^\circ\text{C}/\text{W}$

### ※ Notes :

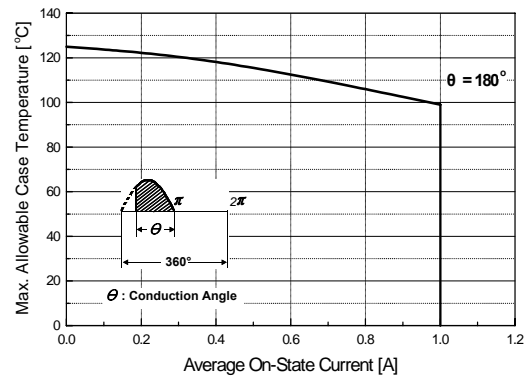
1. Pulse Width  $\leq 1.0\text{ ms}$ , Duty cycle  $\leq 1\%$
2. Does not include  $R_{\text{GK}}$  in measurement.



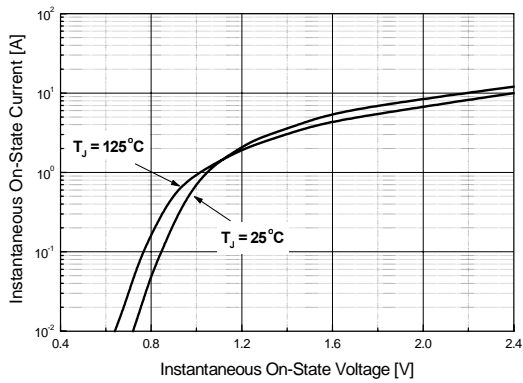
**Fig 1. Gate Characteristics**



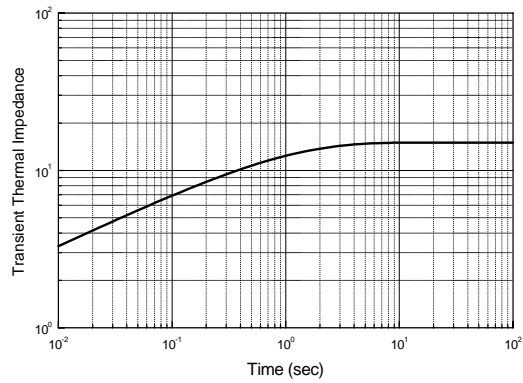
**Fig 2. Maximum Case Temperature**



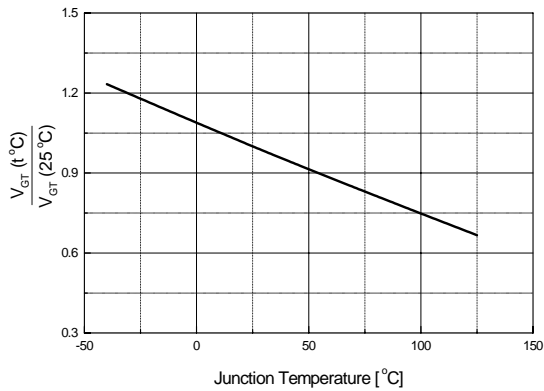
**Fig 3. Typical Forward Voltage**



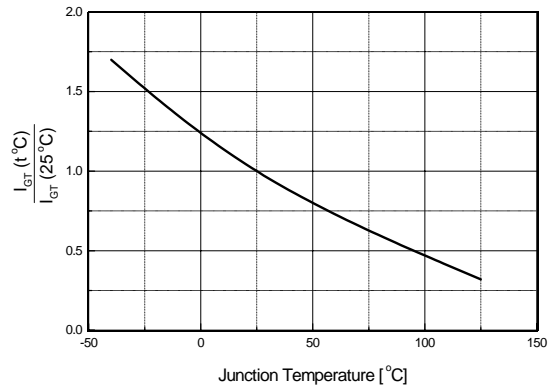
**Fig 4. Thermal Response**



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



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



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Fig 7. Typical Holding Current

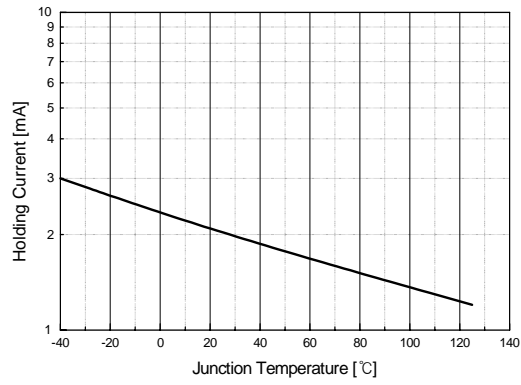
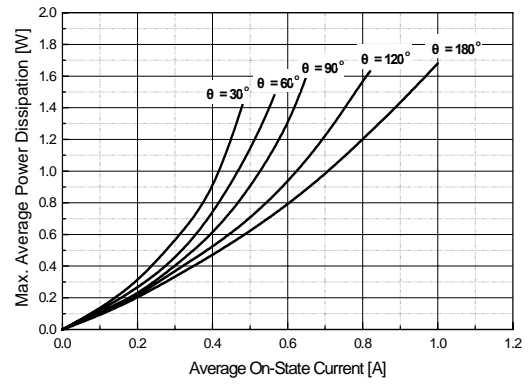
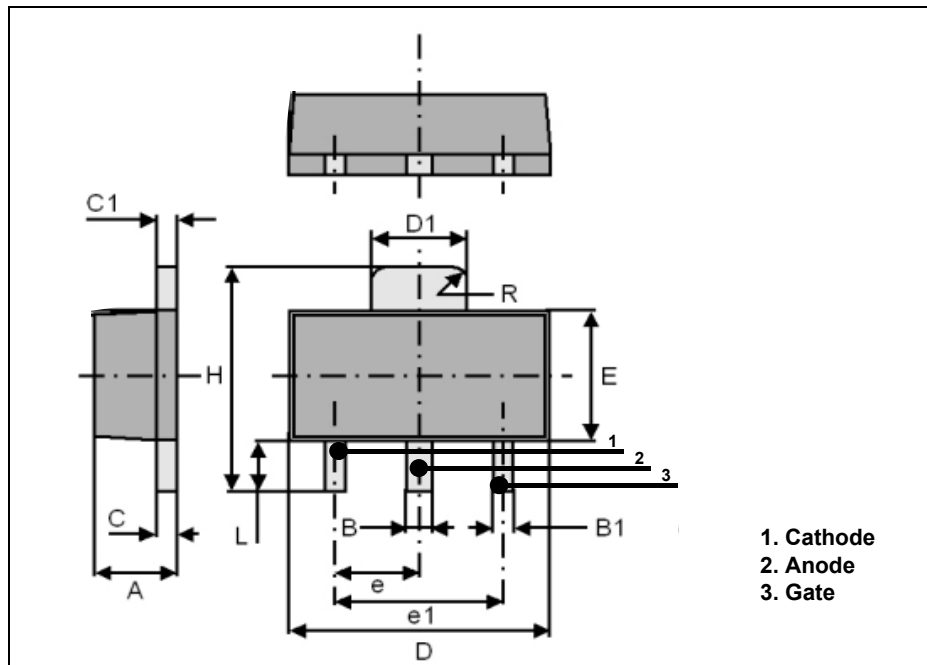


Fig 8. Power Dissipation



## SOT- 89 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.40		1.60	0.055		0.063
B	0.36		0.56	0.014		0.022
B1	0.32		0.52	0.013		0.020
C	0.35		0.44	0.014		0.017
C1	0.35		0.44	0.014		0.017
D	4.40		4.60	0.173		0.181
D1	1.40		1.80	0.055		0.071
E	2.30		2.60	0.091		0.102
e		1.50			0.060	
e1	2.90		3.10	0.114		0.122
H	3.94		4.25	0.155		0.167
L	0.90		1.10	0.035		0.043
R		0.25			0.010	



1. Cathode
2. Anode
3. Gate