

## MCK100-6

### Silicon Controlled Rectifier

#### FEATURES

- Repetitive Peak Off-State Voltage: 400V
- R.M.S On-State Current ( $I_{T(RMS)} = 0.8A$ )
- Low Gate Trigger Current: 200uA

#### Applications

Leakage detector, Electronic Ballast or protection circuit.

#### General Description

Semihow's SCR product is a single directional PNP device, has a low gate trigger current and high stability in gate trigger current to temperature, generally suitable for sensing and detection circuits.

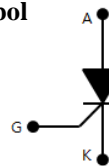
$$V_{DRM} = 400 V$$

$$I_{T(RMS)} = 0.8 A$$

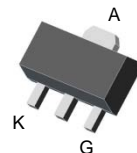
$$I_{TSM} = 11 A$$

$$I_{GT} = 200\mu A$$

Symbol



SOT-89



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

Symbol	Parameter	Conditions	Ratings	Unit
$V_{DRM}$	Repetitive Peak Off-State Voltage	Sine wave, 50/60Hz, Gate open	400	V
$V_{RRM}$	Repetitive Peak Reverse Voltage		400	V
$I_{T(AV)}$	Average On-State Current	Full sine wave, $T_C = 95.1^\circ C$	0.5	A
$I_{T(RMS)}$	R.M.S. On-State Current		0.8	A
$I_{TSM}$	Surge On-State Current	½ cycle, 50Hz/60Hz, Sine wave, Non repetitive	10/11	A
$I^2t$	Fusing Current	$t = 10ms$	0.5	A <sup>2</sup> S
$P_{GM}$	Forward Peak Gate Power Dissipation	$T_J = 125^\circ C$ , pulse width $\leq 1.0\mu s$	2	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	$T_J = 125^\circ C$ , $t = 8.3ms$	0.1	W
$I_{FGM}$	Forward Peak Gate Current	$T_J = 125^\circ C$ , pulse width $\leq 1.0\mu s$	1	A
$V_{RGM}$	Reverse Peak Gate Voltage	$T_J = 125^\circ C$ , pulse width $\leq 1.0\mu s$	5	V
$T_J$	Operating Junction Temperature		-40~+125	$^\circ C$
$T_{STG}$	Storage Temperature		-40~+150	$^\circ C$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$I_{\text{DRM}}$	Repetitive Peak Off-State Current	$V_D = V_{\text{DRM}}$	$T_C=25^\circ\text{C}$	-	-	50	$\mu\text{A}$
			$T_C=125^\circ\text{C}$	-	-	5	$\text{mA}$
$I_{\text{RRM}}$	Repetitive Peak Reverse Current	$V_D = V_{\text{DRM}}$	$T_C=25^\circ\text{C}$	-	-	50	$\mu\text{A}$
			$T_C=125^\circ\text{C}$	-	-	5	$\text{mA}$
$I_{\text{GT}}$	Gate Trigger Current	$V_D = 12\text{V}, R_L=330\Omega$	-	-	200	$\mu\text{A}$	
$V_{\text{GT}}$	Gate Trigger Voltage	$V_D = 12\text{V}, R_L=330\Omega$	-	-	1.0	V	
$V_{\text{GD}}$	Non-Trigger Gate Voltage <sup>1</sup>	$V_D = 12\text{V}, R_L=330\Omega, T_J=125^\circ\text{C}$	0.2	-	-	V	
$V_{\text{TM}}$	Peak On-State Voltage	$I_T = 1.1\text{A}, I_G = 5\text{mA}$	-	1.2	1.7	V	
dv/dt	Critical Rate of Rise of Off-State Voltage	$V_D = 2/3 V_{\text{DRM}}, T_J=125^\circ\text{C}$	10	-	-	V/ $\mu\text{s}$	
$I_{\text{H}}$	Holding current	$I_T = 0.2\text{A}$	-	-	1	$\text{mA}$	

### Notes :

1. Pulse Width  $\leq 1.0\text{ms}$ , Duty Cycle  $\leq 1\%$

## Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\theta\text{JC}}$	Thermal Resistance	Junction to Case			56	$^\circ\text{C}/\text{W}$
$R_{\theta\text{JA}}$	Thermal Resistance	Junction to Ambient			150	$^\circ\text{C}/\text{W}$

Typical Characteristics

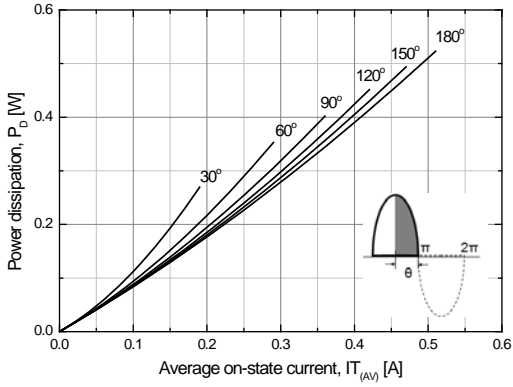


Fig 1. Average Current vs. Power dissipation

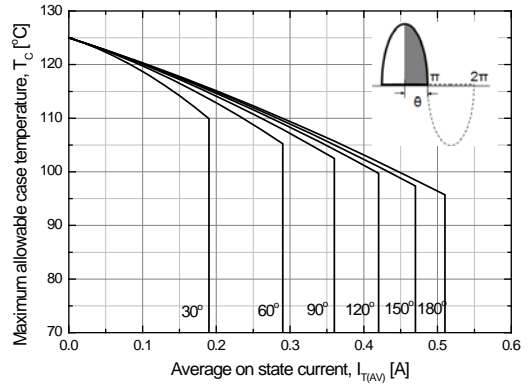


Fig 2. Average current vs. Case Temperature

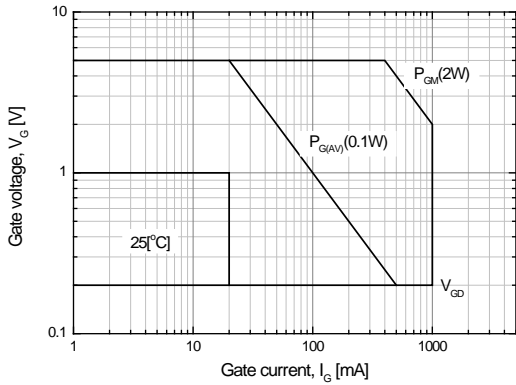


Fig 3. Gate power characteristics

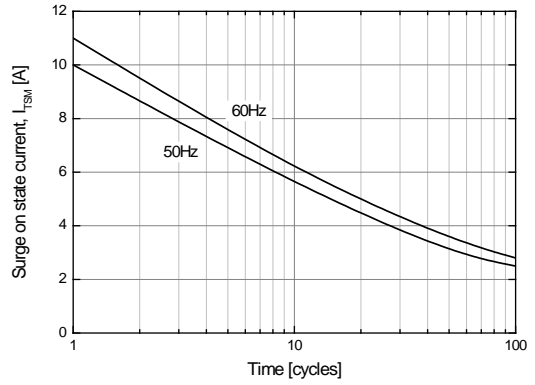


Fig 4. Surge on state current rating (Non-repetitive)

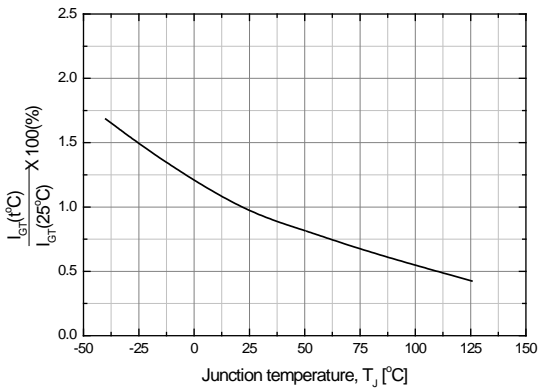


Fig 5. Gate trigger current vs. junction temperature

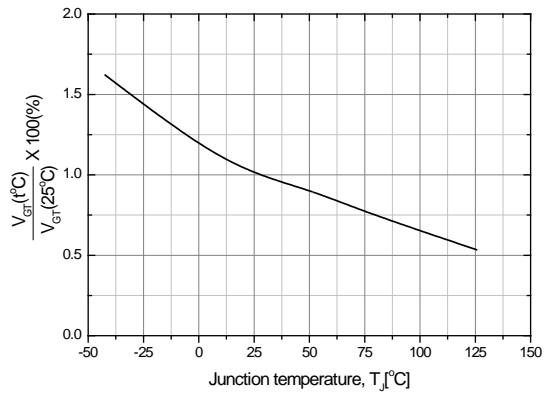
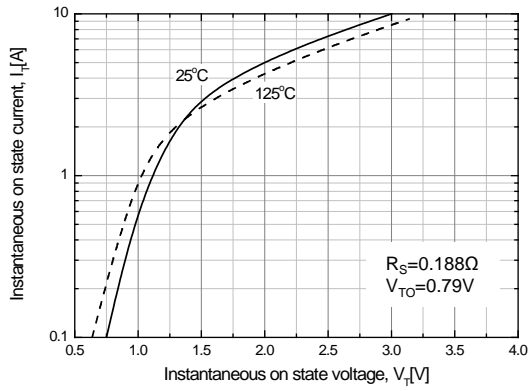
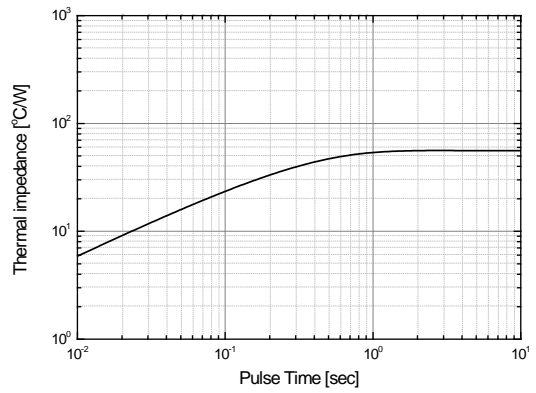


Fig 6. Gate trigger voltage vs. junction temperature

## Typical Characteristics

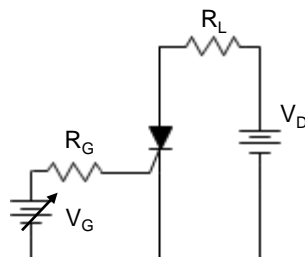


**Fig 7. Instantaneous on state current vs. Instantaneous on state voltage**



**Fig 8. Thermal Impedance vs. pulse time**

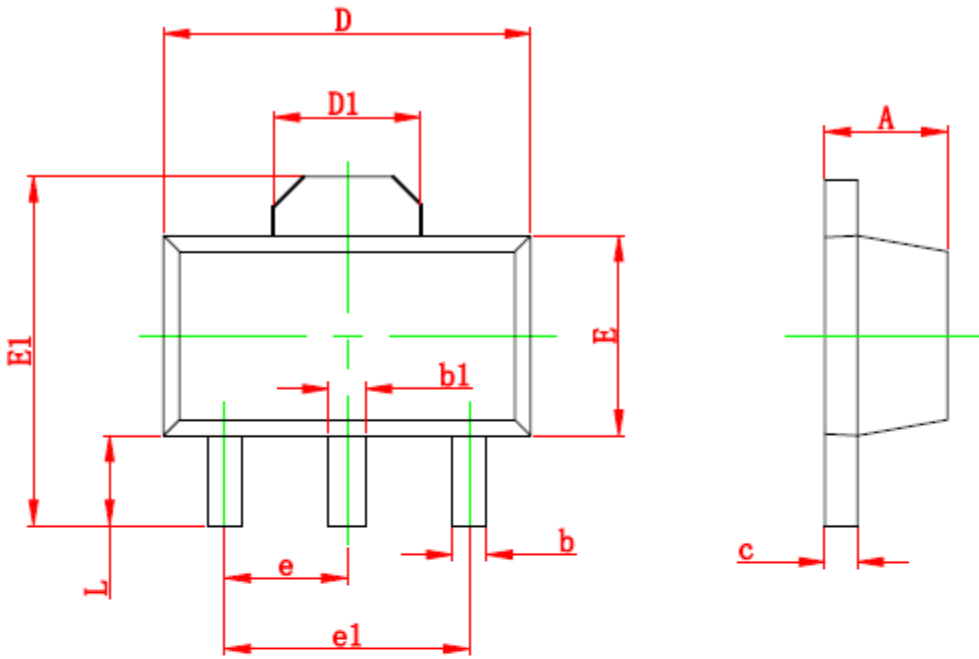
### Measurement of gate trigger current



Note. Whole parameter and test condition can not be over absolute maximum ratings in this datasheet.

Package Dimension

SOT-89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047