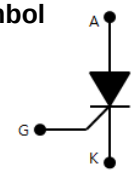
SemiHow
Know-How for Semiconductor

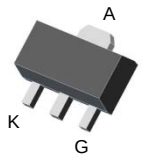
V_{DRM} = 600 V
$I_{T(RMS)}$ = 2 A
I_{TSM} = 20A
I_{GT} = 200uA

MCK22-8
Silicon Controlled Rectifier

Symbol



SOT-89



FEATURES

- Repetitive Peak Off-State Voltage: 600V
- R.M.S On–State Current ($I_{T(RMS)}$ = 2A)
- Low Gate Trigger Current: ≤ 200uA

Applications

Leakage detector, Electronic Ballast or protection circuit.

General Description

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

Absolute Maximum Ratings (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DRM}	Repetitive Peak Off-State Voltage	Sine wave, 50/60Hz, Gate open	600	V
V_{RRM}	Repetitive Peak Reverse Voltage		600	V
$I_{T(RMS)}$	R.M.S. On-State Current	Full sine wave, T_C = 75°C	2	A
I_{TSM}	Surge On-State Current	½ cycle, 60Hz, Sine wave, Non repetitive	20	A
I^2t	Fusing Current	t = 10ms	2	A^2S
P_{GM}	Forward Peak Gate Power Dissipation	T_J = 110 ˚C, pulse width ≤ 1.0us	0.5	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	T_J = 110 ˚C, t = 8.3ms	0.1	W
I_{FGM}	Forward Peak Gate Current	T_J = 110 ˚C, pulse width ≤ 1.0us	0.2	A
V_{RGM}	Reverse Peak Gate Voltage	T_J = 110 ˚C, pulse width ≤ 1.0us	5	V
T_J	Operating Junction Temperature		-40~+110	°C
T_{STG}	Storage Temperature		-40~+150	°C

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{DRM}	Repetitive Peak Off-State Current	$V_D = V_{DRM}$	T_C=25°C	-	-	5	uA
			T_C=125°C	-	-	100	uA
I_{RRM}	Repetitive Peak Reverse Current	$V_D = V_{DRM}$	T_C=25°C	-	-	5	uA
			T_C=125°C	-	-	100	uA
I_{GT}	Gate Trigger Current	V_D = 12V, R_L=33Ω		-	50	200	uA
V_{GT}	Gate Trigger Voltage	V_D = 12V, R_L=33Ω		-	0.6	0.8	V
V_{GD}	Non-Trigger Gate Voltage[1]	V_D = 12V, R_L=33Ω, T_J=110°C		0.2	-	-	V
V_{TM}	Peak On-State Voltage	I_T = 4A		-	-	1.5	V
I_L	Latching Current	I_G= 1.2I_{GT}		-	-	6	mA
I_H	Holding current	I_T= 0.05A		-	-	5	mA
dv/dt	Critical Rate of Rise of Off-State Voltage	V_D = 2/3 V_{DRM}, T_J=110°C R_{GK}=1KΩ		10	-	-	V/us

Notes :
1. Pulse Width ≤ 1.0ms, Duty Cycle ≤ 1%

Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	Junction to Case			8.3	°C/W
$R_{\theta JA}$	Thermal Resistance	Junction to Ambient			150	°C/W

Typical Characteristics

FIG.1: Maximum power dissipation versus RMS on-state current

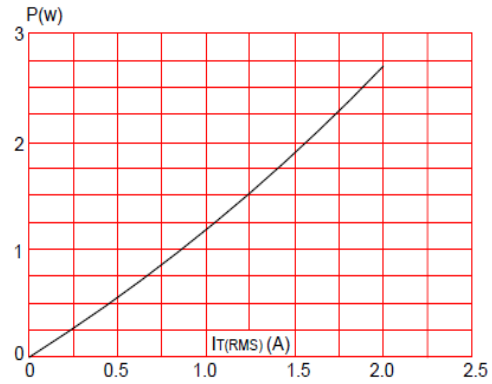


FIG.2: RMS on-state current versus case temperature

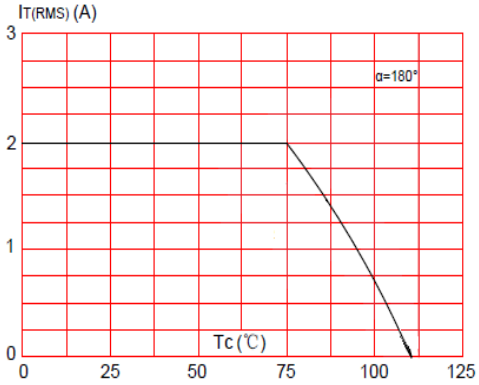


FIG.3: Surge peak on-state current versus number of cycles

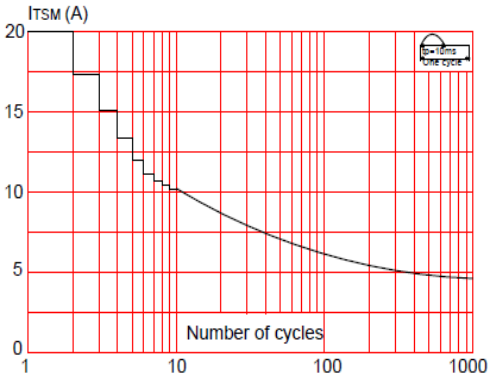


FIG.4: On-state characteristics (maximum values)

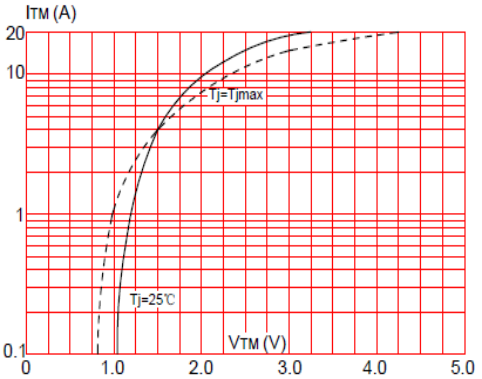


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp< 10ms, and corresponging value of I^2t (dI/dt < 50A/μs)

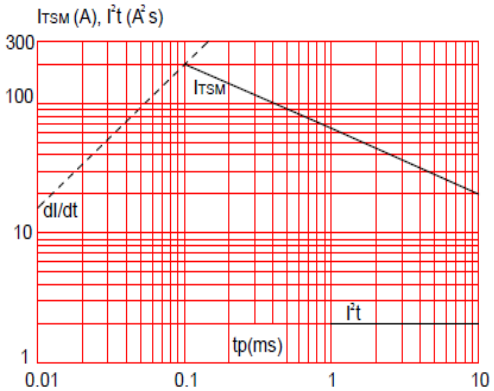
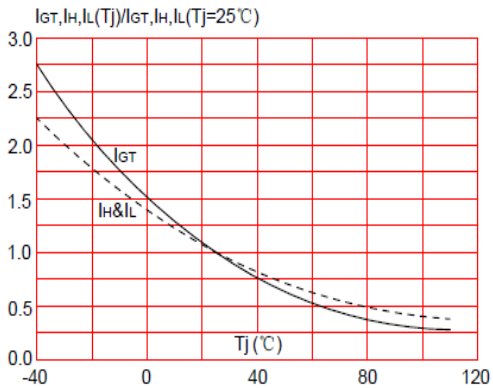
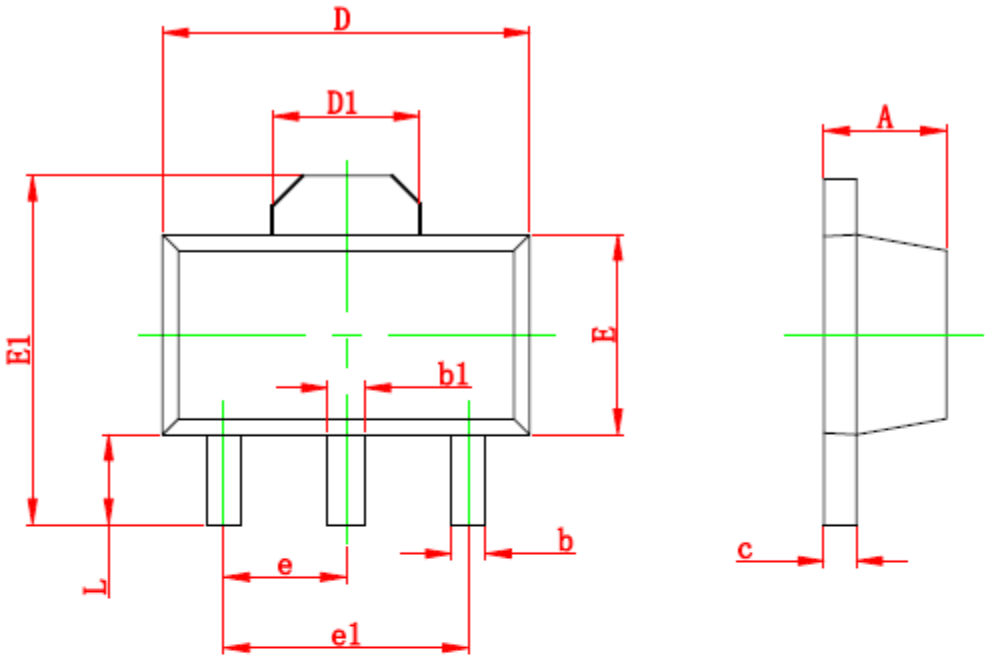


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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