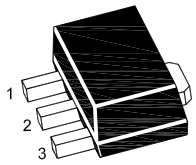
MCR100…U Series

Sensitive Gate Silicon Controlled Rectifiers
Reverse Blocking Thyristors



1.Gate 2.Anode 3.Cathode
SOT-89 Plastic Package

Absolute Maximum Ratings (T_a = 25℃)

Parameter	Symbol	Value	Unit
Peak Repetitive Off-State Voltage [4] (T_J = -40℃ to 110℃, Sine Wave, 50 to 60 Hz, Gate Open) MCR100-4U MCR100-6U MCR100-8U	V_{DRM}, V_{RRM}	 200 400 600	V
On-State RMS Current (T_C = 80 ^{O}C) 180^{O} Conduction Angles	$I_{T(RMS)}$	0.8	A
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60 Hz, T_J = 25℃)	I_{TSM}	10	A
Circuit Fusing Considerations (t = 8.3 ms)	I^2t	0.415	A^2s
Forward Peak Gate Power (Pulse Width ≤ 1 μs)	P_{GM}	0.1	W
Forward Average Gate Power (t = 8.3 ms)	$P_{G(AV)}$	0.1	W
Peak Gate Current – Forward (Pulse Width ≤ 1 μs)	I_{GM}	1	A
Peak Gate Voltage – Reverse (Pulse Width ≤ 1 μs)	V_{GRM}	5	V
Operating Junction Temperature Range	T_J	- 40 to + 110	℃
Storage Temperature Range	T_{Stg}	- 40 to + 150	℃

Characteristics at T_a = 25 ℃

Parameter		Symbol	Max.	Unit
Peak Forward or Reverse Blocking Current [2] at V_D = Rated V_{DRM} and V_{RRM}, R_{GK} = 1 KΩ		I_{DRM}, I_{RRM}	10	μA
Peak Forward On-State Voltage [1] at I_{TM} = 1 A Peak		V_{TM}	1.7	V
Gate Trigger Current [3] at V_{AK} = 7 V, R_L = 100 Ω		I_{GT}	200	μA
Holding Current [2] at V_{AK} = 7 V, Initiating Current = 20 mA	T_C = 25℃ T_C = - 40℃	I_H	5 10	mA
Latch Current at V_{AK} = 7 V, Ig = 200 μA	T_C = 25℃ T_C = - 40℃	I_L	10 15	mA
Gate Trigger Voltage [3] at V_{AK} = 7 V, R_L = 100 Ω	T_C = 25℃ T_C = - 40℃	V_{GT}	0.8 1.2	V

[1] Indicates pulse teat width ≤ 1 ms, duty cycle ≤ 1%
[2] R_{GK} = 1 KΩ included in measurement
[3] Does not include R_{GK} in measurement
[4] V_{DRM} and V_{RRM} for all types can be applied on continous basis. Ratings apply for zero negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current sourse such that the voltage ratings of the devices are exceeded.

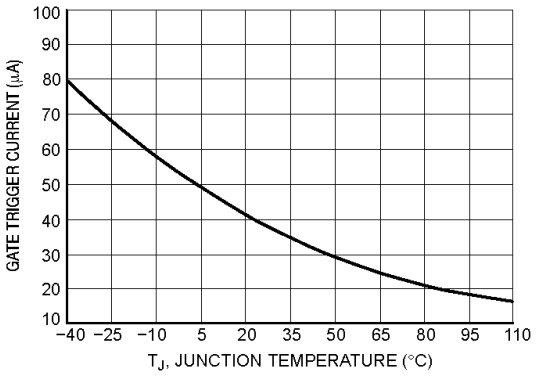


Figure 1. Typical Gate Trigger Current versus Junction Temperature

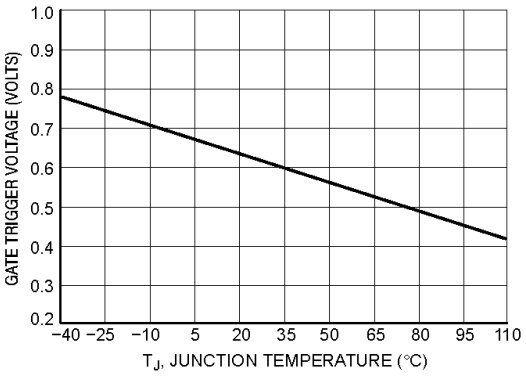


Figure 2. Typical Gate Trigger Voltage versus Junction Temperature

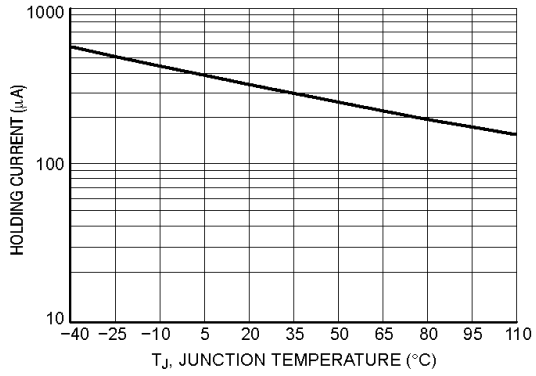


Figure 3. Typical Holding Current versus Junction Temperature

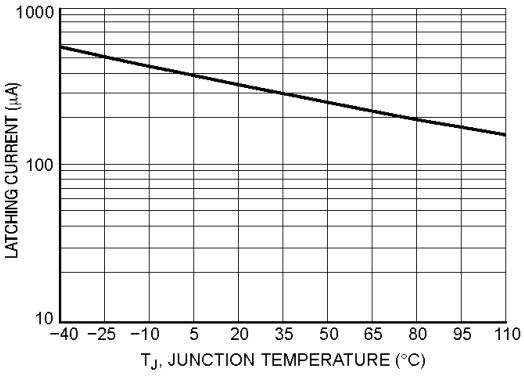


Figure 4. Typical Latching Current versus Junction Temperature

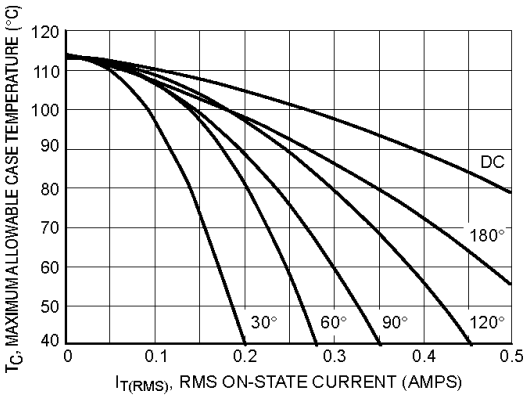


Figure 5. Typical RMS Current Derating

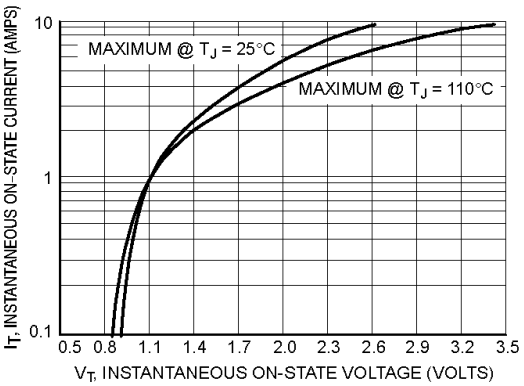
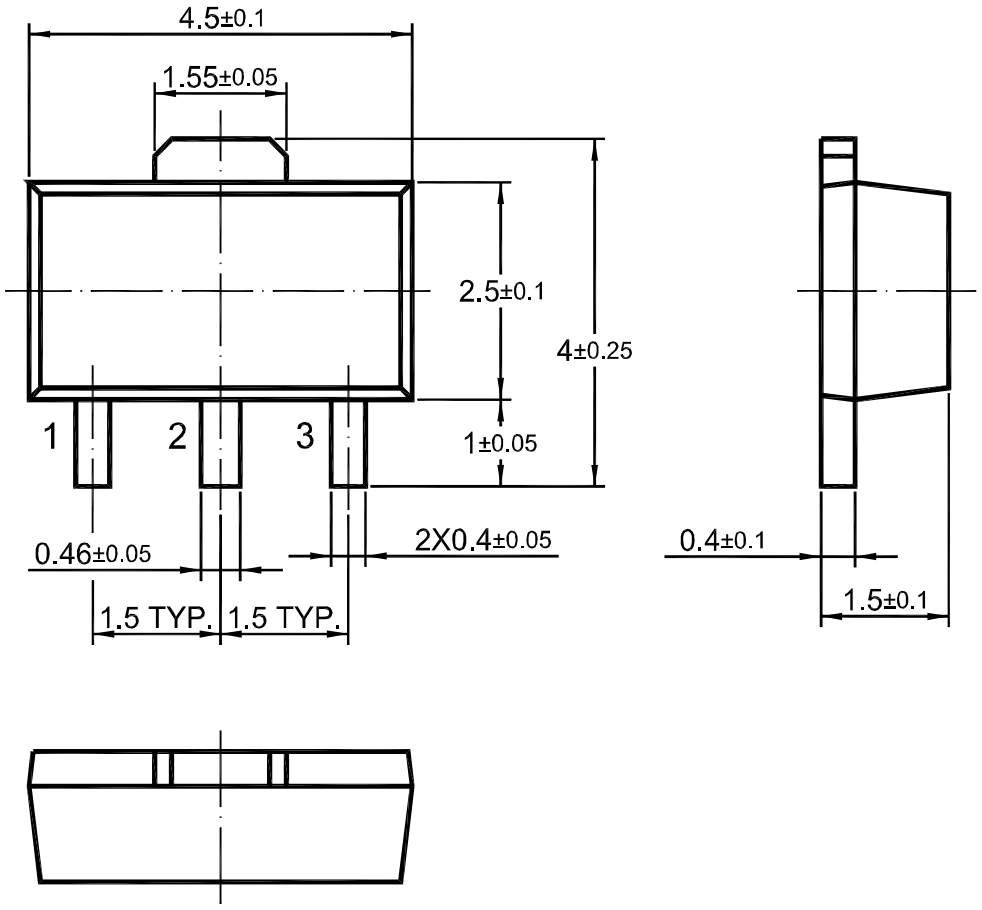


Figure 6. Typical On−State Characteristics

SOT-89 PACKAGE OUTLINE



Dimensions in mm