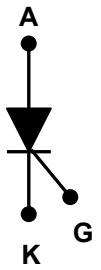
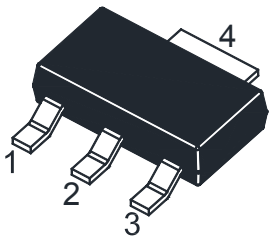
# MCR100-8Q

## Silicon Controlled Rectifiers

Reverse Blocking Triode Thyristors




1. Cathode 2，4. Anode 3. Gate
SOT-223 Plastic Package

**Absolute Maximum Ratings ($T_J$ = 25 °C unless otherwise noted)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Forward and Reverse Blocking Voltage [1] ($T_J$ = 25 to 125 °C, $R_{GK}$ = 1 KΩ) | $V_{DRM}$ and $V_{RRM}$ | 600 | V |
| Forward Current RMS (All Conduction Angles) | $I_{T(RMS)}$ | 0.8 | A |
| Peak Forward Surge Current, $T_A$ = 25 °C (1/2 Cycle, Sine Wave, 60 Hz) | $I_{TSM}$ | 10 | A |
| Circuit Fusing Considerations (t = 8.3 ms) | $I^2t$ | 0.415 | $A^2s$ |
| Forward Peak Gate Power ($T_A$ = 25 °C, PW ≤ 1 μs) | $P_{GM}$ | 0.1 | W |
| Forward Average Gate Power ($T_A$ = 25 °C) | $P_{GF(AV)}$ | 0.01 | W |
| Forward Peak Gate Current ($T_A$ = 25 °C, PW ≤ 1 μs) | $I_{GFM}$ | 1 | A |
| Reverse Peak Gate Voltage ($T_A$ = 25 °C PW ≤ 1 μs) | $V_{GRM}$ | 5 | V |
| Operating Junction Temperature Range at Rated $V_{RRM}$ and $V_{DRM}$ | $T_j$ | - 40 to + 125 | °C |
| Storage Temperature Range | $T_{stg}$ | - 40 to + 150 | °C |

[1] $V_{DRM}$ and $V_{RRM}$ for types can be applied on a continuous basis. Ratings apply for zero or 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 source such that the voltage ratings of the device are exceeded.

**Characteristics at $T_a$ = 25 °C, $R_{GK}$ = 1 KΩ unless otherwise noted.**

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Peak Forward or Reverse Blocking Current at $V_{AK}$ = Rated $V_{DRM}$ or $V_{RRM}$ | $I_{DRM}$, $I_{RRM}$ | - | 10 | μA |
| Peak Forward On-State Voltage at $I_{TM}$ = 1 A Peak, $T_A$ = 25 °C | $V_{TM}$ | - | 1.7 | V |
| Gate Trigger Current (Continuous dc) [1] at Anode Voltage = 7 Vdc, $R_L$=100 Ω) | $I_{GT}$ | - | 200 | μA |
| Gate Trigger Voltage (Continuous dc) at Anode Voltage = 7 Vdc, $R_L$ = 100 Ω) at Anode Voltage = Rated $V_{DRM}$, $R_L$ = 100 Ω) | $V_{GT}$ | - | 0.8 | V |
| Holding Current at Anode Voltage = 7 Vdc, initiating current = 20 mA) | $I_H$ | - | 5 | mA |

[1] $R_{GK}$ current is not included in measurement.

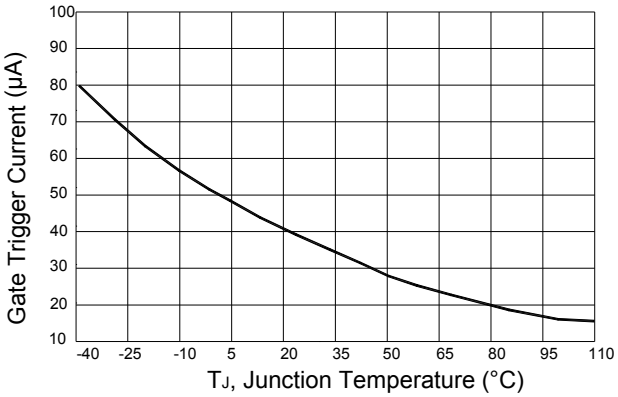



**Figure 1. Typical Gate Trigger Curent Versus Junction Temperature**

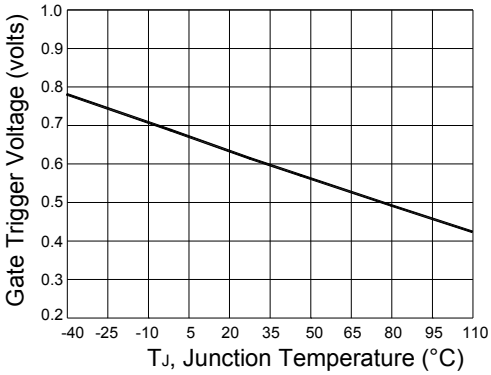



**Figure 2. Typical Gate Trigger Voltage Versus Junction Temperature**

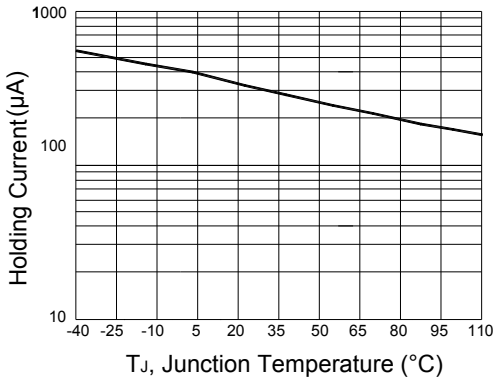



**Figure 3. Typical Holding Curent Versus Junction Temperature**

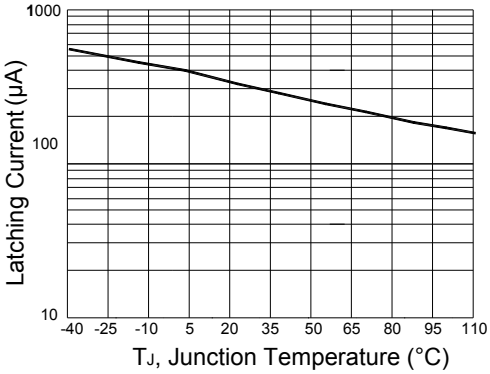



**Figure 4. Typical Latching Curent Versus Junction Temperature**

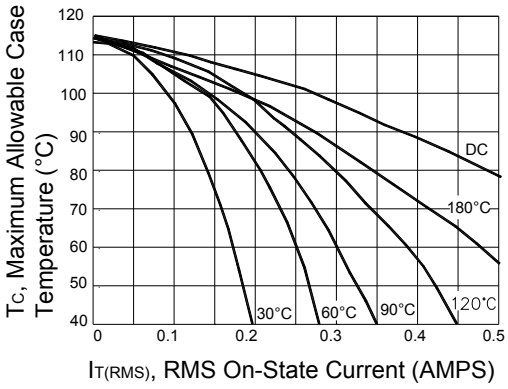



**Figure 5. Typical RMS Current Derating**

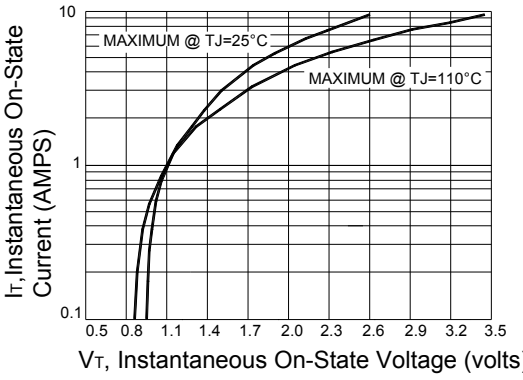



**Figure 6. Typical On-State Characteristics**

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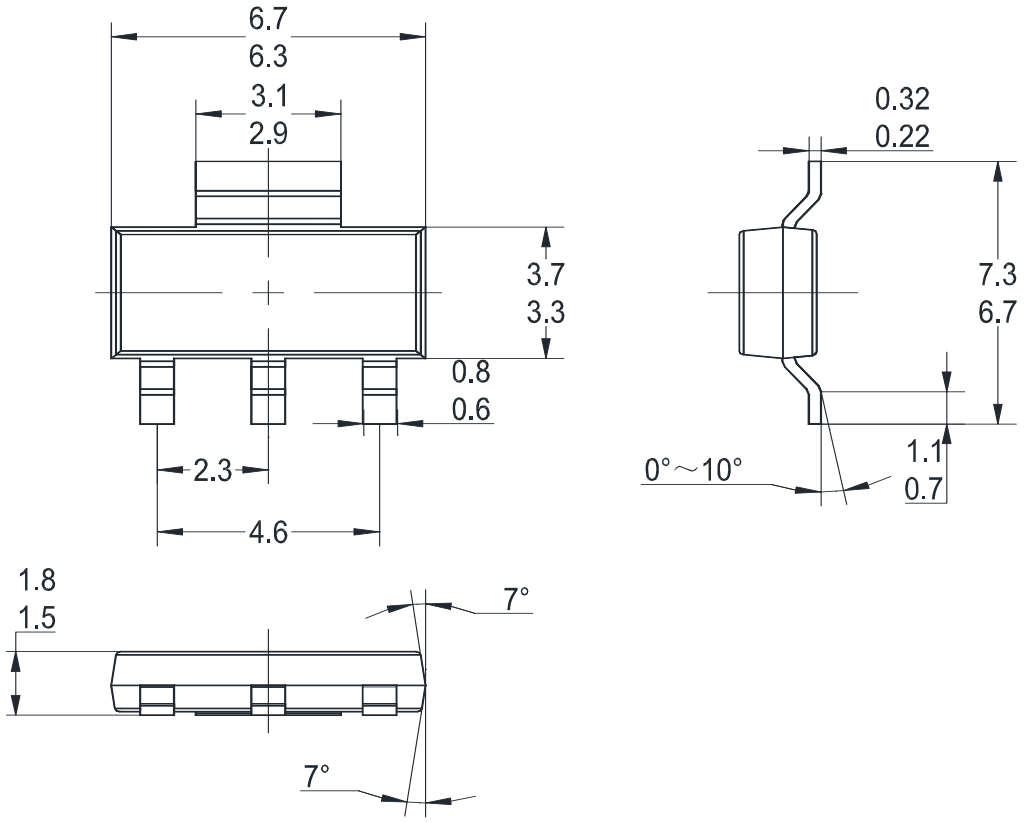
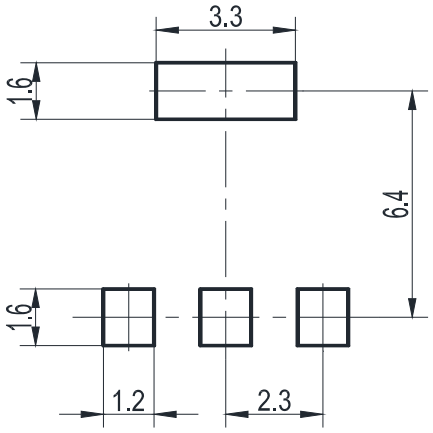
**PACKAGE OUTLINE** **SOT-223 (Dimensions in mm)**




**Recommended Soldering Footprint**




**Packing information**

| Package | Tape Width (mm) | Pitch | | Reel Size | | Per Reel Packing Quantity |
|---|---|---|---|---|---|---|
| | | mm | inch | mm | inch | |
| SOT-223 | 12 | 4 ± 0.1 | 0.157 ± 0.004 | 330 | 13 | 2,500 |