

Small Signal Product

## Thyristors

### FEATURES

- Epitaxial planar die construction
- Moisture sensitivity level 1
- Matte Tin (Sn) lead finish with Nickel (Ni) underplate
- Packing code with suffix "G" means Green compound (Halogen free)



TO-92



### MECHANICAL DATA

- Case : TO-92 plastic package
- Terminal : Matte tin plated, lead free, solderable per MIL-STD-202, method 208 guaranteed
- High temperature soldering guaranteed : 260°C/10s
- Weight : 0.19 gram (approximately)



1. Cathode 2. Gate 3. Anode  
TO-92 Plastic Package

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)               |                                                                      |                                        |                  |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------|------------------|
| PARAMETER                                                                                                  | SYMBOL                                                               | VALUE                                  | UNIT             |
| Forward Current RMS (All Conduction Angles)                                                                | I <sub>T(RMS)</sub>                                                  | 0.8                                    | A                |
| Peak Repetitive Forward and Reverse Blocking Voltage (T <sub>J</sub> =25°C to 125°C, R <sub>GK</sub> =1KΩ) | MCR100-3<br>MCR100-4<br>MCR100-5<br>MCR100-6<br>MCR100-7<br>MCR100-8 | 100<br>200<br>300<br>400<br>500<br>600 | V                |
| Peak Forward Surge Current, T <sub>A</sub> =25°C (1/2 Cycle, Sine Wave, 60Hz)                              | I <sub>TSM</sub>                                                     | 10                                     | A                |
| Circuit Fusing Considerations (t= 8.3 ms)                                                                  | I <sup>2</sup> t                                                     | 0.415                                  | A <sup>2</sup> s |
| Forward Peak Gate Power (T <sub>A</sub> =25°C, PW ≤ 1 μs)                                                  | P <sub>GM</sub>                                                      | 0.1                                    | W                |
| Forward Average Gate Power (T <sub>A</sub> =25°C)                                                          | P <sub>GF(AV)</sub>                                                  | 0.01                                   | W                |
| Forward Peak Gate Current (T <sub>A</sub> =25°C, PW ≤ 1 μs)                                                | I <sub>GFM</sub>                                                     | 1                                      | A                |
| Reverse Peak Gate Current (T <sub>A</sub> =25°C, PW ≤ 1 μs)                                                | V <sub>GRM</sub>                                                     | 5                                      | V                |
| Operating junction temperature range                                                                       | T <sub>J</sub>                                                       | -40 ~ +125                             | °C               |
| Storage temperature range                                                                                  | T <sub>STG</sub>                                                     | -40 ~ +150                             | °C               |

Notes: 1. Valid provided that electrodes are kept at ambient temperature

| PARAMETER                                                                                                                                              | SYMBOL                               | MIN | MAX | UNIT |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----|-----|------|
| Peak Forward or Reverse Blocking Current at V <sub>AK</sub> = Rated V <sub>DRM</sub> or V <sub>RRM</sub>                                               | I <sub>DRM</sub><br>I <sub>RRM</sub> | -   | 10  | μA   |
| Peak Forward On-State Voltage at I <sub>TM</sub> =1A Peak, T <sub>A</sub> =25°C                                                                        | V <sub>TM</sub>                      | -   | 1.7 | V    |
| Gate Trigger Current (Continuous dc) at Anode Voltage = 7 Vdc., R <sub>L</sub> =100Ω                                                                   | I <sub>GT</sub>                      | -   | 200 | μA   |
| Gate Trigger Current (Continuous dc) at Anode Voltage = 7 Vdc., R <sub>L</sub> =100Ω at Anode Voltage = Rated V <sub>DRM</sub> , R <sub>L</sub> =100Ω) | V <sub>GT</sub>                      | -   | 0.8 | V    |
| Holding Current at Anode Voltage =7 Vdc, Initiating Current=20mA                                                                                       | I <sub>H</sub>                       | -   | 5   | mA   |

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**RATINGS AND CHARACTERISTICS CURVES**

( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

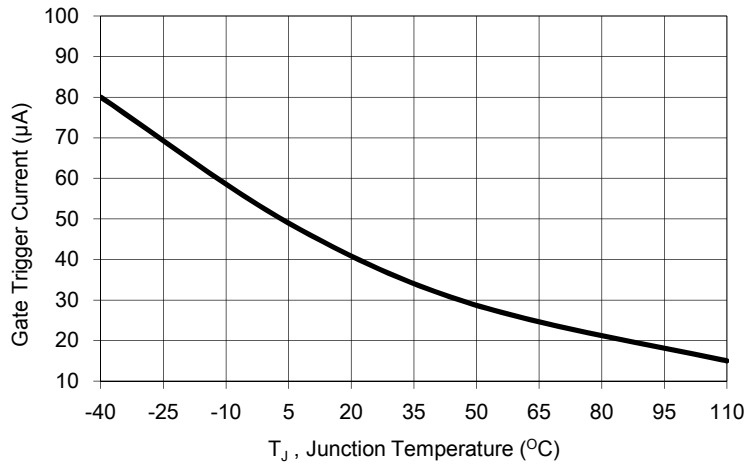


Fig. 1 Typical Gate Trigger Current VS. Junction Temperature

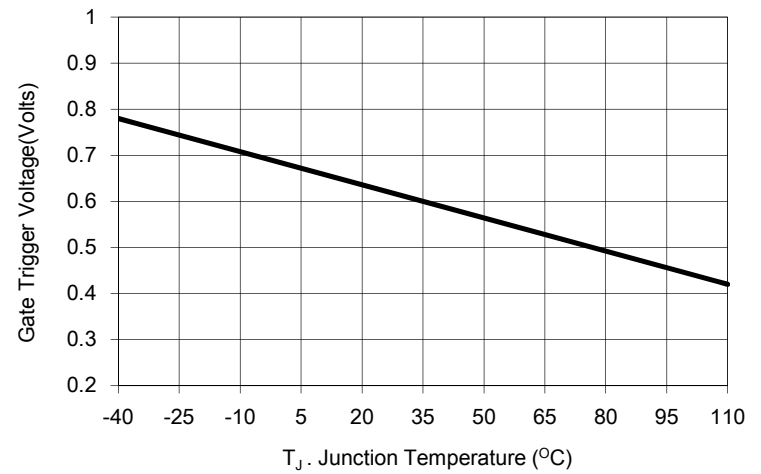


Fig. 2 Typical Gate Trigger Voltage VS. Junction Temperature

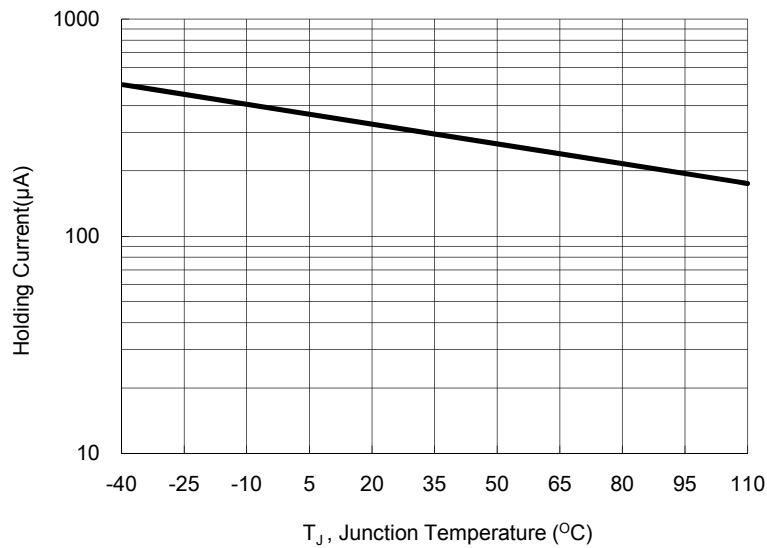


Fig. 3 Typical Holding Current VS. Junction Temperature

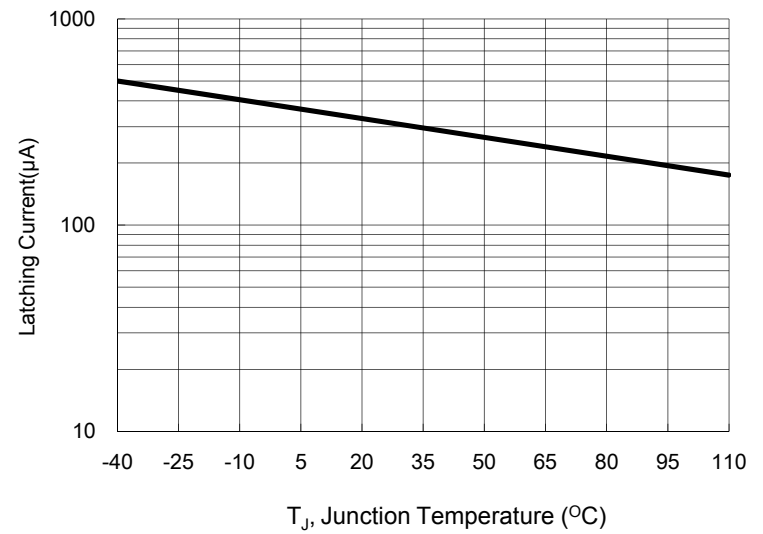


Fig. 4 Typical Latching Current VS. Junction Temperature

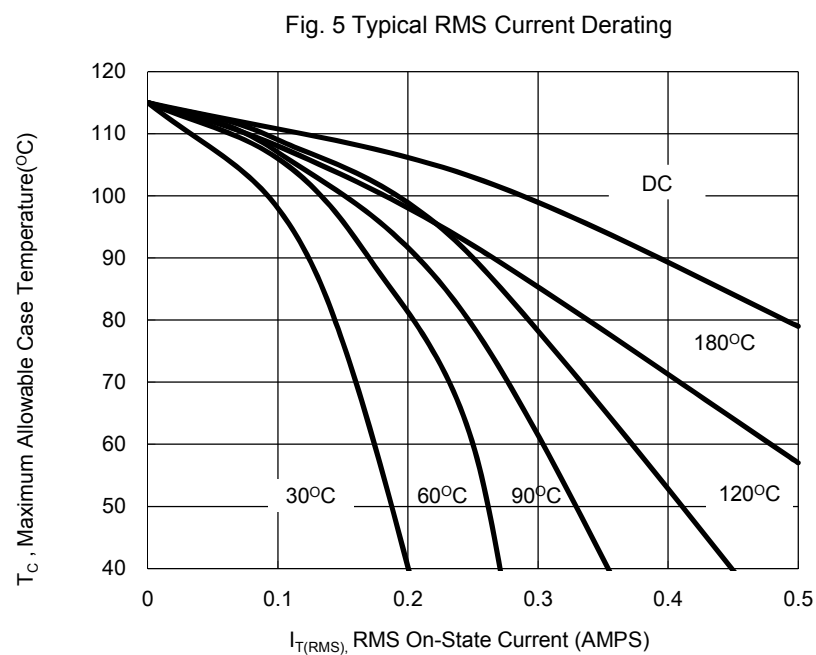


Fig. 5 Typical RMS Current Derating

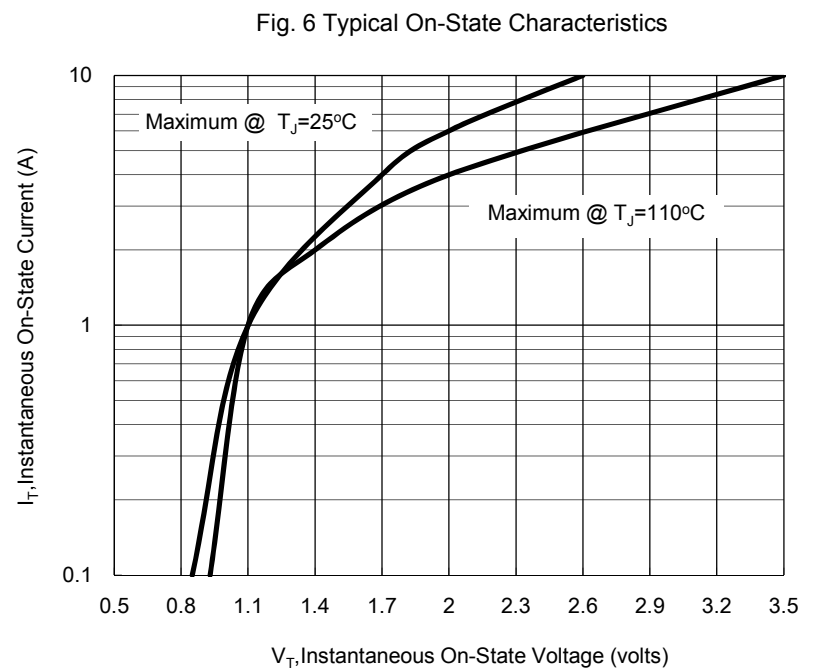
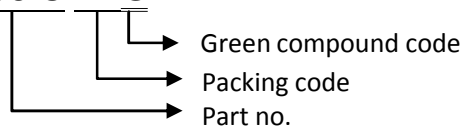


Fig. 6 Typical On-State Characteristics

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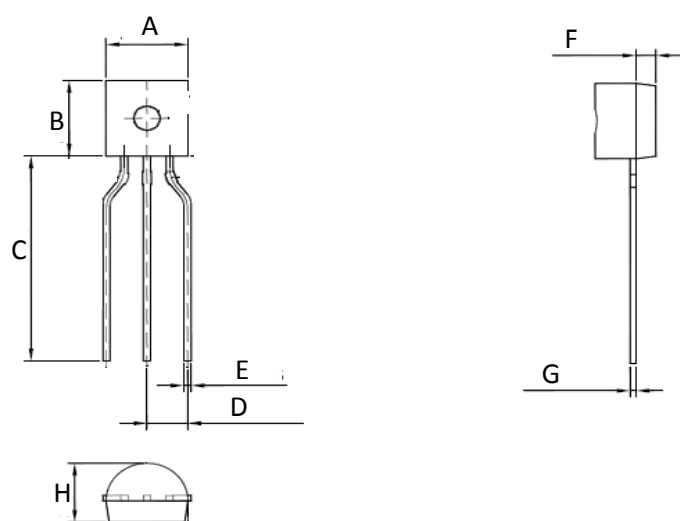
**ORDER INFORMATION (EXAMPLE)**

**MCR100-3 A1G**



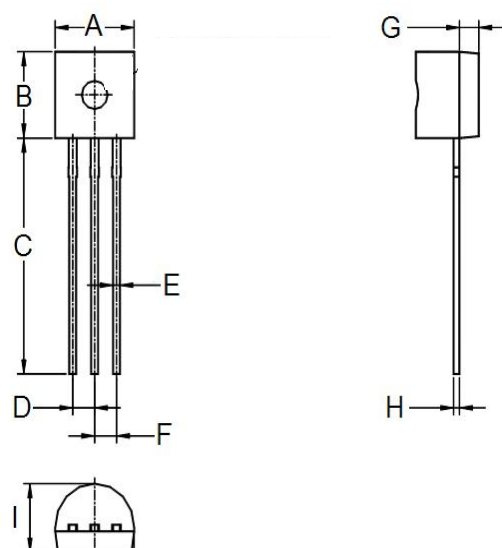
**PACKAGE OUTLINE DIMENSIONS**

**TO-92 (Amo)**



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 4.30      | 5.10 | 0.169       | 0.201 |
| B    | 4.30      | 4.70 | 0.169       | 0.185 |
| C    | 12.50     | -    | 0.492       | -     |
| D    | 2.20      | 2.80 | 0.087       | 0.110 |
| E    | 0.35      | 0.55 | 0.014       | 0.022 |
| F    | 0.59      | 1.40 | 0.023       | 0.055 |
| G    | 0.29      | 0.51 | 0.011       | 0.020 |
| H    | 3.30      | 4.10 | 0.130       | 0.161 |

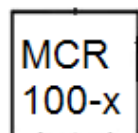
**TO-92 (Bulk)**



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | 4.30      | 5.10  | 0.169       | 0.201 |
| B    | 4.30      | 4.70  | 0.169       | 0.185 |
| C    | 12.50     | 14.50 | 0.492       | 0.571 |
| D    | 1.17      | 1.37  | 0.046       | 0.054 |
| E    | 0.35      | 0.55  | 0.014       | 0.022 |
| F    | 1.17      | 1.37  | 0.046       | 0.054 |
| G    | 0.59      | 1.40  | 0.023       | 0.055 |
| H    | 0.29      | 0.51  | 0.011       | 0.020 |
| I    | 3.30      | 4.10  | 0.130       | 0.161 |

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**MARKING DIAGRAM**



x = Device P/N from 3~8

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