

T-25-15

# Triacs

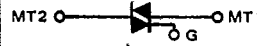
## Silicon Bidirectional Thyristors

... designed primarily for industrial and military applications for the fullwave control of ac loads in applications such as light dimmers, power supplies, heating controls, motor controls, welding equipment and power switching systems.

- All Diffused and Glass Passivated Junctions for Greater Stability
- Pressfit and Stud Packages
- Gate Triggering Guaranteed In All 4 Quadrants

**MAC245**  
**SC246**

**TRIAC**  
**10 AMPERES RMS**  
**200 thru 800 VOLTS**



### MAXIMUM RATINGS

| Rating  | Symbol              | Value                    | Unit             |
|---|---------------------|--------------------------|------------------|
| Repetitive Peak Off-State Voltage (1)<br>T <sub>C</sub> = -40°C to +100°C<br>SC246B, MAC245B<br>SC246D, MAC245D<br>SC246M, MAC245M<br>SC246N, MAC245N | V <sub>DRM</sub>    | 200<br>400<br>600<br>800 | Volts            |
| RMS On-State Current  | I <sub>T(RMS)</sub> | 10                       | Amps             |
| Peak Non-Repetitive Surge Current<br>(One Full Cycle, 60 Hz)  | I <sub>TSM</sub>    | 100                      | Amps             |
| Circuit Fusing Considerations<br>t = 1 ms<br>t = 8.3 ms   | I <sup>2</sup> t    | 20<br>41.5               | A <sup>2</sup> s |
| Peak Gate Power   | P <sub>GM</sub>     | 10                       | Watts            |
| Average Gate Power  | P <sub>G(AV)</sub>  | 0.5                      | Watt             |
| Operating Junction Temperature Range  | T <sub>J</sub>      | -40 to +100              | °C               |
| Storage Temperature Range   | T <sub>stg</sub>    | -40 to +125              | °C               |
| Stud Torque   | —                   | 30                       | in. lb.          |

### THERMAL CHARACTERISTICS

| Characteristic                       | Symbol           | Max | Unit |
|--------------------------------------|------------------|-----|------|
| Thermal Resistance, Junction to Case | R <sub>θJC</sub> | 2   | °C/W |

(1) Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.



CASE 174-04  
(TO-203AA)  
STYLE 3  
SC246  
PRESS FIT



CASE 263-04  
STYLE 2  
MAC245  
STUD

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ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = +25°C unless otherwise noted.)

| Characteristic   | Symbol           | Min | Typ | Max  | Unit     |
|--|------------------|-----|-----|--|----------|
| Peak Off-State Current (1)<br>Rated V <sub>DRM</sub> = Peak Off-State Voltage,<br>Gate Open-Circuited<br>T <sub>C</sub> = +25°C<br>T <sub>C</sub> = +115°C   | I <sub>DRM</sub> | —   | —   | 0.1<br>0.5   | mA       |
| Peak On-State Voltage (1)<br>I <sub>TM</sub> = 14 A Peak, Pulse Width = 1 ms, Duty Cycle ≤ 2%,<br>T <sub>C</sub> = +25°C   | V <sub>TM</sub>  | —   | —   | 1.65   | Volts    |
| Critical Rate of Rise of Off-State Voltage (1)<br>Rated V <sub>DRM</sub> , Gate Open-Circuited,<br>Exponential Waveform<br>T <sub>C</sub> = +100°C   | dv/dt            | —   | 50  | —  | Volts/μs |
| Critical Rate-of-Rise of Commutating Off-State Voltage (1)<br>I <sub>T(RMS)</sub> = Rated RMS On-State Current<br>V <sub>DRM</sub> = Rated Peak Off-State Voltage,<br>Gate Open-Circuited, Commutating di/dt = 5.4 A/ms<br>T <sub>C</sub> = +78.5°C  | dv/dt(C)         | 4   | —   | —  | Volts/μs |
| DC Gate Trigger Current (2)<br>V <sub>D</sub> = 12 Vdc<br>Trigger Mode<br>MT2(+), Gate(+), R <sub>L</sub> = 100 Ohms<br>MT2(-), Gate(-), R <sub>L</sub> = 100 Ohms<br>MT2(+), Gate(-), R <sub>L</sub> = 50 Ohms<br>MT2(+), Gate(+), R <sub>L</sub> = 50 Ohms, T <sub>C</sub> = -40°C<br>MT2(-), Gate(-), R <sub>L</sub> = 50 Ohms, T <sub>C</sub> = -40°C<br>MT2(+), Gate(-), R <sub>L</sub> = 25 Ohms, T <sub>C</sub> = -40°C   | I <sub>GT</sub>  | —   | —   | 50<br>50<br>50<br>80<br>80<br>80                                   | mAdc     |
| DC Gate Trigger Voltage (2)<br>V <sub>D</sub> = 12 Vdc<br>Trigger Mode<br>MT2(+), Gate(+), R <sub>L</sub> = 100 Ohms<br>MT2(-), Gate(-), R <sub>L</sub> = 100 Ohms<br>MT2(+), Gate(-), R <sub>L</sub> = 50 Ohms<br>MT2(+), Gate(+), R <sub>L</sub> = 50 Ohms, T <sub>C</sub> = -40°C<br>MT2(-), Gate(-), R <sub>L</sub> = 50 Ohms, T <sub>C</sub> = -40°C<br>MT2(+), Gate(-), R <sub>L</sub> = 25 Ohms, T <sub>C</sub> = -40°C<br>MT2(+), Gate(+), R <sub>L</sub> = 1000 Ohms, T <sub>C</sub> = +100°C (2,3)<br>MT2(-), Gate(-), R <sub>L</sub> = 1000 Ohms, T <sub>C</sub> = +100°C (2,3)<br>MT2(+), Gate(-), R <sub>L</sub> = 1000 Ohms, T <sub>C</sub> = +100°C (2,3)<br>MT2(-), Gate(+), R <sub>L</sub> = 1000 Ohms, T <sub>C</sub> = +100°C (2,3) | V <sub>GT</sub>  | —   | —   | 2.5<br>2.5<br>2.5<br>3.5<br>3.5<br>3.5<br>0.2<br>0.2<br>0.2<br>0.2 | Vdc      |
| Holding Current (1)<br>Main Terminal Voltage = 24 Vdc,<br>Peak Initiating Current = 0.5 A,<br>Pulse Width = 0.1 to 10 ms<br>Gate Trigger Source = 7 V, 20 Ohms<br>T <sub>C</sub> = +25°C<br>T <sub>C</sub> = -40°C   | I <sub>H</sub>   | —   | —   | 50<br>100  | mAdc     |
| Latching Current (2)<br>Main Terminal Source Voltage = 24 Vdc,<br>Gate Trigger Source = 15 V, 100 Ohms,<br>Pulse Width = 50 μs, Rise and Fall Times Maximum = 5 μs<br>Trigger Mode<br>MT2(+), Gate(+)<br>MT2(-), Gate(-)<br>MT2(+), Gate(-)<br>MT2(+), Gate(+), T <sub>C</sub> = -40°C<br>MT2(-), Gate(-), T <sub>C</sub> = -40°C<br>MT2(+), Gate(-), T <sub>C</sub> = -40°C   | I <sub>L</sub>   | —   | —   | 100<br>100<br>200<br>200<br>200<br>400                             | mAdc     |

NOTES:

1. Values apply for either polarity of Main Terminal 2 characteristics referenced to Main Terminal 1.
2. Main Terminal 1 is the reference terminal.
3. With V<sub>D</sub> equal to rated off-state voltage.