

MAC212A8, MAC212A10

Preferred Device

Triacs

Silicon Bidirectional Thyristors

Designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies; or wherever full-wave silicon gate controlled solid-state devices are needed. Triac type thyristors switch from a blocking to a conducting state for either polarity of applied anode voltage with positive or negative gate triggering.

- Blocking Voltage to 800 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering Guaranteed in Four Modes
- Device Marking: Logo, Device Type, e.g., MAC212A8, Date Code

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

| Rating | Symbol | Value | Unit |
|---|--|-------------|------------------|
| Peak Repetitive Off-State Voltage ⁽¹⁾ (T _J = -40 to +125°C, Sine Wave 50 to 60 Hz, Gate Open) MAC212A8 MAC212A10 | V _{DRM} , V _{RRM} | 600 800 | Volts |
| On-State RMS Current (T _C = +85°C) Full Cycle Sine Wave 50 to 60 Hz | I _{T(RMS)} | 12 | Amp |
| Peak Non-repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, T _C = +25°C) Preceded and followed by rated current | I _{TSM} | 100 | Amp |
| Circuit Fusing Considerations (t = 8.3 ms) | I ² t | 40 | A ² s |
| Peak Gate Power (T _C = +85°C, Pulse Width = 10 μs) | P _{GM} | 20 | Watts |
| Average Gate Power (T _C = +85°C, t = 8.3 ms) | P _{G(AV)} | 0.35 | Watt |
| Peak Gate Current (T _C = +85°C, Pulse Width = 10 μs) | I _{GM} | 2.0 | Amp |
| Operating Junction Temperature Range | T _J | -40 to +125 | °C |
| Storage Temperature Range | T _{stg} | -40 to +150 | °C |

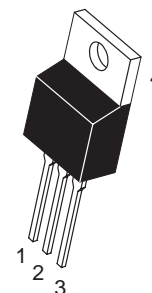
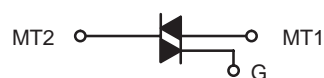
(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.



ON Semiconductor

<http://onsemi.com>

TRIACS
12 AMPERES RMS
600 thru 800 VOLTS



TO-220AB
CASE 221A
STYLE 4

PIN ASSIGNMENT

| | |
|---|-----------------|
| 1 | Main Terminal 1 |
| 2 | Main Terminal 2 |
| 3 | Gate |
| 4 | Main Terminal 2 |

ORDERING INFORMATION

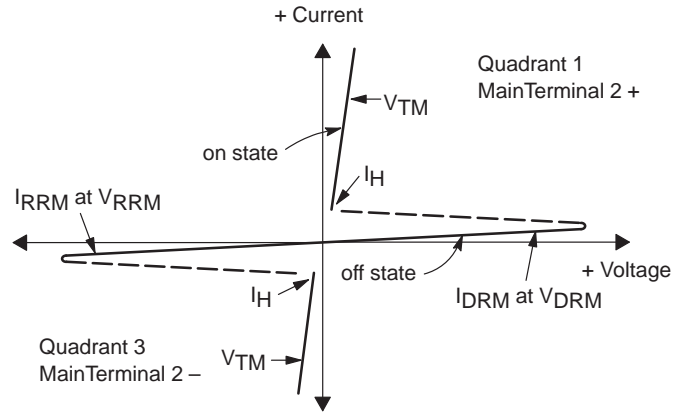
| Device | Package | Shipping |
|-----------|---------|----------|
| MAC212A8 | TO220AB | 500/Box |
| MAC212A10 | TO220AB | 500/Box |

Preferred devices are recommended choices for future use and best overall value.

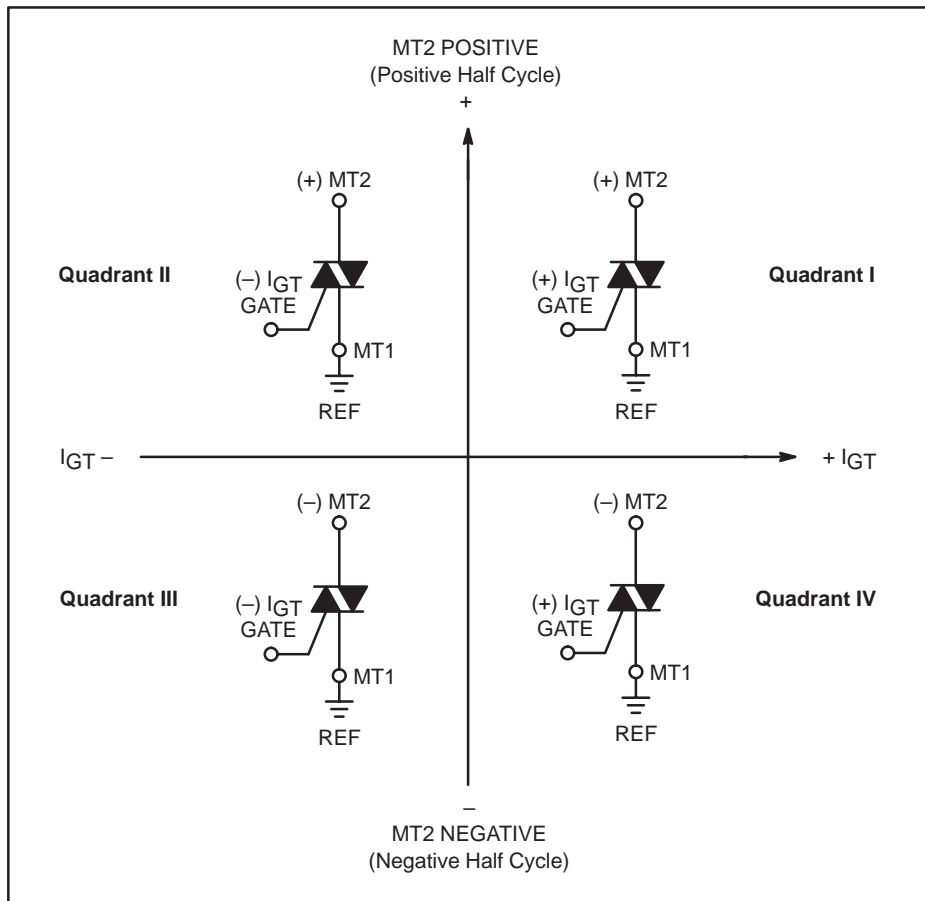
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Voltage Current Characteristic of Triacs (Bidirectional Device)

| Symbol | Parameter |
|-----------|---|
| V_{DRM} | Peak Repetitive Forward Off State Voltage |
| I_{DRM} | Peak Forward Blocking Current |
| V_{RRM} | Peak Repetitive Reverse Off State Voltage |
| I_{RRM} | Peak Reverse Blocking Current |
| V_{TM} | Maximum On State Voltage |
| I_H | Holding Current |



Quadrant Definitions for a Triac



All polarities are referenced to MT1.
 With in-phase signals (using standard AC lines) quadrants I and III are used.

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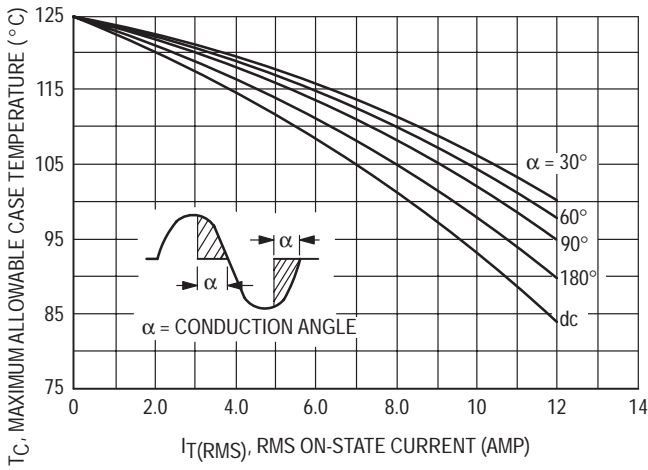


Figure 1. Current Derating

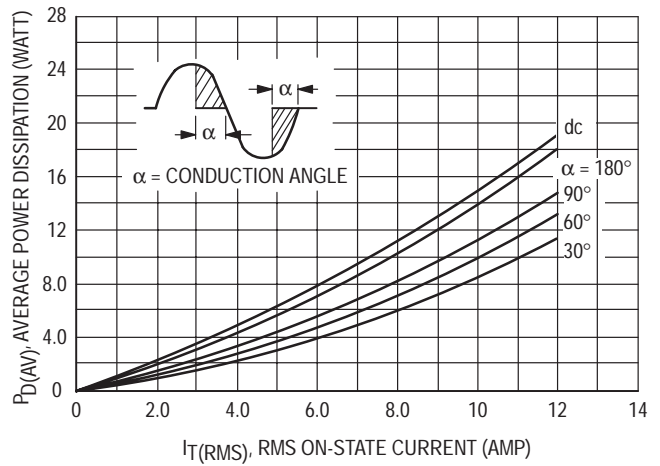


Figure 2. Power Dissipation

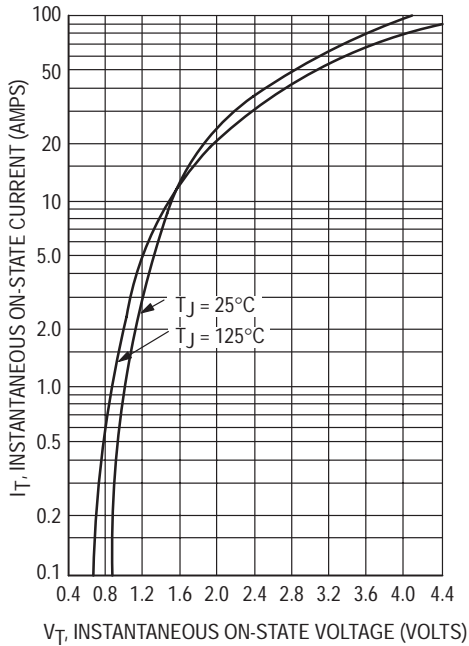


Figure 3. Maximum On-State Voltage Characteristics

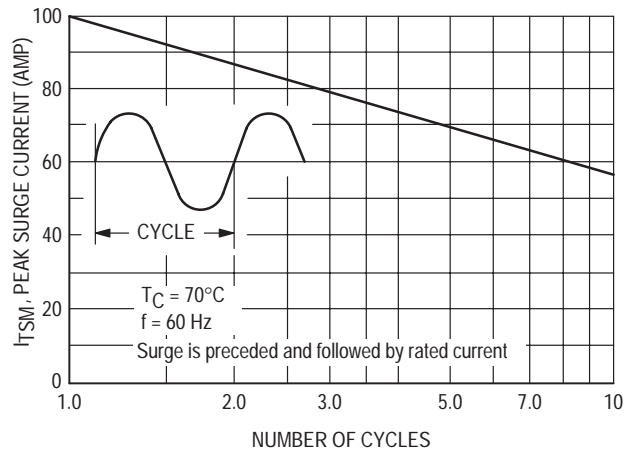


Figure 4. Maximum Non-Repetitive Surge Current

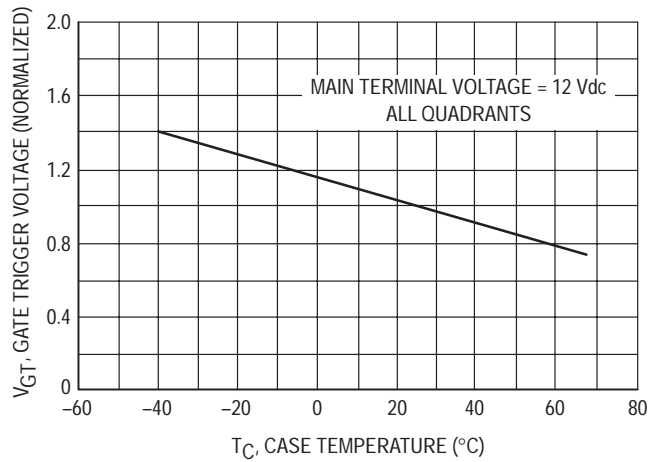


Figure 5. Typical Gate Trigger Voltage

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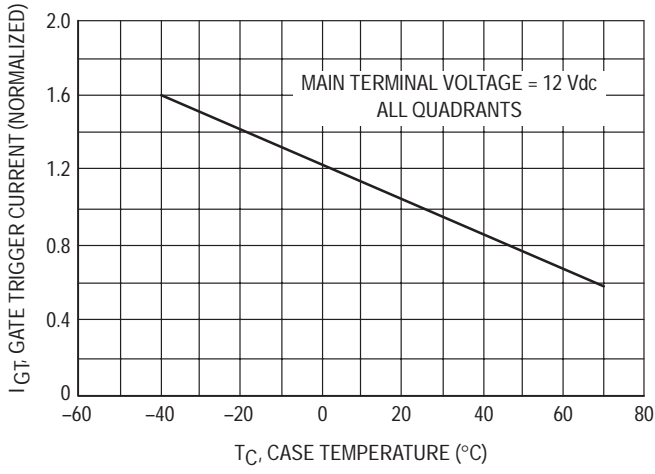


Figure 6. Typical Gate Trigger Current

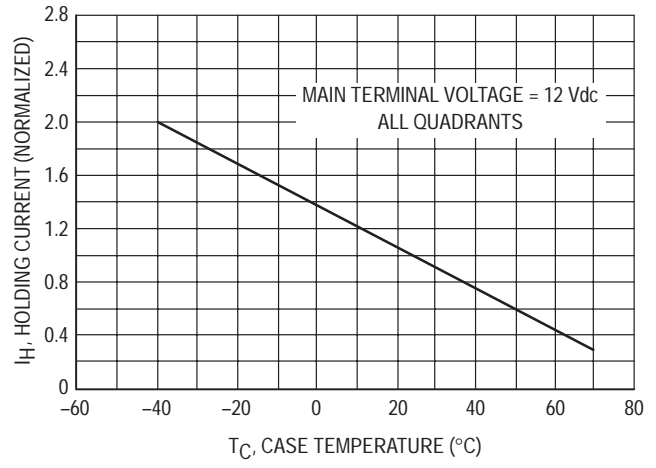


Figure 7. Typical Holding Current

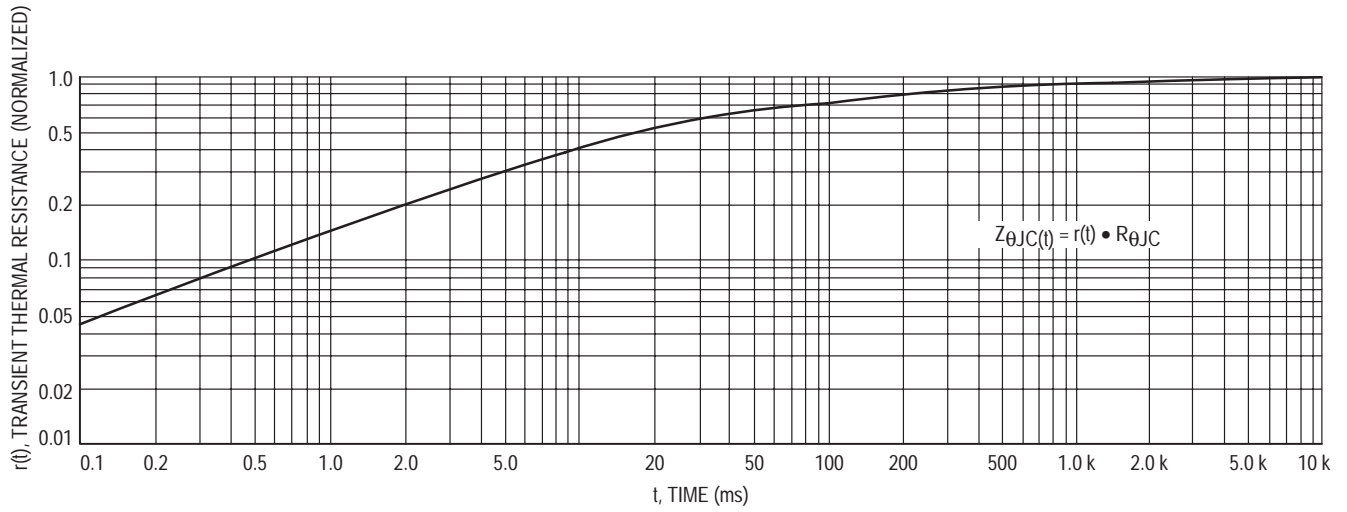
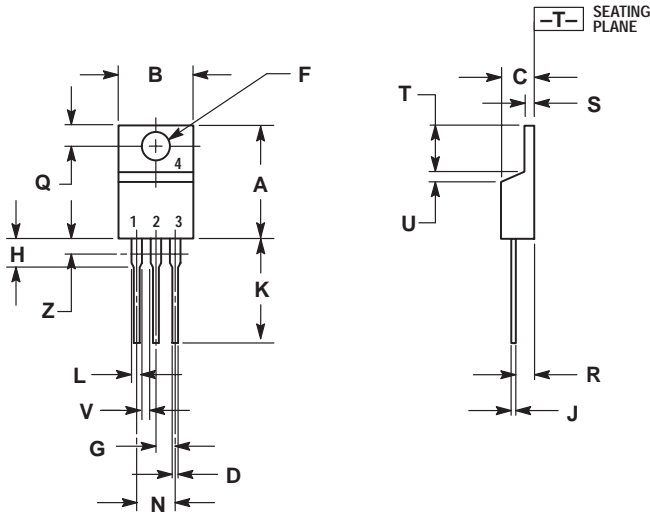


Figure 8. Thermal Response

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PACKAGE DIMENSIONS

TO-220AB
CASE 221A-07
ISSUE Z



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.570 | 0.620 | 14.48 | 15.75 |
| B | 0.380 | 0.405 | 9.66 | 10.28 |
| C | 0.160 | 0.190 | 4.07 | 4.82 |
| D | 0.025 | 0.035 | 0.64 | 0.88 |
| F | 0.142 | 0.147 | 3.61 | 3.73 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.014 | 0.022 | 0.36 | 0.55 |
| K | 0.500 | 0.562 | 12.70 | 14.27 |
| L | 0.045 | 0.060 | 1.15 | 1.52 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| O | 0.100 | 0.120 | 2.54 | 3.04 |
| R | 0.080 | 0.110 | 2.04 | 2.79 |
| S | 0.045 | 0.055 | 1.15 | 1.39 |
| T | 0.235 | 0.255 | 5.97 | 6.47 |
| U | 0.000 | 0.050 | 0.00 | 1.27 |
| V | 0.045 | --- | 1.15 | --- |
| Z | --- | 0.080 | --- | 2.04 |

- STYLE 4:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

Notes

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