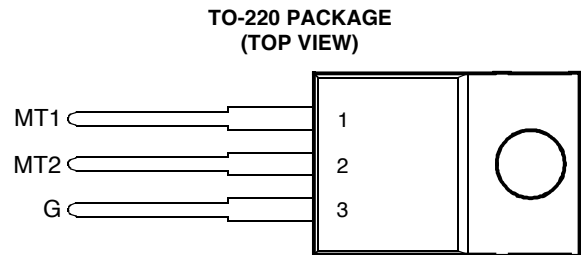




THE DATASHEET OF TIC236M-S



- High Current Triacs
- 12 A RMS
- Glass Passivated Wafer
- 400 V to 800 V Off-State Voltage
- Max I_{GT} of 50 mA (Quadrants 1 - 3)



Pin 2 is in electrical contact with the mounting base.

MDC2ACA

This series is currently available,
but not recommended for new
designs.



absolute maximum ratings over operating case temperature (unless otherwise noted)

| RATING | | SYMBOL | VALUE | UNIT |
|---|---------|--------------|-------------|------|
| Repetitive peak off-state voltage (see Note 1) | TIC236D | V_{DRM} | 400 | V |
| | TIC236M | | 600 | |
| | TIC236S | | 700 | |
| | TIC236N | | 800 | |
| Full-cycle RMS on-state current at (or below) 70°C case temperature (see Note 2) | | $I_{T(RMS)}$ | 12 | A |
| Peak on-state surge current full-sine-wave at (or below) 25°C case temperature (see Note 3) | | I_{TSM} | 100 | A |
| Peak gate current | | I_{GM} | ±1 | A |
| Operating case temperature range | | T_C | -40 to +110 | °C |
| Storage temperature range | | T_{stg} | -40 to +125 | °C |
| Lead temperature 1.6 mm from case for 10 seconds | | T_L | 230 | °C |

- NOTES: 1. These values apply bidirectionally for any value of resistance between the gate and Main Terminal 1.
 2. This value applies for 50-Hz full-sine-wave operation with resistive load. Above 70°C derate linearly to 110°C case temperature at the rate of 300 mA/°C.
 3. This value applies for one 50-Hz full-sine-wave when the device is operating at (or below) the rated value of peak reverse voltage and on-state current. Surge may be repeated after the device has returned to original thermal equilibrium.

electrical characteristics at 25°C case temperature (unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | | MIN | TYP | MAX | UNIT |
|---|-------------------------------------|----------------------|------------------------------|-----|------|------|------|
| I_{DRM} Repetitive peak off-state current | $V_D = \text{Rated } V_{DRM}$ | $I_G = 0$ | $T_C = 110^\circ\text{C}$ | | | ±2 | mA |
| I_{GT} Gate trigger current | $V_{supply} = +12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | 12 | 50 | mA |
| | $V_{supply} = +12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | -19 | -50 | |
| | $V_{supply} = -12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | -16 | -50 | |
| | $V_{supply} = -12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | 34 | | |
| V_{GT} Gate trigger voltage | $V_{supply} = +12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | 0.8 | 2 | V |
| | $V_{supply} = +12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | -0.8 | -2 | |
| | $V_{supply} = -12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | -0.8 | -2 | |
| | $V_{supply} = -12\text{ V}^\dagger$ | $R_L = 10\ \Omega$ | $t_{p(g)} > 20\ \mu\text{s}$ | | 0.9 | 2 | |
| V_T On-state voltage | $I_{TM} = \pm 17\text{ A}$ | $I_G = 50\text{ mA}$ | (see Note 4) | | ±1.4 | ±2.1 | V |

† All voltages are with respect to Main Terminal 1.

NOTE 4: This parameter must be measured using pulse techniques, $t_p = \leq 1\text{ ms}$, duty cycle $\leq 2\%$. Voltage-sensing contacts separate from the current carrying contacts are located within 3.2 mm from the device body.

PRODUCT INFORMATION

DECEMBER 1971 - REVISED SEPTEMBER 2002
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electrical characteristics at 25°C case temperature (unless otherwise noted) (continued)

| PARAMETER | TEST CONDITIONS | | | MIN | TYP | MAX | UNIT |
|---|---|------------------------|---|-----------|-----------|-----------|------------|
| I_H Holding current | $V_{supply} = +12 V \dagger$ $V_{supply} = -12 V \dagger$ | $I_G = 0$ $I_G = 0$ | Init' $I_{TM} = 100 mA$ Init' $I_{TM} = -100 mA$ | | 22 -12 | 40 -40 | mA |
| I_L Latching current | $V_{supply} = +12 V \dagger$ $V_{supply} = -12 V \dagger$ | (see Note 5) | | | | 80 -80 | mA |
| dv/dt Critical rate of rise of off-state voltage | $V_D = \text{Rated } V_D$ | $I_G = 0$ | $T_C = 110^\circ C$ | | ± 400 | | V/ μs |
| dv/dt _(c) Critical rise of commutation voltage | $V_D = \text{Rated } V_D$ di/dt = 0.5 $I_{T(RMS)}$ /ms | | $T_C = 80^\circ C$ $I_T = 1.4 I_{T(RMS)}$ | ± 1.2 | ± 9 | | V/ μs |
| di/dt Critical rate of rise of on-state current | $V_D = \text{Rated } V_D$ di _G /dt = 50 mA/ μs | $I_{GT} = 50 mA$ | $T_C = 110^\circ C$ | | ± 100 | | A/ μs |

† All voltages are with respect to Main Terminal 1.

NOTE 5: The triacs are triggered by a 15-V (open-circuit amplitude) pulse supplied by a generator with the following characteristics:
 $R_G = 100 \Omega$, $t_{p(g)} = 20 \mu s$, $t_r \leq 15 ns$, $f = 1 kHz$.

thermal characteristics

| PARAMETER | MIN | TYP | MAX | UNIT |
|---|-----|-----|------|------|
| $R_{\theta JC}$ Junction to case thermal resistance | | | 2 | °C/W |
| $R_{\theta JA}$ Junction to free air thermal resistance | | | 62.5 | °C/W |

TYPICAL CHARACTERISTICS

**GATE TRIGGER CURRENT
vs**

CASE TEMPERATURE

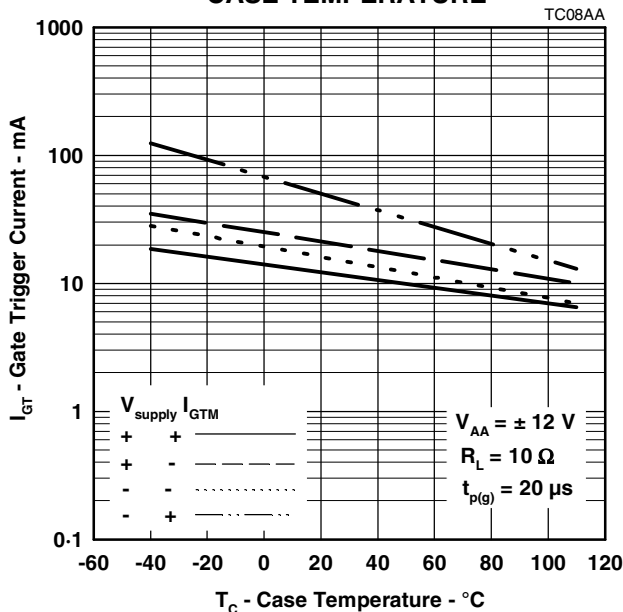


Figure 1.

**GATE TRIGGER VOLTAGE
vs**

CASE TEMPERATURE

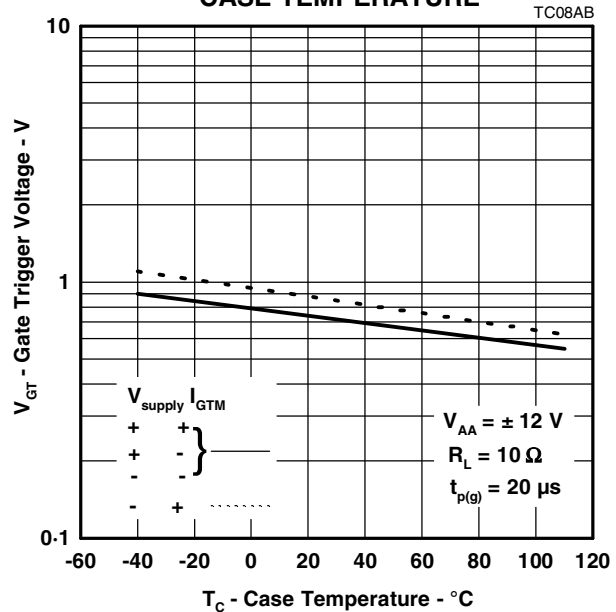
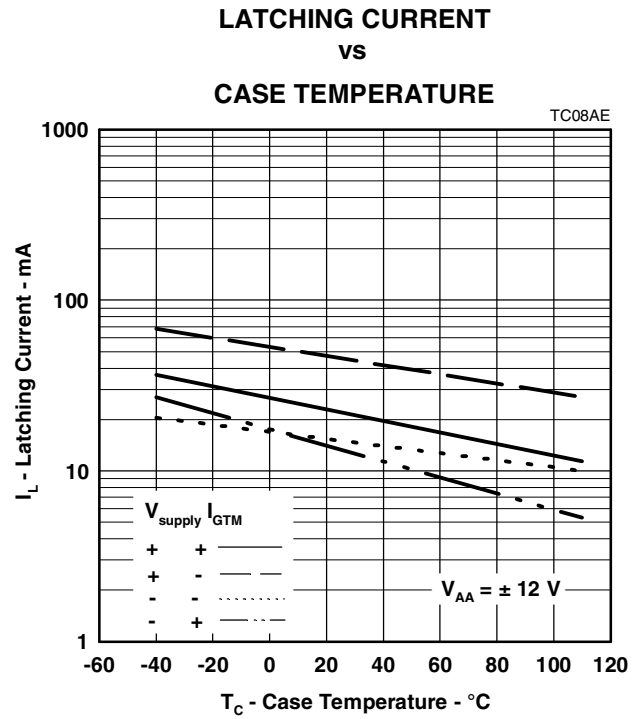
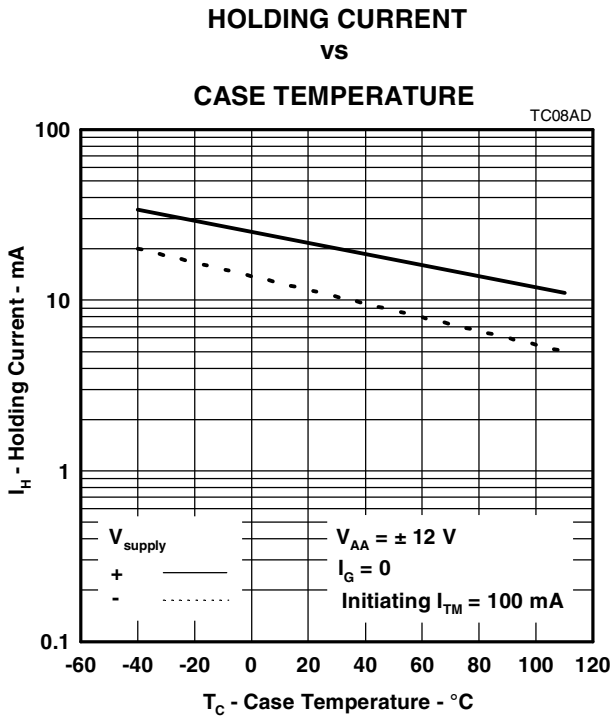


Figure 2.

PRODUCT INFORMATION

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TYPICAL CHARACTERISTICS





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