

8961726 TEXAS INSTR (OPTO)

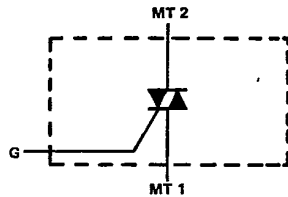
62C 36732 D

SERIES TIC236, TIC246
SILICON TRIACS

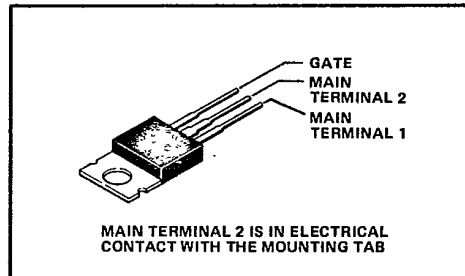
T-25-15
REVISED OCTOBER 1984

- High-Current Triacs
- 100 V to 800 V
- 12 A and 16 A RMS
- 100 A and 125 A Peak Current
- Max IGT of 50 mA (Quadrants 1-3)

device schematic



TO-220AB PACKAGE



absolute maximum ratings at 25°C case temperature (unless otherwise noted)

| | SUFFIX | SERIES | |
|---|--------|-----------------|--------|
| | | TIC236 | TIC246 |
| Repetitive peak off-state voltage, V_{DRM} (see Note 1) | A | 100 V | 100 V |
| | B | 200 V | 200 V |
| | C | 300 V | 300 V |
| | D | 400 V | 400 V |
| | E | 500 V | 500 V |
| | M | 600 V | 600 V |
| | S | 700 V | 700 V |
| | N | 800 V | 800 V |
| Full-cycle RMS on-state current at (or below) 70°C case temperature $I_T(RMS)$ (see Note 3) | | 12 A | 16 A |
| Peak on-state surge current, full-sine-wave, I_{TSM} (see Note 3) | | 100 A | 125 A |
| Peak gate current, I_{GM} | | ± 1 A | |
| Operating case temperature range | | - 40°C to 110°C | |
| Storage temperature range | | - 40°C to 125°C | |
| Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds | | 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 for Series TIC236 and 400 mA/°C for Series TIC246.
 3. This value applies for one 50-Hz full-sine-wave when the device is operating at (or below) rated values of peak reverse voltage and on-state current. Surge may be repeated after the device has returned to original thermal equilibrium.

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TIC Devices

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62C 36733 D

7-25-15

**SERIES TIC236, TIC246
SILICON TRIACS**

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

| PARAMETER | TEST CONDITIONS | SERIES TIC236 | | | SERIES TIC246 | | | UNIT |
|--|---|---------------|-----|-----|---------------|-----|-----|------------------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| I_{DRM} Repetitive Peak Off-State Current | $V_{DRM} = \text{Rated } V_{DRM}, I_G = 0, T_C = 110^\circ\text{C}$ | ± 2 | | | ± 2 | | | mA |
| I_{GTM} Peak Gate Trigger Current | $V_{supply} = +12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | 5 50 | | | 5 50 | | | mA |
| | $V_{supply} = +12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | -11 -60 | | | -11 -60 | | | |
| | $V_{supply} = -12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | -20 -50 | | | -20 -50 | | | |
| | $V_{supply} = -12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | 28 | | | 28 | | | |
| V_{GTM} Peak Gate Trigger Voltage | $V_{supply} = +12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | 0.7 2 | | | 0.7 2 | | | V |
| | $V_{supply} = +12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | -0.8 -2 | | | -0.8 -2 | | | |
| | $V_{supply} = -12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | -0.8 -2 | | | 0.8 -2 | | | |
| | $V_{supply} = -12\text{V}^\dagger, t_w(g) \geq 20\mu\text{s}, R_L = 10\Omega$ | 0.9 2 | | | 0.9 2 | | | |
| V_{TM} Peak On-State Voltage | $I_{TM} = \pm 17\text{A}, I_G = 100\text{mA}, \text{See Note 4}$ | ± 1.5 ± 2.1 | | | | | | V |
| | $I_{TM} = \pm 22.5\text{A}, I_G = 100\text{mA}, \text{See Note 4}$ | | | | ± 1.4 ± 1.7 | | | |
| I_H Holding Current | $V_{supply} = +12\text{V}^\dagger, I_G = 0, \text{Initiating } I_{TM} = 100\text{mA}$ | 12 40 | | | 12 40 | | | mA |
| | $V_{supply} = -12\text{V}^\dagger, I_G = 0, \text{Initiating } I_{TM} = -100\text{mA}$ | -12 -40 | | | -12 -40 | | | |
| I_L Latching Current | $V_{supply} = +12\text{V}^\dagger, \text{See Note 5}$ | 80 | | | 80 | | | mA |
| | $V_{supply} = -12\text{V}^\dagger, \text{See Note 5}$ | -80 | | | -80 | | | |
| dv/dt Critical Rate of Rise of Off-State Voltage | $V_D = \text{Rated } V_D, I_G = 0, T_C = 110^\circ\text{C}$ | 400 | | | 400 | | | V/ μs |
| $dv/dt(c)$ Critical Rise of Commutation Voltage | $V_R = \text{Rated } V_D, di/dt = 0.5 I_T(\text{RMS})/\text{ms}, T_C = 80^\circ\text{C}, I_T = 1.4 I_T(\text{RMS})$ | 1.2 2 | | | 1.2 2 | | | V/ μs |
| di/dt Critical Rate of Rise of On-State Current | $V_D = \text{Rated } V_D, I_{GT} = 50\text{mA}, di_G/dt = 50\text{mA}/\mu\text{s}, T_C = 110^\circ\text{C}$ | 200 | | | 200 | | | A/ μs |

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TIC Devices

† All voltages are with respect to Main Terminal 1.

NOTES: 4. This parameter must be measured using pulse techniques, $t_w \leq 1\text{ms}$, duty cycle $\leq 2\%$. Voltage-sensing contacts, separate from the current-carrying contacts, are located within 3.2 mm (1/8 inch) from the device body.

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

thermal characteristics

| PARAMETER | SERIES TIC236 | | | SERIES TIC246 | | | UNIT |
|-----------------|---------------|-----|-----|---------------|-----|-----|------|
| | MIN | TYP | MAX | MIN | TYP | MAX | |
| $R_{\theta JC}$ | 2 | | | 1.9 | | | °C/W |
| $R_{\theta JA}$ | 62.5 | | | 62.5 | | | |



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62C 36734 D

SERIES TIC236, TIC246
SILICON TRIACS

T-25-15

TYPICAL CHARACTERISTICS

GATE TRIGGER CURRENT
vs
CASE TEMPERATURE

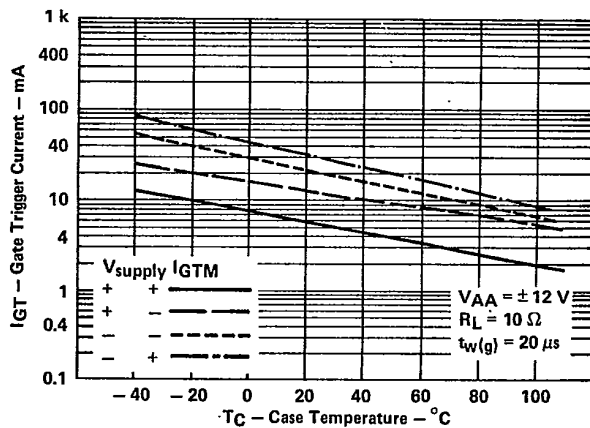


FIGURE 1

GATE TRIGGER VOLTAGE
vs
CASE TEMPERATURE

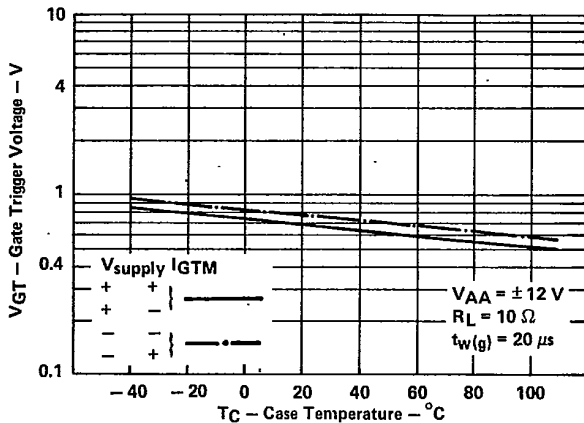


FIGURE 2

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TIC Devices

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SERIES TIC236, TIC246
SILICON TRIACS

TYPICAL CHARACTERISTICS

HOLDING CURRENT
VS
CASE TEMPERATURE

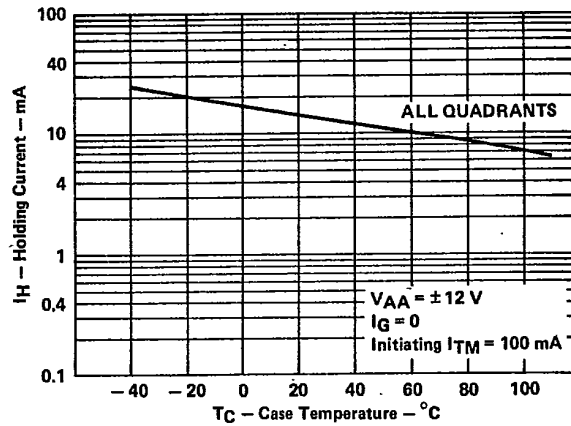


FIGURE 3

GATE FORWARD VOLTAGE
VS
GATE FORWARD CURRENT

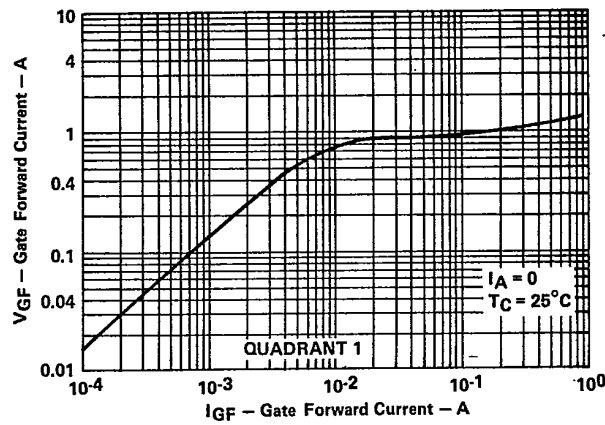


FIGURE 4

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TIC Devices

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SERIES TIC236, TIC246
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TYPICAL CHARACTERISTICS

LATCHING CURRENT
vs
CASE TEMPERATURE

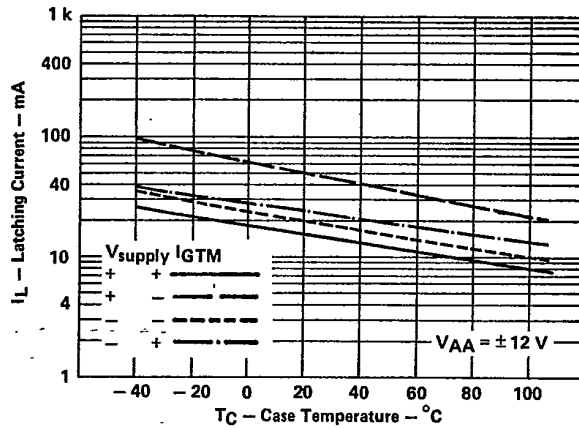


FIGURE 5

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TIC Devices

TEXAS
INSTRUMENTS

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