

T2800D

Triacs

Silicon Bidirectional Thyristors

Designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies.

- Blocking Voltage to 400 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
- Four Quadrant Gating
- Device Marking: Logo, Device Type, e.g., T2800D, Date Code

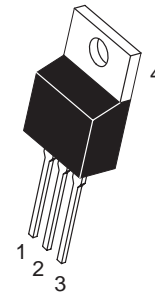
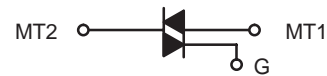
MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

| Rating | Symbol | Value | Unit |
|--|--------------------------|----------------|----------------------|
| Peak Repetitive Off-State Voltage ⁽¹⁾ ($T_J = -40$ to $+125^\circ\text{C}$, Gate Open) | V_{DRM} , V_{RRM} | 400 | Volts |
| On-State RMS Current (All Conduction Angles, $T_C = +80^\circ\text{C}$) | $I_T(\text{RMS})$ | 8.0 | Amps |
| Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, $T_J = +80^\circ\text{C}$) | I_{TSM} | 100 | Amps |
| Circuit Fusing Consideration ($t = 8.3$ ms) | I^2t | 40 | A^2s |
| Peak Gate Power (Pulse Width = 10 μs , $T_C = +80^\circ\text{C}$) | P_{GM} | 16 | Watts |
| Average Gate Power ($t = 8.3$ ms, $T_C = +80^\circ\text{C}$) | $P_{G(AV)}$ | 0.35 | Watt |
| Peak Gate Current (Pulse Width = 10 μs , $T_C = +80^\circ\text{C}$) | I_{GM} | 4.0 | Amps |
| Operating Junction Temperature Range | T_J | -40 to +125 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -40 to +150 | $^\circ\text{C}$ |



www.kersemi.com

TRIACS
8 AMPERES RMS
400 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 |
|--------|---------|----------|
| T2800D | TO220AB | 500/Box |

T2800D

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------|---------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 2.2 | $^{\circ}C/W$ |
| Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds | T_L | 260 | $^{\circ}C$ |

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}C$ unless otherwise noted; Electricals apply in both directions)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | | |
|---|--------------------|----------------------|---|---|-----|---------|
| Peak Repetitive Blocking Current ($V_D = \text{Rated } V_{DRM}, V_{RRM}; \text{ Gate Open}$) | I_{DRM}, I_{RRM} | $T_C = 25^{\circ}C$ | — | — | 10 | μA |
| | | $T_C = 100^{\circ}C$ | — | — | 2.0 | mA |

ON CHARACTERISTICS

| | | | | | |
|--|----------|-----|------|-----|---------|
| Peak On-State Voltage ⁽¹⁾ ($I_T = \pm 30 \text{ A Peak}$) | V_{TM} | — | 1.7 | 2.0 | Volts |
| Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ Vdc}, R_L = 100 \text{ Ohms}$) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+) | I_{GT} | — | 10 | 25 | mA |
| | | — | 20 | 60 | |
| | | — | 15 | 25 | |
| | | — | 30 | 60 | |
| Gate Trigger Voltage (Continuous dc) (All Quadrants) ($V_D = 12 \text{ Vdc}, R_L = 100 \text{ Ohms}$) | V_{GT} | — | 1.25 | 2.5 | Volts |
| Gate Non-Trigger Voltage (Continuous dc) ($V_D = 12 \text{ V}, R_L = 100 \text{ Ohms}, T_C = 100^{\circ}C$) | V_{GD} | 0.2 | — | — | Volts |
| Holding Current ($V_D = 12 \text{ Vdc}, \text{ Initiating Current} = \pm 200 \text{ mA}, \text{ Gate Open}$) | I_H | — | 15 | 30 | mA |
| Gate Controlled Turn-On Time ($V_D = \text{Rated } V_{DRM}, I_T = 10 \text{ A}, I_{GT} = 80 \text{ mA}, \text{ Rise Time} = 0.1 \mu s$) | t_{gt} | — | 1.6 | — | μs |

DYNAMIC CHARACTERISTICS

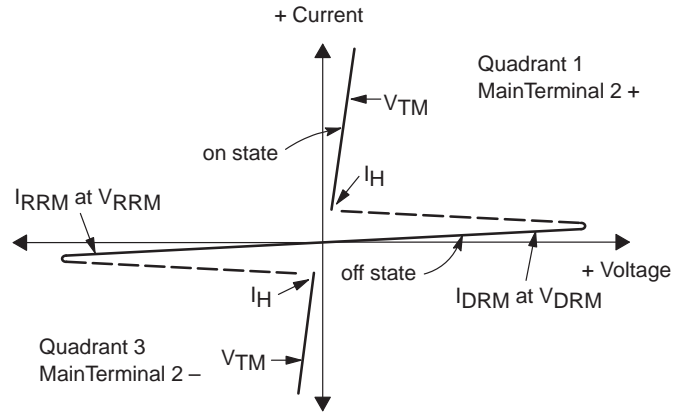
| | | | | | |
|--|------------|----|----|---|-----------|
| Critical Rate-of-Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}, I_T(\text{RMS}) = 8 \text{ A}, \text{ Commutating } di/dt = 4.1 \text{ A/ms}, \text{ Gate Unenergized}, T_C = 80^{\circ}C$) | $dv/dt(c)$ | — | 10 | — | $V/\mu s$ |
| Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}, \text{ Exponential Voltage Rise}, \text{ Gate Open}, T_C = 100^{\circ}C$) | dv/dt | 60 | — | — | $V/\mu s$ |

(1) Pulse Test: Pulse Width $\leq 2.0 \text{ ms}$, Duty Cycle $\leq 2\%$.

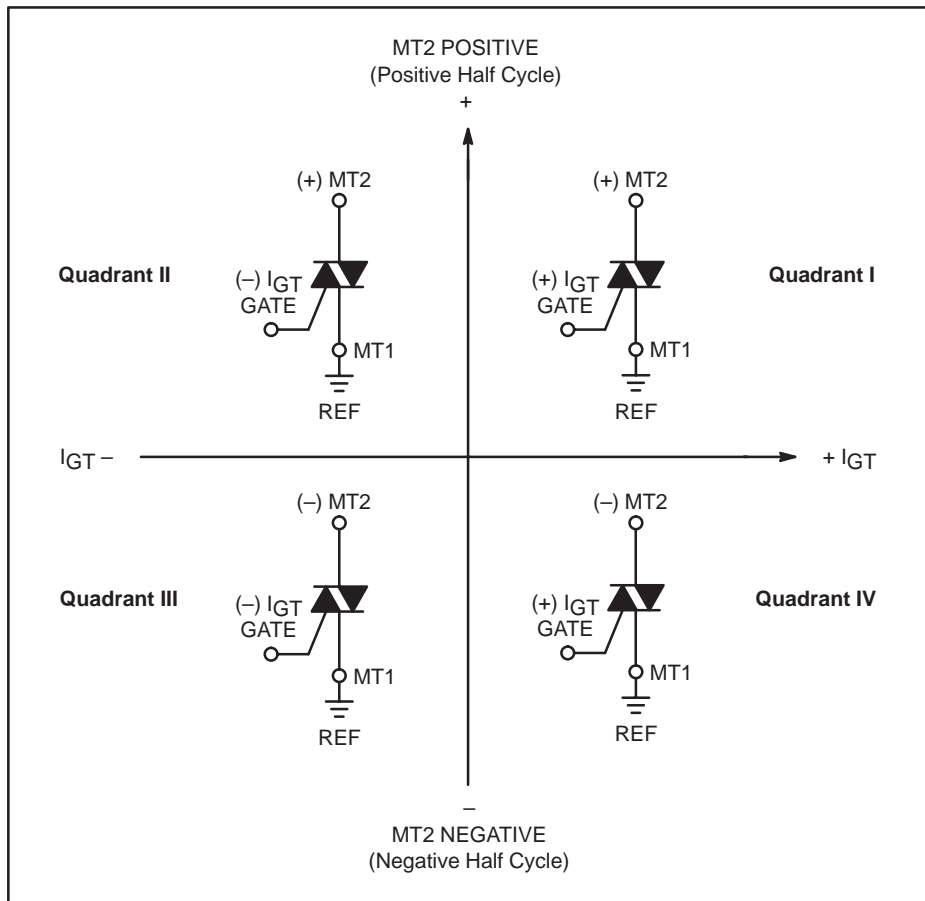
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Voltage Current Characteristic of Triacs (Bidirectional Device)

| 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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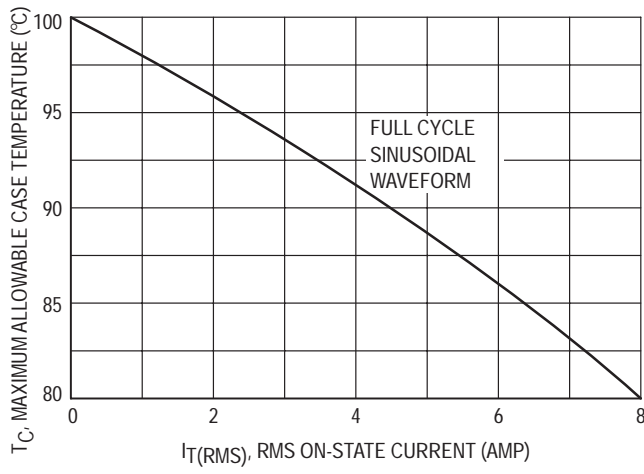


Figure 1. Current Derating

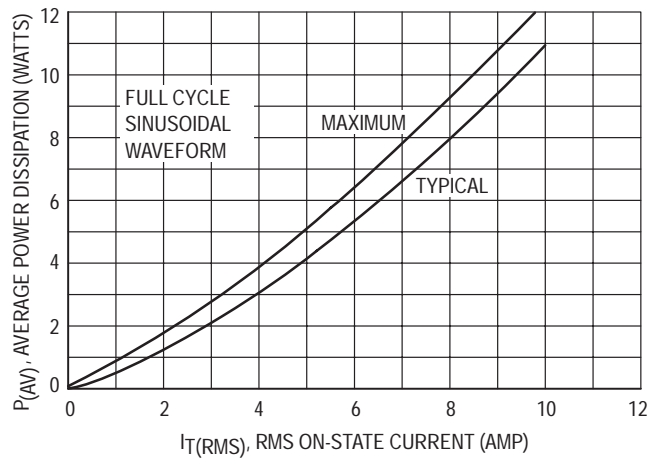
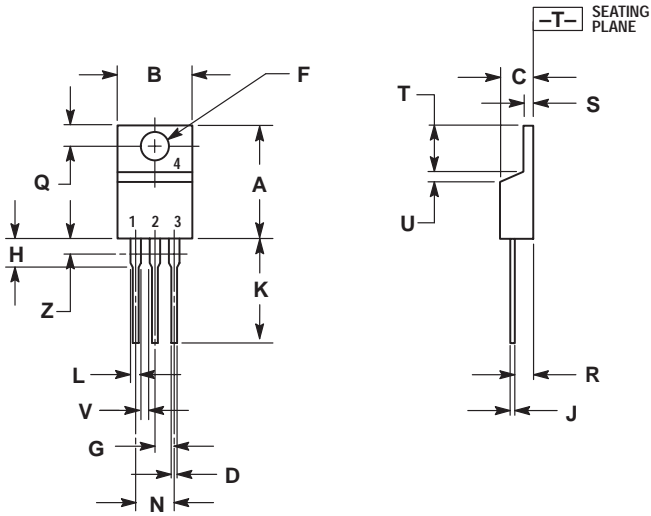


Figure 2. Power Dissipation

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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