New Jersey Semi-Conductor Products, Inc.

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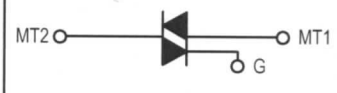
# Triacs
## Bidirectional Triode Thyristors

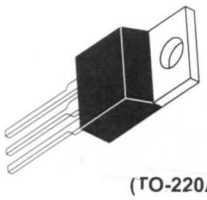
**T2800 SERIES**

**TRIACs**
**8 AMPERES RMS**
**200 thru 600 VOLTS**

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

- Blocking Voltage to 600 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
- T2800 — Four Quadrant Gating



(TO-220AB)

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

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Off-State Voltage(1) ($T_J$ = –40 to +100°C, Gate Open) | $V_{DRM}$ | | Volts |
| T2800 B | | 200 | |
| D | | 400 | |
| M | | 600 | |
| RMS On-State Current ($T_C$ = +80°C) (Conduction Angle = 360°) | $I_{T(RMS)}$ | 8 | Amps |
| Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, $T_J$ = +80°C) | $I_{TSM}$ | 100 | Amps |
| Circuit Fusing (t = 8.3 ms) | $I^2t$ | 40 | $A^2s$ |
| Peak Gate Power (Pulse Width = 1 μs) | $P_{GM}$ | 16 | Watts |
| Average Gate Power | $P_{G(AV)}$ | 0.35 | Watt |
| Peak Gate Trigger Current (Pulse Width = 1 μs) | $I_{GTM}$ | 4 | Amps |
| Operating Junction Temperature Range | $T_J$ | –40 to +100 | °C |
| Storage Temperature Range | $T_{stg}$ | –40 to +150 | °C |

**THERMAL CHARACTERISTICS**

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 2.2 | °C/W |

1. $V_{DRM}$ 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.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

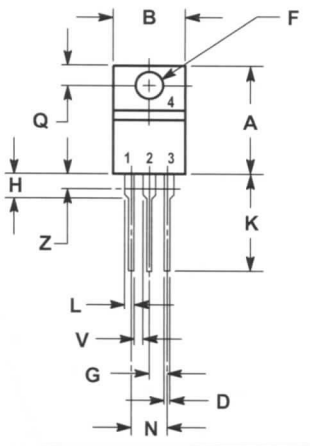
Quality Semi-Conductors

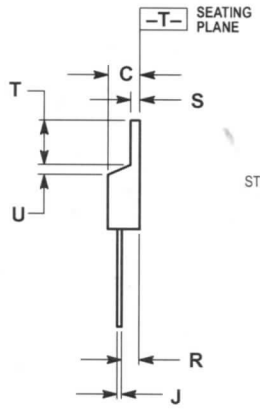
## T2800 SERIES

**ELECTRICAL CHARACTERISTICS** ($T_C$ = 25°C unless otherwise noted.)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Peak Blocking Current<br>($V_D$ = Rated $V_{DRM}$, Gate Open) $T_C$ = 25°C<br>$T_C$ = 100°C | $I_{DRM}$ | —<br>— | —<br>— | 10<br>2 | μA<br>mA |
| Peak On-State Voltage (Either Direction)*<br>($I_T$ = 30 A Peak) | $V_{TM}$ | — | 1.7 | 2 | Volts |
| Gate Trigger Current (Continuous dc)<br>($V_D$ = 12 Vdc, $R_L$ = 12 Ohms)<br>MT2(+), G(+) T2800<br>MT2(+), G(–) T2800<br>MT2(–), G(–) T2800<br>MT2(–), G(+) T2800 | $I_{GT}$ | <br>—<br>—<br>—<br>— | <br>10<br>20<br>15<br>30 | <br>25<br>60<br>25<br>60 | mA |
| Gate Trigger Voltage (Continuous dc) (All Polarities)<br>($V_D$ = 12 Vdc, $R_L$ = 100 Ohms)<br>($R_L$ = 125 Ohms, $V_D$ = $V_{DRM}$, $T_C$ = 100°C) | $V_{GT}$ | —<br>0.2 | 1.25<br>— | 2.5<br>— | Volts |
| Holding Current (Either Direction)<br>($V_D$ = 12 Vdc, Gate Open) T2800 | $I_H$ | — | 15 | 30 | mA |
| Gate Controlled Turn-On Time<br>($V_D$ = Rated $V_{DRM}$, $I_T$ = 10 A, $I_{GT}$ = 80 mA, Rise Time = 0.1 μs) | $t_{gt}$ | — | 1.6 | — | μs |
| Critical Rate-of-Rise of Commutation Voltage<br>($V_D$ = Rated $V_{DRM}$, $I_{T(RMS)}$ = 8 A, Commutating di/dt = 4.1 A/ms, Gate Unenergized, $T_C$ = 80°C) | dv/dt(c) | — | 10 | — | V/μs |
| Critical Rate-of-Rise of Off-State Voltage<br>($V_D$ = Rated $V_{DRM}$, Exponential Voltage Rise, Gate Open, $T_C$ = 100°C)<br>T2800 B<br>D<br>M | dv/dt | <br>100<br>—<br>60 | <br>—<br>—<br>— | <br>—<br>—<br>— | V/μs |

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.




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

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.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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 | 0.055 | 1.15 | 1.39 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| Q | 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 |