

## Triacs

### Bidirectional Triode Thyristors

... designed primarily for industrial and military applications for the fullwave control of ac loads in applications such as light dimmers, power supplies, heating controls, motor controls, welding equipment and power switching systems.

- All Diffused and Glass Passivated Junctions for Greater Stability
- Pressfit, Stud and Isolated Stud Packages
- Gate Triggering Guaranteed In All 4 Quadrants

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage ( $T_J = -65$ to $+100^\circ\text{C}$ ) 1/2 Sine Wave 50 to 60 Hz, Gate Open 2N5567, 2N5569, T4121B 2N5568, 2N5570, T4121D T4101M, T4111M, T4121M	V <sub>DRM</sub>	200 400 600	Volts
*Peak Gate Voltage	V <sub>GM</sub>	20	Volts
*RMS On-State Current ( $T_C = -65$ to $+85^\circ\text{C}$ ) ( $T_C = +90^\circ\text{C}$ ) Full cycle, Sine Wave, 50 to 60 Hz	I <sub>T(RMS)</sub>	10 6.7	Amps
*Peak Non-Repetitive Surge Current (One Full cycle of surge current at 60 Hz, preceded and followed by rated current, $T_C = 85^\circ\text{C}$ )	I <sub>TSM</sub>	100	Amps
Circuit Fusing Considerations ( $T_C = -65$ to $+85^\circ\text{C}$ , $t = 1$ to 8.3 ms)	I <sup>2</sup> t	40	A <sup>2</sup> s
Peak Gate Power ( $T_C = 85^\circ\text{C}$ , Pulse Width = 1 $\mu\text{s}$ )	P <sub>GM</sub>	16	Watts
*Average Gate Power ( $T_C = 85^\circ\text{C}$ , Pulse Width = 8.3 ms)	P <sub>G(AV)</sub>	0.5	Watt
*Operating Junction Temperature Range	T <sub>J</sub>	-65 to +100	°C
*Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Stud Torque	—	30	in. lb.

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case Stud and Pressfit Isolated Stud	R <sub>θJC</sub>	1 1.1	°C/W

\*Indicates JEDEC Registered Data.

**2N5567  
thru  
2N5570  
T4101M  
T4111M  
T4121  
Series**

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



**CASE 174-04  
(TO-203)  
STYLE 3  
2N5567  
2N5568  
T4101M**



**CASE 175-03  
STYLE 3  
2N5569  
2N5570  
T4111M**



**CASE 235-03  
STYLE 2  
T4121 SERIES**

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2N5567 thru 2N5570 • T4101M • T4111M • T4121 Series

ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C, and Either Polarity of MT2 to MT1 Voltage unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Forward or Reverse Blocking Current (Rated V <sub>DRM</sub> or V <sub>RRM</sub> ) T <sub>J</sub> = 25°C T <sub>J</sub> = 100°C	I <sub>DRM</sub> , I <sub>RRM</sub>	—	—	10 2	μA mA
*Peak On-State Voltage (I <sub>TM</sub> = 14.2 A Peak, Pulse Width = 1 to 2 ms, Duty Cycle ≤ 2%)	V <sub>TM</sub>	—	1.3	1.65	Volts
Gate Trigger Current (Continuous dc), Note 1 (V <sub>D</sub> = 12 Vdc, R <sub>L</sub> = 12 Ohms) MT2(+), G(+); MT2(-), G(-) MT2(+), G(-); MT2(-), G(+) *MT2(+), G(+); MT2(-), G(-), T <sub>C</sub> = -65°C *MT2(+), G(-); MT2(-), G(+), T <sub>C</sub> = -65°C	I <sub>GT</sub>	—	—	25 40 100 150	mA
Gate Trigger Voltage (Continuous dc) (All Quadrants) (V <sub>D</sub> = 12 Vdc, R <sub>L</sub> = 12 Ohms) T <sub>C</sub> = 25°C *T <sub>C</sub> = -65°C (V <sub>D</sub> = Rated V <sub>DRM</sub> , R <sub>L</sub> = 125 Ω) T <sub>C</sub> = 100°C	V <sub>GT</sub>	— — 0.2	— — —	2.5 4 —	Volts
Holding Current (V <sub>D</sub> = 12 Vdc, Gate Open) T <sub>C</sub> = 25°C *T <sub>C</sub> = -65°C	I <sub>H</sub>	— —	— —	30 200	mA
Gate Controlled Turn-On Time (V <sub>D</sub> = Rated V <sub>DRM</sub> , I <sub>TM</sub> = 15 A Peak, I <sub>GT</sub> = 160 mA, Rise Time = 0.1 μs, Pulse Width = 2 μs) MT2(+), G(+); MT2(-), G(-)	t <sub>gt</sub>	—	1	2.5	μs
*Critical Rate-of-Rise of Commutation Voltage (V <sub>D</sub> = Rated V <sub>DRM</sub> , I <sub>TM</sub> = 14.2 A Peak, Commutating di/dt = 5.4 A/ms, gate unenergized) T <sub>C</sub> = 85°C	dv/dt(c)	2	10	—	V/μs
Critical Rate-of-Rise of Off-State Voltage (V <sub>D</sub> = Rated V <sub>DRM</sub> , Exponential Voltage Rise, Gate Open, T <sub>C</sub> = 100°C) *2N5567, *2N5569, T4121B *2N5568, *2N5570, T4121D T4101M, T4111M, T4121M	dv/dt	30 20 10	150 100 75	— — —	V/μs

\*Indicates JEDEC Registered Data.  
Note 1. All Voltage polarities referenced to main terminal 1.



FIGURE 1 - RMS CURRENT DERATING (Isolated Stud)

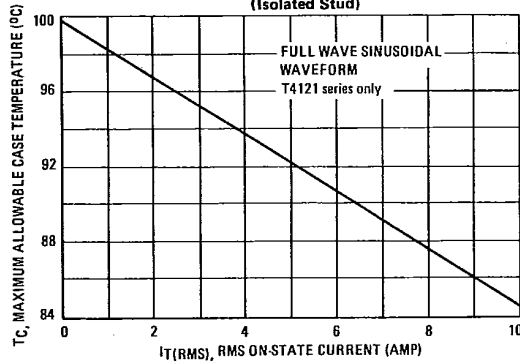


FIGURE 2 - RMS CURRENT DERATING (Pressfit and Stud)

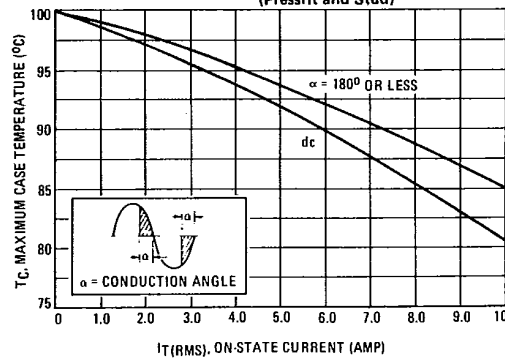


FIGURE 3 - POWER DISSIPATION  
 (Isolated Stud)

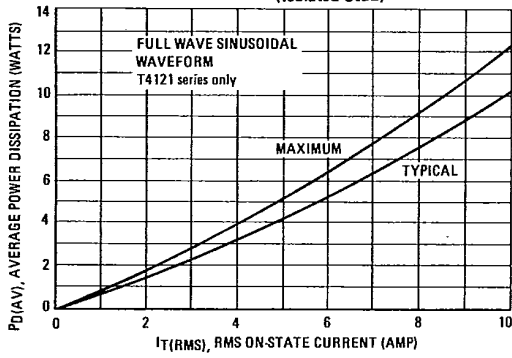


FIGURE 4 - POWER DISSIPATION  
 (Pressfit and Stud)

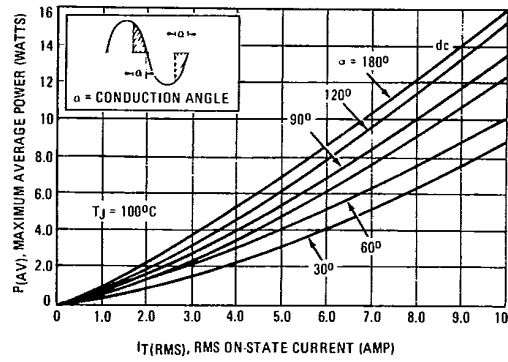


FIGURE 5 - TYPICAL GATE TRIGGER VOLTAGE

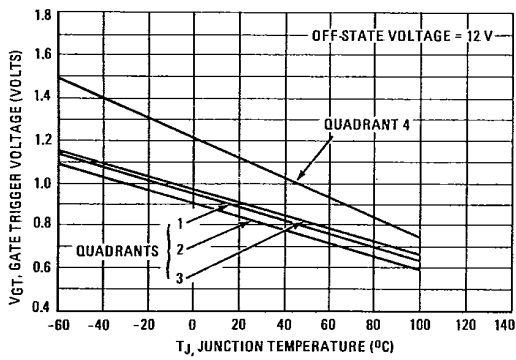
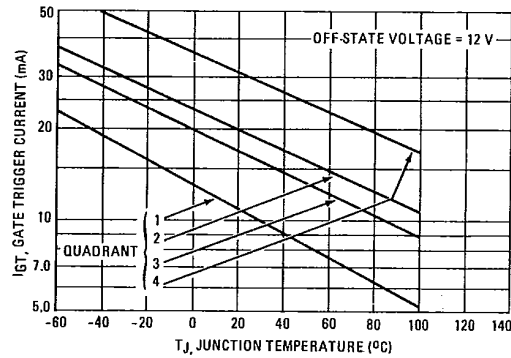


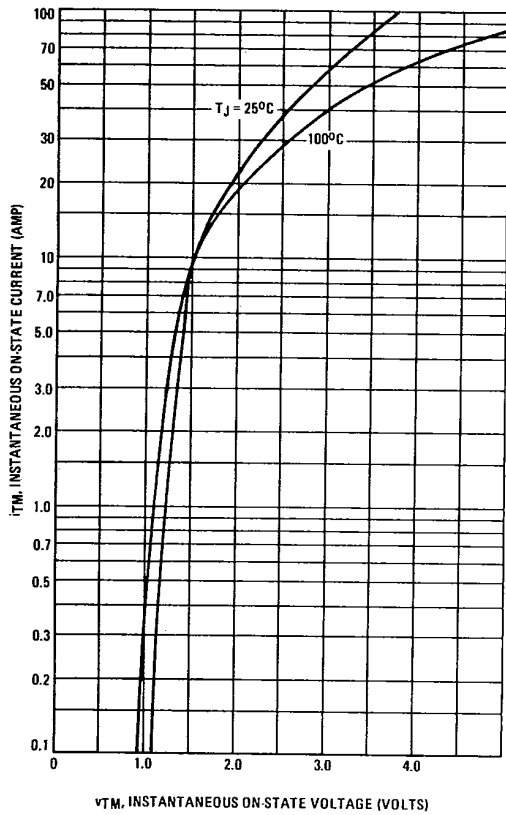
FIGURE 6 - TYPICAL GATE TRIGGER CURRENT



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2N5567 thru 2N5570 • T4101M • T4111M • T4121 Series

FIGURE 7 - ON-STATE CHARACTERISTICS



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FIGURE 8 - TYPICAL HOLDING CURRENT

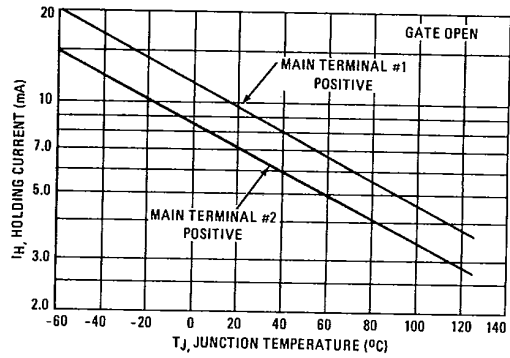


FIGURE 9 - MAXIMUM NON-REPETITIVE SURGE CURRENT

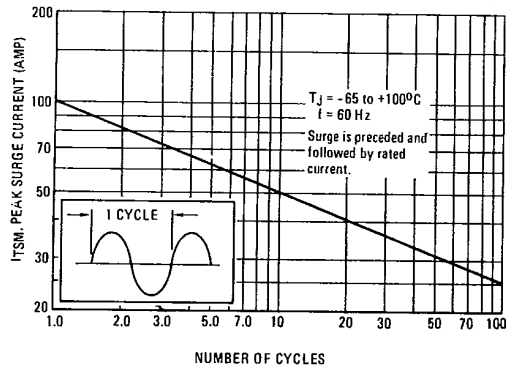
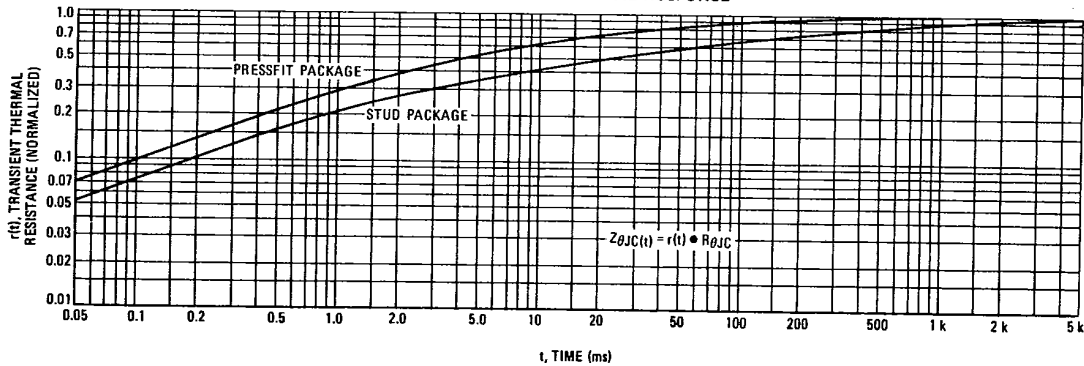


FIGURE 10 - TYPICAL THERMAL RESPONSE



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Datasheets for electronics components.