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

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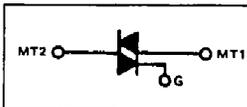T4121
Series**

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

MT2 O———◁▷———O MT1
O G

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage (T_J = −65 to +100°C) 1/2 Sine Wave 50 to 60 Hz, Gate Open	V_{DRM}		Volts
2N5567, 2N5569, T4121B		200	
2N5568, 2N5570, T4121D		400	
T4101M, T4111M, T4121M		600	
*Peak Gate Voltage	V_{GM}	20	Volts
*RMS On-State Current (T_C = −65 to +85°C) (T_C = +90°C) Full cycle, Sine Wave, 50 to 60 Hz	$I_{T(RMS)}$	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°C)	I_{TSM}	100	Amps
Circuit Fusing Considerations (T_C = −65 to +85°C, t = 1 to 8.3 ms)	I^2t	40	A^2s
Peak Gate Power *(T_C = 85°C, Pulse Width = 1 μs)	P_{GM}	16	Watts
*Average Gate Power (T_C = 85°C, Pulse Width = 8.3 ms)	$P_{G(AV)}$	0.5	Watt
*Operating Junction Temperature Range	T_J	−65 to +100	°C
*Storage Temperature Range	T_{stg}	−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	$R_{\theta JC}$	1 / 1.1	°C/W

*Indicates JEDEC Registered Data.

CASE 174-04 (TO-203)

2N5567
2N5568
T4101M

CASE 175-03

2N5569
2N5570
T4111M

CASE 235-03

T4121 SERIES

Quality Semi-Conductors

ELECTRICAL CHARACTERISTICS (T$_C$ = 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$_{DRM}$ or V$_{RRM}$) T$_J$ = 25°C T$_J$ = 100°C	I$_{DRM}$, I$_{RRM}$	— —	— —	10 2	μA mA
*Peak On-State Voltage (I$_{TM}$ = 14.2 A Peak, Pulse Width = 1 to 2 ms, Duty Cycle ⩽ 2%)	V$_{TM}$	—	1.3	1.65	Volts

Gate Trigger Current (Continuous dc), Note 1
(V$_D$ = 12 Vdc, R$_L$ = 12 Ohms)
   MT2(+), G(+); MT2(−), G(−)
   MT2(+), G(−); MT2(−), G(+)
   *MT2(+), G(+); MT2(−), G(−), T$_C$ = −65°C
   *MT2(+), G(−); MT2(−), G(+), T$_C$ = −65°C
	I$_{GT}$	—
		—
		—
		—
			—
			—
			—
			—
				25
				40
				100
				150
					mA

Gate Trigger Voltage (Continuous dc) (All Quadrants) (V$_D$ = 12 Vdc, R$_L$ = 12 Ohms T$_C$ = 25°C *T$_C$ = −65°C (V$_D$ = Rated V$_{DRM}$, R$_L$ = 125 Ω) T$_C$ = 100°C	V$_{GT}$	— — 0.2	— — —	2.5 4 —	Volts
Holding Current (V$_D$ = 12 Vdc, Gate Open) T$_C$ = 25°C *T$_C$ = −65°C	I$_H$	— —	— —	30 200	mA
Gate Controlled Turn-On Time (V$_D$ = Rated V$_{DRM}$, I$_{TM}$ = 15 A Peak, I$_{GT}$ = 160 mA, Rise Time = 0.1 μs, Pulse Width = 2 μs) MT2(+), G(+); MT2(−), G(−)	t$_{gt}$	—	1	2.5	μs
*Critical Rate-of-Rise of Commutation Voltage (V$_D$ = Rated V$_{DRM}$, I$_{TM}$ = 14.2 A Peak, Commutating di/dt = 5.4 A/ms, gate unenergized) T$_C$ = 85°C	dv/dt(c)	2	10	—	V/μs

Critical Rate-of-Rise of Off-State Voltage
(V$_D$ = Rated V$_{DRM}$, Exponential Voltage Rise, Gate Open,
T$_C$ = 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)

FULL WAVE SINUSOIDAL
WAVEFORM
T4121 series only

T$_C$, MAXIMUM ALLOWABLE CASE TEMPERATURE (°C)

I$_{T(RMS)}$, RMS ON-STATE CURRENT (AMP)

FIGURE 2 — RMS CURRENT DERATING
(Pressfit and Stud)

α = 180° OR LESS
dc
α = CONDUCTION ANGLE

T$_C$, MAXIMUM CASE TEMPERATURE (°C)

I$_{T(RMS)}$, ON-STATE CURRENT (AMP)