TIC216A, TIC216B, TIC216D, TIC216M, TIC216N, TIC216S

SILICON BIDIRECTIONAL TRIODE THYRISTOR

- 6 A RMS
- Glass Passivated Wafer
- 100 V to 800 V Off-State Voltage
- Max I_{GT} of 5 mA (Quadrants 1-3)
- Sensitive gate triacs
- **Compliance to ROHS**

DESCRIPTION

This device is a bidirectional triode thyristor (triac) which may be triggered from the off-state to the on-state by either polarity of gate signal with main Terminal 2 at either polarity.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value						Unit
		A	B	D	M	S	N	
V_{DRM}	Repetitive peak off-state voltage (see Note1)	100	200	400	600	700	800	V
$I_{T(RMS)}$	Full-cycle RMS on-state current at (or below) 70°C case temperature (see note2)	6						A
I_{TSM}	Peak on-state surge current full-sine-wave (see Note3)	60						A
I_{TSM}	Peak on-state surge current half-sine-wave (see Note4)	70						A
I_{GM}	Peak gate current	± 1						A
P_{GM}	Peak gate power dissipation at (or below) 85°C case temperature (pulse width ≤200 µs)	2.2						W
$P_{G(AV)}$	Average gate power dissipation at (or below) 85°C case (see Note5)	0.9						W
T_C	Operating case temperature range	-40 to +110						°C
T_{stg}	Storage temperature range	-40 to +125						°C
T_L	Lead temperature 1.6 mm from case for 10 seconds	230						°C

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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 150 mA/°C.
3. This value applies for one 50-Hz full-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
4. This value applies for one 50-Hz half-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
5. This value applies for a maximum averaging time of 20 ms.

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{\partial JC}$	Junction to case thermal resistance	≤ 2.5	°C/W
$R_{\partial JA}$	Junction to free air thermal resistance	≤ 62.5	

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
I_{DRM}	Repetitive peak off-state current	V_D = Rated V_{DRM}, , I_G = 0, T_C = 110°C	-	-	±2	mA
I_{GT}	Gate trigger current	V_{supply} = +12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	5	mA
		V_{supply} = +12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	-5	
		V_{supply} = -12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	-5	
		V_{supply} = -12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	10	
V_{GT}	Gate trigger voltage	V_{supply} = +12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	2.2	V
		V_{supply} = +12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	-2.2	
		V_{supply} = -12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	-2.2	
		V_{supply} = -12 V†, R_L = 10 Ω, $t_{p(g)}$ = > 20 µs	-	-	3	
I_H	Holding current	V_{supply} = +12 V†, I_G = 0, initiating I_{TM} = 100 mA	-	-	30	mA
		V_{supply} = -12 V†, I_G = 0, initiating I_{TM} = -100 mA	-	-	-30	
I_L	Latching current	V_{supply} = +12 V† (seeNote7)	-	50	-	mA
		V_{supply} = -12 V† (seeNote7)	-	-20	-	
V_{TM}	Peak on-state voltage	I_{TM} = ± 8.4 A, I_G = 50 mA (see Note6)	-	-	±1.7	V
dv/dt	Critical rate of rise of off-state voltage	V_{DRM} = Rated V_{DRM}, I_G = 0 T_C = 110°C	-	±50	-	V/µs
$dv/dt_{©}$	Critical rise of communication voltage	V_{DRM} = Rated V_{DRM}, I_{TRM} = ± 8.4A T_C = 70°C	±5	-	-	

† All voltages are whit respect to Main Terminal 1.

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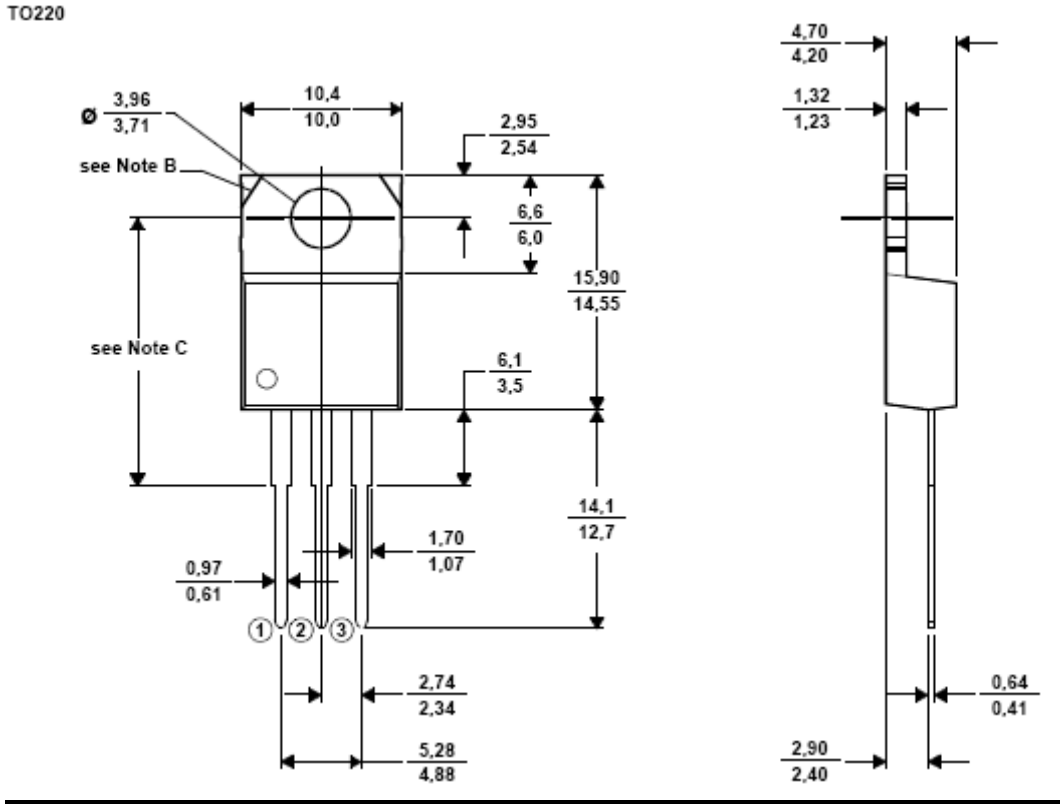
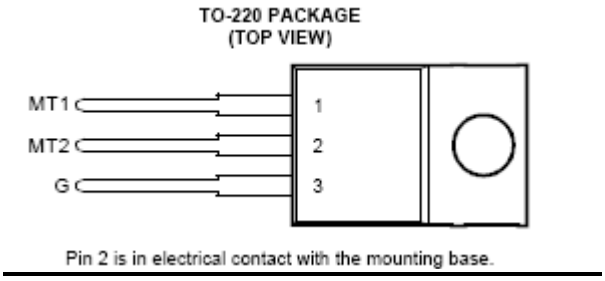
Note 6: This parameters must be measured using pulse techniques, t_W = ≤1µs, duty cycle ≤ 2 %, voltage-sensing contacts, separate from the courrent-carrying contacts are located within 3.2mm (1/8 inch) from de device body.
Note 7: The triacs are triggered by a 15-V (open circuit amplitude) pulse supplied by a generator with the following characteristics : R_G = 100Ω, $_{tp(g)}$ = 20 µs, t_r = ≤ 15ns, f = 1 kHz.

MECHANICAL DATA CASE TO-220





Pin 2 is in electrical contact with the mounting base.

Pin 1 :	Main Terminal 1
Pin 2 :	Main Terminal 2
Pin 3 :	Gate