TIC116A, TIC116B, TIC116C, TIC116D, TIC116E, TIC116M, TIC116N, TIC116S

P-N-P-N SILICON REVERSE-BLOCKING TRIODE THYRISTORS

- 8 A Continuous On-State Current
- 80 A Surge-Current
- Glass Passivated Wafer
- 100 V to 800 V Off-State Voltage
- Max I_{GT} of 20 mA
- Compliance to ROHS

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value								Unit
		A	B	C	D	E	M	S	N	
V_{DRM}	Repetitive peak off-state voltage (see Note1)	100	200	300	400	500	600	700	800	V
V_{RRM}	Repetitive peak reverse voltage	100	200	300	400	500	600	700	800	V
$I_{T(RMS)}$	Continuous on-state current at (or below) 70°C case temperature (see note2)	8								A
$I_{T(AV)}$	Average on-state current (180° conduction angle) at(or below) 70°C case temperature (see Note3)	5								A
I_{TM}	Surge on-state current (see Note4)	80								A
I_{GM}	Peak positive gate current (pulse width ≤300 µs)	3								A
P_{GM}	Peak power dissipation (pulse width ≤300 µs)	5								W
$P_{G(AV)}$	Average gate power dissipation (see Note5)	1								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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THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
t_{gt}	Gate-controlled Turn-on time	V_{AA} = 30 V, R_L = 6 Ω, $R_{GK(eff)}$ = 100 Ω, V_{in} = 20 V	0.8	µs
t_q	Circuit-communicated Turn-off time	V_{AA} = 30 V, R_L = 6 Ω, I_{RM} ≈ 10 A	11	
$R_{\partial JC}$	Junction to case thermal resistance		≤ 3	°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	Max	Unit
I_{DRM}	Repetitive peak off-state current	V_D = Rated V_{DRM}, R_{GK} = 1 kΩ T_C = 110°C	-	-	2	mA
I_{RRM}	Repetitive peak reverse current	V_R = Rated V_{RRM}, I_G = 0 T_C = 110°C	-	-	2	mA
I_{GT}	Gate trigger current	V_{AA} = 6 V, R_L = 100 Ω $t_{p(g)}$ ≥ 20µs	-	5	20	mA
V_{GT}	Gate trigger voltage	V_{AA} = 6 V, R_L = 100 Ω R_{GK} = 1 kΩ, $t_{p(g)}$ ≥ 20µs T_C = -40°C	-	-	2.5	V
		V_{AA} = 6 V, R_L = 100 Ω R_{GK} = 1 kΩ, $t_{p(g)}$ ≥ 20µs	-	0.8	1.5	
		V_{AA} = 6 V, R_L = 100 Ω R_{GK} = 1 kΩ, $t_{p(g)}$ ≥ 20µs T_C = 110°C	0.2	-	-	
I_H	Holding current	V_{AA} = 6 V, R_{GK} = 1 kΩ initiating I_T = 100 mA	-	-	40	mA
		V_{AA} = 6 V, R_{GK} = 1 kΩ initiating I_T = 100 mA T_C = -40°C	-	-	70	
V_{TM}	Peak on-state voltage	I_{TM} = 8A (see Note6)	-	-	1.7	V
dv/dt	Critical rate of rise of off-state voltage	V_D = Rated V_D T_C = 110°C	-	100	-	V/µs

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Notes:

1. These values apply when the gate-cathode resistance R_{GK} = 1kΩ
2. These values apply for continuous dc operation with resistive load. Above 70°C derate linearly to zero at 110°C.
3. This value may be applied continuously under single phase 50 Hz half-sine-wave operation with resistive load. Above 70°C derate linearly to zero at 110°C.
4. This value applies for one 50 Hz half-sine-wave when the device is operating at (or below) the rated value of peak reverse voltage and on-state current. Surge may be repeated after the device has returned to original thermal equilibrium.
5. This value applies for a maximum averaging time of 20 ms.
6. This parameters must be measured using pulse techniques, t_W = 300µs, duty cycle ≤ 2 %, voltage-sensing contacts, separate from the courrent-carrying contacts, are located within 3.2mm (1/8 inch) from de device body

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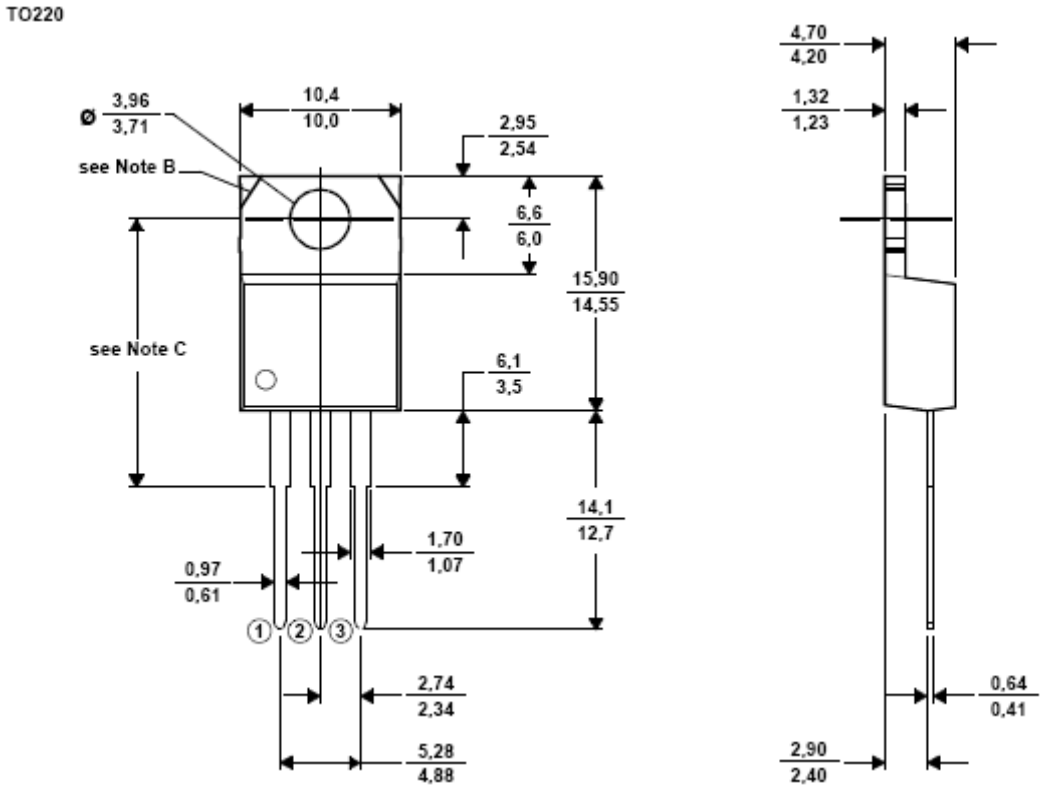
MECHANICAL DATA CASE TO-220



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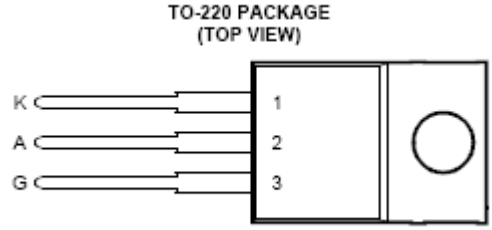
PINNING



Pin 2 is in electrical contact with the mounting base.

Pin 1 :	kathode
Pin 2 :	Anode
Pin 3 :	Gate

Revised September 2012