

**TIC108A, TIC108B, TIC108C, TIC108D, TIC108E, TIC108M,  
TIC108N, TIC108S**
**P-N-P-N SILICON REVERSE-BLOCKING TRIODE  
THYRISTORS**

- 5 A Continuous On-State Current
- 20 A Surge-Current
- Glass Passivated Wafer
- 100 V to 800 V Off-State Voltage
- Max  $I_{GT}$  of 1 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) 80°C case temperature (see note2)	5								A
$I_{T(AV)}$	Average on-state current (180° conduction angle) at(or below) 80°C case temperature (see Note3)	3.2								A
$I_{TM}$	Surge on-state current (see Note4)	20								A
$I_{GM}$	Peak positive gate current (pulse width $\leq 300 \mu s$ )	0.2								A
$P_{GM}$	Peak power dissipation (pulse width $\leq 300 \mu s$ )	1.3								W
$P_{G(AV)}$	Average gate power dissipation (see Note5)	0.3								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	$V_{AA} = 30\text{ V}, R_L = 6\ \Omega$ $R_{GK(\text{eff})} = 5\text{ k}\Omega, V_{in} = 50\text{ V}$	2.9	$\mu\text{s}$
$t_q$	Circuit-communicated Turn-off time	$V_{AA} = 30\text{ V}, R_L = 6\ \Omega$ $I_{RM} \approx 8\text{ A}$	13.3	
$R_{\theta JC}$	Junction to case thermal resistance		$\leq 3.5$	$^{\circ}\text{C/W}$
$R_{\theta JA}$	Junction to free air thermal resistance		$\leq 62.5$	

### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
$I_{DRM}$	Repetitive peak off-state current	$V_D = \text{Rated } V_{DRM}$ $R_{GK} = 1\text{ k}\Omega, T_C = 110^{\circ}\text{C}$	-	-	400	$\mu\text{A}$
$I_{RRM}$	Repetitive peak reverse current	$V_R = \text{Rated } V_{RRM}, I_G = 0$ $T_C = 110^{\circ}\text{C}$	-	-	1	mA
$I_{GT}$	Gate trigger current	$V_{AA} = 6\text{ V}, R_L = 100\ \Omega$ $t_{p(g)} \geq 20\ \mu\text{s}$	0.2	-	200	$\mu\text{A}$
$V_{GT}$	Gate trigger voltage	$V_{AA} = 6\text{ V}, R_L = 100\ \Omega$ $R_{GK} = 1\text{ k}\Omega, t_{p(g)} \geq 20\ \mu\text{s}$ $T_C = -40^{\circ}\text{C}$	-	-	1.2	V
		$V_{AA} = 6\text{ V}, R_L = 100\ \Omega$ $R_{GK} = 1\text{ k}\Omega, t_{p(g)} \geq 20\ \mu\text{s}$	0.4	0.6	1	
		$V_{AA} = 6\text{ V}, R_L = 100\ \Omega$ $R_{GK} = 1\text{ k}\Omega, t_{p(g)} \geq 20\ \mu\text{s}$ $T_C = 110^{\circ}\text{C}$	0.2	-	-	
$I_H$	Holding current	$V_{AA} = 6\text{ V}, R_{GK} = 1\text{ k}\Omega$ initiating $I_T = 20\text{ mA}$	-	-	10	mA
		$V_{AA} = 6\text{ V}, R_{GK} = 1\text{ k}\Omega$ initiating $I_T = 20\text{ mA}$ $T_C = -40^{\circ}\text{C}$	-	-	15	
$V_{TM}$	Peak on-state voltage	$I_{TM} = 5\text{ A}$ (see Note6)	-	-	1.7	V
$dv/dt$	Critical rate of rise of off-state voltage	$V_D = \text{Rated } V_D, R_{GK} = 1\text{ k}\Omega$ $T_C = 110^{\circ}\text{C}$	-	80	-	V/ $\mu\text{s}$

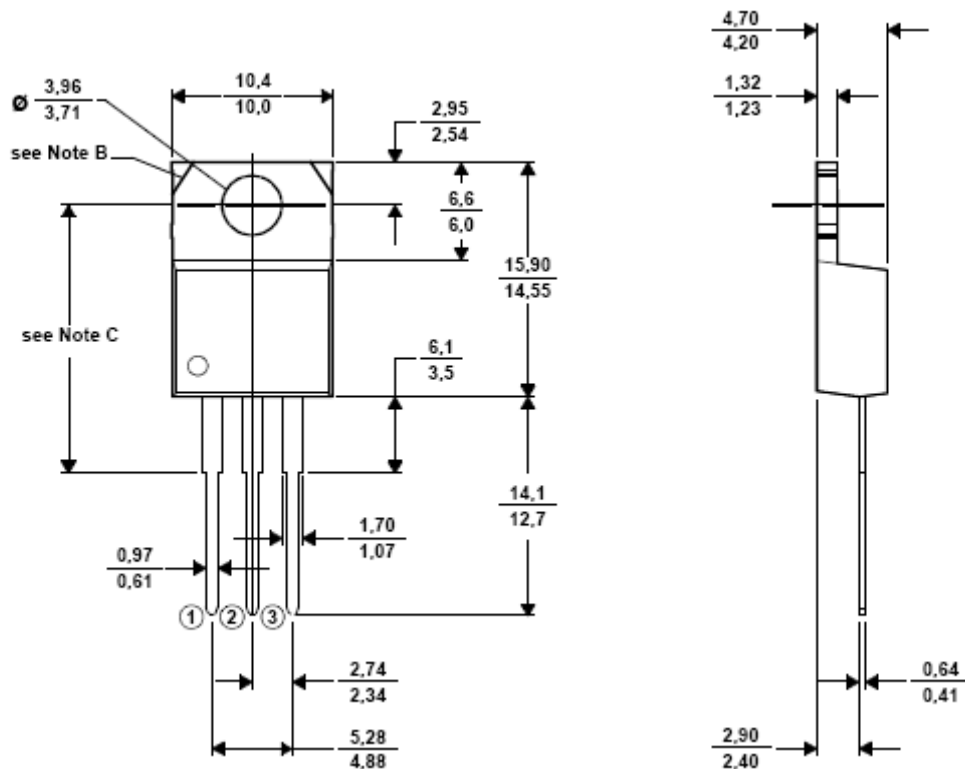
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Notes:

1. These values apply when the gate-cathode resistance  $R_{GK} = 1k\Omega$
2. These values apply for continuous dc operation with resistive load. Above 80°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 80°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,  $t_w = 300\mu s$ , duty cycle  $\leq 2\%$ , voltage-sensing contacts, separate from the current-carrying contacts, are located within 3.2mm (1/8 inch) from the device body.

### MECHANICAL DATA CASE TO-220

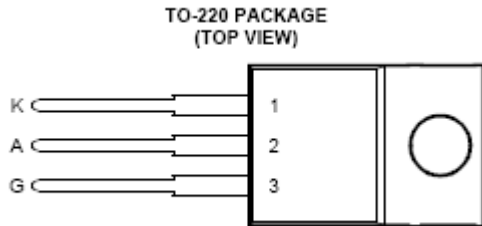
TO220





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**PINNING**



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

Pin 2 is in electrical contact with the mounting base.

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