

TIC106A, TIC106B, TIC106C, TIC106D, TIC106E, TIC106M, TIC106N, TIC106S

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

- 5 A Continuous On-State Current
- 30 A Surge-Current
- Glass Passivated Wafer
- 100 V to 800 V Off-State Voltage
- Max I_{GT} of 200 μ A
- 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) | 30 | | | | | | | | 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 | $V_{AA} = 30\text{ V}$, $R_L = 6\ \Omega$ $R_{GK(eff)} = 5\text{ k}\Omega$ $V_{in} = 50\text{ V}$ | 1.75 | μs |
| t_q | Circuit-communicated Turn-off time | $V_{AA} = 30\text{ V}$, $R_L = 6\ \Omega$ $I_{RM} \approx 8\text{ A}$ | 7.7 | |
| $R_{\theta JC}$ | Junction to case thermal resistance | | ≤ 3.5 | $^{\circ}\text{C/W}$ |
| $R_{\theta JA}$ | 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 | $V_D = \text{Rated } V_{DRM}$ $R_{GK} = 1\text{ k}\Omega$, $T_C = 110^{\circ}\text{C}$ | - | - | 400 | μA |
| 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 | $V_{AA} = 6\text{ V}$, $R_L = 100\ \Omega$ $t_{p(g)} \geq 20\ \mu\text{s}$ | - | 60 | 200 | μA |
| 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 $I_T = 10\text{ mA}$ | - | - | 5 | mA |
| | | $V_{AA} = 6\text{ V}$, $R_{GK} = 1\text{ k}\Omega$ initiating $I_T = 10\text{ mA}$ $T_C = -40^{\circ}\text{C}$ | - | - | 8 | |
| 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 | $V_D = \text{Rated } V_D$ $R_{GK} = 1\text{ k}\Omega$, $T_C = 110^{\circ}\text{C}$ | - | 10 | - | V/ μs |

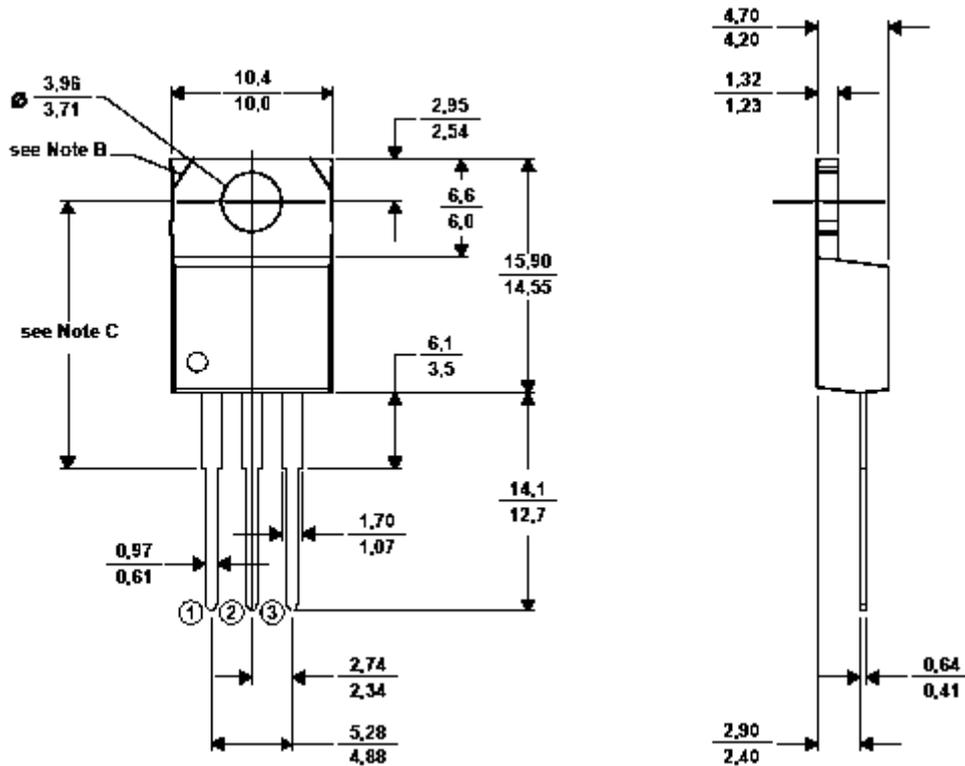
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Notes:

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 de device body.

MECHANICAL DATA CASE TO-220

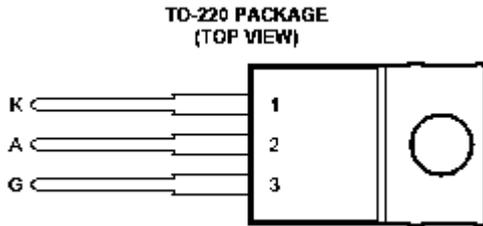
TO220





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PINNING



| | |
|---------|---------|
| Pin 1 : | Cathode |
| Pin 2 : | Anode |
| Pin 3 : | Gate |

Pin 2 is in electrical contact with the mounting base.

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