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## NTE5461 thru NTE5468 Silicon Controlled Rectifier (SCR) 10 Amp, TO220

**Description:**

The NTE5461 through NTE5468 series silicon controlled rectifiers are designed primarily for half-wave AC control applications such as motor controls, heating controls, and power supplies; or wherever half-wave silicon gate-controlled, solid-state devices are needed. These devices are supplied in a TO220 type package.

**Features:**

- Glass Passivated Junctions and Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation, and Durability
- Blocking Voltage to 800 Volts

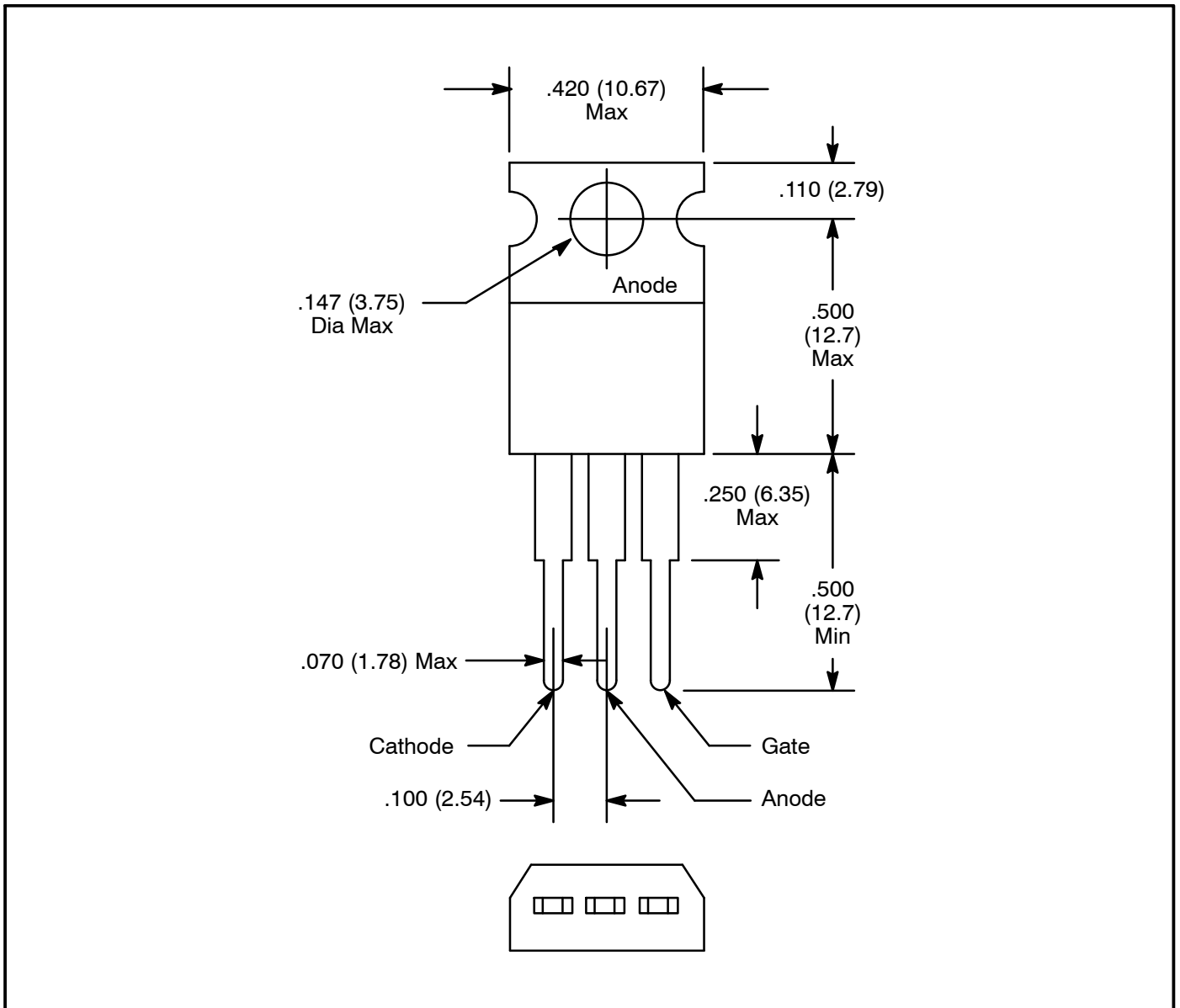
**Absolute Maximum Ratings:**

|   |                                     |
|---|-------------------------------------|
| Peak Repetitive Reverse Voltage; Peak Repetitive Off-State Voltage (Note 1), $V_{RRM}$ , $V_{DRM}$    |                                     |
| NTE5461 .....   | 50V                                 |
| NTE5462 .....   | 100V                                |
| NTE5463 .....   | 200V                                |
| NTE5465 .....   | 400V                                |
| NTE5466 .....   | 600V                                |
| NTE5468 .....   | 800V                                |
| Non-Repetitive Peak Reverse Voltage; Non-Repetitive Off-State Voltage, $V_{RSM}$ , $V_{DSM}$          |                                     |
| NTE5461 .....   | 75V                                 |
| NTE5462 .....   | 125V                                |
| NTE5463 .....   | 250V                                |
| NTE5465 .....   | 500V                                |
| NTE5466 .....   | 700V                                |
| NTE5468 .....   | 900V                                |
| RMS Forward Current (All Conducting Angles, $T_C = +75^\circ\text{C}$ ), $I_{T(RMS)}$                 | 10A                                 |
| Peak Forward Surge Current (1 Cycle, Sine Wave, 60Hz, $T_C = +80^\circ\text{C}$ ), $I_{TSM}$          | 100A                                |
| Circuit Fusing Considerations ( $T_J = -65^\circ$ to $+100^\circ\text{C}$ , $t = 1$ to 8.3ms), $I^2t$ | 40A <sup>2</sup> s                  |
| Forward Peak gate Power ( $t \leq 10\mu\text{s}$ ), $P_{GM}$  | 16W                                 |
| Forward Average Gate Power, $P_{G(AV)}$   | 500mW                               |
| Operating Junction Temperature Range, $T_J$   | $-40^\circ$ to $+100^\circ\text{C}$ |
| Storage Temperature Range, $T_{stg}$  | $-40^\circ$ to $+150^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Case, $R_{thJC}$  | $2^\circ\text{C/W}$                 |

Note 1.  $V_{DRM}$  and  $V_{RRM}$  for all types can be applied on a continuous DC basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode.

**Electrical Characteristics:** ( $T_C = +25^\circ\text{C}$  unless otherwise specified)

| Parameter                                  | Symbol                   | Test Conditions   | Min                        | Typ | Max | Unit                   |               |
|--|--------------------------|---|----------------------------|-----|-----|------------------------|---------------|
| Peak Forward or Reverse Blocking Current   | $I_{DRM}$ ,<br>$I_{RRM}$ | Rated $V_{DRM}$ or $V_{RRM}$  | $T_C = +25^\circ\text{C}$  | -   | -   | 10                     | $\mu\text{A}$ |
|  |                          |   | $T_C = +100^\circ\text{C}$ | -   | -   | 2                      | $\text{mA}$   |
| Instantaneous On-State Voltage             | $V_T$                    | $I_{TM} = 30A_{(Peak)}$ , Pulse Width $\leq 1\text{ms}$ ,<br>Duty Cycle $\leq 2\%$  | -                          | 1.7 | 2.0 | V                      |               |
| Gate Trigger Current (Continuous DC)       | $I_{GT}$                 | $V_D = 12\text{V}$ , $R_L = 30\Omega$   | -                          | 8   | 15  | $\text{mA}$            |               |
| Gate Trigger Voltage (Continuous DC)       | $V_{GT}$                 | $V_D = 12\text{V}$ , $R_L = 30\Omega$   | -                          | 0.9 | 1.5 | V                      |               |
| Holding Current                            | $I_H$                    | Gate Open, $V_D = 12\text{V}$ , $I_T = 150\text{mA}$  | -                          | 10  | 20  | $\text{mA}$            |               |
| Gate Controlled Turn-On Time               | $t_{gt}$                 | $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 2\text{A}$ , $I_{GR} = 80\text{mA}$   | -                          | 1.6 | -   | $\mu\text{s}$          |               |
| Circuit Commutated Turn-Off Time           | $t_q$                    | $V_D = V_{DRM}$ , $I_{TM} = 2\text{A}$ , Pulse Width = $50\mu\text{s}$ ,<br>$dv/dt = 200\text{V}/\mu\text{s}$ , $di/dt = 10\text{A}/\mu\text{s}$ ,<br>$T_C = +75^\circ\text{C}$ | -                          | 25  | -   | $\mu\text{s}$          |               |
| Critical Rate-of-Rise of Off-State Voltage | $dv/dt$                  | $V_D = \text{Rated } V_{DRM}$ , Exponential Rise,<br>$T_C = +100^\circ\text{C}$   | -                          | 100 | -   | $\text{V}/\mu\text{s}$ |               |



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