



**ELECTRONICS, INC.**  
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## NTE5680 thru NTE5687 TRIAC, 25 Amp

**Description:**

The NTE5680 thru NTE5687 series of medium power TRIACs are bidirectional triode thyristors which may be switched from off-state to conduction for either polarity of applied voltage with positive or negative gate triggering. These devices are designed for control of AC loads in applications such as lighting, heating, and motor speed control, as well as static switching relays.

**Absolute Maximum Ratings:**

|   |                |
|---|----------------|
| Repetitive Peak Off-State and Reverse Voltage ( $T_J = +100^\circ\text{C}$ ), $V_{\text{DRM}}$ , $V_{\text{RRM}}$ |                |
| NTE5680 .....   | 25V            |
| NTE5681 .....   | 50V            |
| NTE5682 .....   | 100V           |
| NTE5683 .....   | 200V           |
| NTE5684 .....   | 300V           |
| NTE5685 .....   | 400V           |
| NTE5686 .....   | 500V           |
| NTE5687 .....   | 600V           |
| RMS On-State Current ( $T_C = +75^\circ\text{C}$ , 360° Conduction), $I_{\text{T(RMS)}}$ .....                    | 25A            |
| Peak Surge (Non-Repetitive) On-State Current (One-Cycle, 50Hz or 60Hz), $I_{\text{TSM}}$ .....                    | 250A           |
| Peak Gate-Trigger Current (3μs Max), $I_{\text{GTM}}$ .....   | 4A             |
| Peak Gate-Power Dissipation ( $I_{\text{GT}} \leq I_{\text{GTM}}$ , 3μs Max), $P_{\text{GM}}$ .....               | 40W            |
| Average Gate Power Dissipation, $P_{\text{G(AV)}}$ .....  | 0.8W           |
| Storage Temperature Range, $T_{\text{stg}}$ .....   | -40° to +150°C |
| Operating Temperature Range ( $T_J$ ), $T_{\text{opr}}$ .....   | -40° to +100°C |
| Thermal Resistance, Junction-to-Case, $R_{\text{thJC}}$ .....   | 1.8°C/W        |

**Electrical Characteristics:** (At Maximum Ratings,  $T_A = +25^\circ\text{C}$  unless otherwise specified)

| Parameter   | Symbol            | Test Conditions   | Min | Typ | Max        | Unit             |
|---|-------------------|---|-----|-----|------------|------------------|
| Peak Off-State Current  | $I_{DROM}$        | Gate Open, $I_T = 100\text{A}$ (Peak)   | -   | -   | 4          | mA               |
| Maximum On-State Voltage  | $V_T$             | $I_T = 100\text{A}$ (Peak)  | -   | -   | 2.5        | V                |
| DC Holding Current  | $I_H$             | Gate Open   | -   | -   | 60         | mA               |
| Critical Rate-of-Rise of Off-State Voltage  | Critical dv/dt    | Gate Open, $V_D = \text{Rated } V_{DROM}$ ,<br>$T_C = +100^\circ\text{C}$   | -   | 40  | -          | V/ $\mu\text{s}$ |
| Critical Rate-of-Rise of Commutation  | Commutating dv/dt | Gate Open, $V_D = \text{Rated } V_{DROM}$ ,<br>$I_T = 25\text{A}$ , $T_C = +75^\circ\text{C}$                             | -   | 3   | -          | V/ $\mu\text{s}$ |
| DC Gate Trigger Current<br>MT <sub>2</sub> (+), Gate (+); MT <sub>2</sub> (-), Gate (-)<br>MT <sub>2</sub> (+), Gate (-); MT <sub>2</sub> (-), Gate (+) | $I_{GT}$          | $V_D = 24\text{V}$ , $R_L = 12\Omega$   | -   | -   | 100<br>150 | mA<br>mA         |
| DC Gate Trigger Voltage   | $V_{GT}$          | $V_D = 24\text{V}$ , $R_L = 12\Omega$   | -   | -   | 2.5        | V                |
| Gate-Controlled Turn-On Time  | $t_{gt}$          | $V_D = \text{Rated } V_{DROM}$ , $I_{GT} = 300\text{mA}$ ,<br>$t_r = 0.1\mu\text{s}$ , $I_t = 10\text{A}_{(\text{Peak})}$ | -   | 3   | -          | $\mu\text{s}$    |

