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## NTE5550 thru NTE5558 Silicon Controlled Rectifier (SCR) 25 Amp, TO220

**Description:**

The NTE5550 thru NTE5558 SCR's are designed primarily for half-wave AC control applications, such as motor controls, heating controls and power supply crowbar circuits.

**Features:**

- Glass Passivated Junctions with Center Gate Fire for Greater Parameter Uniformity and Stability.
- Small, Rugged, Thermowatt Constructed for Low Thermal Resistance, High Heat Dissipation and Durability.
- Blocking Voltage to 800 Volts
- 300A Surge Current Capability

**Absolute Maximum Ratings:**

|   |                |
|---|----------------|
| Peak Reverse Blocking Voltage (Note 1), $V_{RRM}$           |                |
| NTE5550   | 50V            |
| NTE5552   | 200V           |
| NTE5554   | 400V           |
| NTE5556   | 600V           |
| NTE5558   | 800V           |
| Forward Current ( $T_C = +85^\circ\text{C}$ ), $I_{T(RMS)}$ | 25A            |
| (All Conduction Angles), $I_{T(AV)}$                        | 16A            |
| Peak Non-Repetitive Surge Current (8.3ms), $I_{TSM}$        | 300A           |
| (1/2 Cycle, Sine Wave, 1.5ms)                               | 350A           |
| Forward Peak Gate Power, $P_{GM}$                           | 20W            |
| Forward Average Gate Power, $P_{G(AV)}$                     | 0.5W           |
| Forward Peak Gate Current, $I_{GM}$                         | 2A             |
| Operating Junction Temperature Range, $T_J$                 | -40° to +125°C |
| Storage Temperature Range, $T_{stg}$                        | -40° to +150°C |
| Thermal Resistance, Junction-to-Case, $R_{thJC}$            | 1.5°C/W        |

Note 1.  $V_{RRM}$  for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices should not be tested for blocking capability in a manner such that the voltage supplied exceeds the rated blocking voltage.

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

| Parameter  | Symbol                           | Min                            | Typ                   | Max                   | Unit                |
|--|----------------------------------|--------------------------------|-----------------------|-----------------------|---------------------|
| Peak Forward Blocking Voltage, ( $T_J = +125^\circ\text{C}$ )<br>NTE5550<br>NTE5552<br>NTE5554<br>NTE5556<br>NTE5558   | $V_{\text{DRM}}$                 | 50<br>200<br>400<br>600<br>800 | -<br>-<br>-<br>-<br>- | -<br>-<br>-<br>-<br>- | V                   |
| Peak Forward or Reverse Blocking Current,<br>(Rated $V_{\text{DRM}}$ or $V_{\text{RRM}}$ )<br>$T_J = +25^\circ\text{C}$<br>$T_J = +125^\circ\text{C}$  | $I_{\text{DRM}}, I_{\text{RRM}}$ | -<br>-                         | -<br>-                | 10<br>2               | $\mu\text{A}$<br>mA |
| Forward "ON" Voltage, ( $I_{\text{TM}} = 50\text{A}$ , Note 2)   | $V_{\text{TM}}$                  | -                              | -                     | 1.8                   | V                   |
| Gate Trigger Current (Continuous DC),<br>(Anode Voltage = 12Vdc, $R_L = 100\Omega$ )<br>$T_C = +25^\circ\text{C}$<br>$T_C = -40^\circ\text{C}$   | $I_{\text{GT}}$                  | -<br>-                         | -<br>25               | 40<br>75              | mA                  |
| Gate Trigger Voltage (Continuous DC)<br>(Anode Voltage = 12Vdc, $R_L = 100\Omega$ , $T_C = -40^\circ\text{C}$ )  | $V_{\text{GT}}$                  | -                              | 1                     | 1.5                   | V                   |
| Gate Non-Trigger Voltage<br>(Anode Voltage = Rated $V_{\text{DRM}}$ , $R_L = 100\Omega$ , $T_J = +125^\circ\text{C}$ )   | $V_{\text{GD}}$                  | 0.2                            | -                     | -                     | V                   |
| Holding Current<br>(Anode Voltage = 12Vdc, $T_C = -40^\circ\text{C}$ )   | $I_{\text{H}}$                   | -                              | 35                    | 40                    | mA                  |
| Turn-On Time<br>( $I_{\text{TM}} = 25\text{A}$ , $I_{\text{GT}} = 50\text{mA}$ )   | $t_{\text{gt}}$                  | -                              | 1.5                   | 2                     | $\mu\text{s}$       |
| Turn-Off Time ( $V_{\text{DRM}} = \text{rated voltage}$ )<br>( $I_{\text{TM}} = 25\text{A}$ , $I_{\text{R}} = 25\text{A}$ )<br>( $I_{\text{TM}} = 25\text{A}$ , $I_{\text{R}} = 25\text{A}$ , $T_J = +125^\circ\text{C}$ ) | $t_{\text{q}}$                   | -<br>-                         | 15<br>35              | -<br>-                | $\mu\text{s}$       |
| Critical Rate of Rise of Off-State Voltage<br>(Gate Open, Rated $V_{\text{DRM}}$ , Exponential Waveform)   | dv/dt                            | -                              | 50                    | -                     | V/ $\mu\text{s}$    |

Note 2. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

