



**ELECTRONICS, INC.**  
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## NTE5570, NTE5572, & NTE5574 Silicon Controlled Rectifier for Phase Control Applications

**Electrical Characteristics:** (Maximum values @  $T_J = +125^\circ\text{C}$  unless otherwise specified)

Repetitive Peak Voltages,  $V_{DRM}$  &  $V_{RRM}$

NTE5570 .....	200V
NTE5572 .....	600V
NTE5574 .....	1200V

Non-Repetitive Peak Reverse Blocking Voltage,  $V_{RSM}$

NTE5570 .....	500V
NTE5572 .....	900V
NTE5574 .....	1300V

Average On-State Current (Half Sine Wave,  $180^\circ$ ,  $T_C = +85^\circ\text{C}$ ),  $I_{T(AV)}$  ..... 80A

RMS On-State Current (DC @  $T_C = +75^\circ\text{C}$ ),  $I_{T(RMS)}$  ..... 125A

Peak One-Cycle, Non-Repetitive Surge Current (10ms Duration, Sinusoidal Half Wave),  $I_{TSM}$

No Voltage Reapplied .....	1900A
100% $V_{RRM}$ Reapplied .....	1600A

Maximum  $I^2t$  for Fusing (10ms Duration, Sinusoidal Half Wave),  $I^2t$

No Voltage Reapplied .....	18000A <sup>2</sup> sec
100% $V_{RRM}$ Reapplied .....	12700A <sup>2</sup> sec

Peak Positive Gate Current (5ms Pulse Width),  $I_{GM}$  ..... 3A

Peak Positive Gate Voltage (5ms Pulse Width),  $+V_{GM}$  ..... 20V

Peak Negative Gate Voltage (5ms Pulse Width),  $-V_{GM}$  ..... 10V

Average Gate Power ( $f = 50\text{Hz}$ , Duty Cycle = 50%),  $P_G$  ..... 3W

Peak Gate Power (50ms Pulse Width),  $P_{GM}$  ..... 12W

Rate of Rise of Off-State Voltage (Exponential to 67% Rated  $V_{DRM}$ ),  $dv/dt$  ..... 500V/ $\mu\text{s}$

Rate of Rise of ON-State Current,  $di/dt$

(Gate Drive 20V, 65 $\Omega$ , with  $t_r = 0.5\mu\text{s}$ ,  $V_d = \text{Rated } V_{DRM}$ ,  $I_{TM} = 2 \times di/dt$  snubber 0.2 $\mu\text{F}$ )

Non-Repetitive ..... 300A/ $\mu\text{s}$

Typical Delay Time,  $t_d$

(Gate Pulse: 10V, 15 $\Omega$  Source,  $t_p = 6\mu\text{s}$ ,  $t_r = 0.1\mu\text{s}$ ,  $V_d = \text{rated } V_{DRM}$ ,  $I_{TM} = 50\text{A}$ ) ..... 1 $\mu\text{s}$

Typical Turn-On Time,  $t_q$

( $I_{TM} = 50\text{A}$ ,  $di/dt = -5\text{A}/\mu\text{s}$  min,  $V_R = 50\text{V}$ ,  $dv/dt = 20\text{V}/\mu\text{s}$ , Gate Bias: 0V 25 $\Omega$ ,  $t_p = 500\mu\text{s}$ ) 110 $\mu\text{s}$

On-State Voltage ( $I_{PK} = 250\text{A}$ , 10ms Sine Pulse),  $V_{TM}$  ..... 1.6V

Repetitive Peak Off-State Current (At  $V_{DRM}$ ),  $I_{DRM}$  ..... 15mA

Repetitive Peak Reverse Current (At  $V_{RRM}$ ),  $I_{RRM}$  ..... 15mA

Maximum Gate Current Required to Trigger,  $I_{GT}$

(6V Anode-to-Cathode Applied,  $T_J = +25^\circ\text{C}$ ) ..... 120mA

Maximum Gate Voltage Required to Trigger,  $V_{GT}$

(6V Anode-to-Cathode Applied,  $T_J = +25^\circ\text{C}$ ) ..... 2.5V

Maximum Holding (Anode Supply 12V Resistive Load,  $T_J = +25^\circ\text{C}$ ),  $I_H$  ..... 150mA

Maximum Gate Voltage which will not Trigger any Device,  $V_{GD}$  ..... 0.25V

**Electrical Characteristics (Cont'd):** (Maximum values @  $T_J = +125^\circ\text{C}$  unless otherwise specified)

Operating Temperature Range,  $T_J$  .....  $-40^\circ$  to  $+125^\circ\text{C}$

Storage Temperature Range,  $T_{\text{stg}}$  .....  $-40^\circ$  to  $+150^\circ\text{C}$

Thermal Resistance, Junction-to-Case (DC Operation),  $R_{\text{thJC}}$  .....  $0.3^\circ\text{C/W}$

Thermal Resistance, Case-to-Heat Sink,  $R_{\text{thC-HS}}$   
 (Mounting Surface Smooth, Flat, and Greased) .....  $0.1^\circ\text{C/W}$

