



ELECTRONICS, INC.

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NTE5567, NTE5568, NTE5569, & NTE5571 Silicon Controlled Rectifier (SCR) for Phase Control Applications

Features:

- High Current Rating
- Excellent Dynamic Characteristics
- Superior Surge Capabilities
- Standard Package

Voltage Ratings and Electrical Characteristics: ($T_J = +125^\circ\text{C}$ unless otherwise specified)

Maximum Repetitive Peak Forward and Reverse Voltage (Note 1), V_{DRM} , V_{RRM}	
NTE5567	200V
NTE5568	600V
NTE5569	1200V
NTE5571	1600V
Maximum Non-Repetitive Peak Voltage (Note 2), V_{RSM}	
NTE5567	300V
NTE5568	700V
NTE5569	1300V
NTE5571	1700V
Maximum Peak Reverse and Off-State Current, I_{DRM} , I_{RRM}	15mA
Maximum Average On-State Current (180° Sinusoidal Conduction), $I_{T(RMS)}$	
NTE5567, NTE5568, NTE5569 ($T_C = +94^\circ\text{C}$)	50A
NTE5571 ($T_C = +90^\circ\text{C}$)	50A
Maximum RMS On-State Current, $I_{T(RMS)}$	80A
Maximum Peak One-Cycle Non-Repetitive Surge Current (t = 10ms, Sinusoidal Half Wave), I_{TSM}	
(No Voltage Reapplied)	
NTE5567, NTE5568, NTE5569	1430A
NTE5571	1200A
(100% V_{RRM} Reapplied)	
NTE5567, NTE5568, NTE5569	1200A
NTE5571	1010A
Maximum I^2t for Fusing (t = 10ms, Sinusoidal Half Wave), I^2t	
(No Voltage Reapplied)	
NTE5567, NTE5568, NTE5569	10.18KA ² s
NTE5571	7.21KA ² s
(100% V_{RRM} Reapplied)	
NTE5567, NTE5568, NTE5569	7.20KA ² s
NTE5571	5.10KA ² s

Voltage Ratings and Electrical Characteristics (Cont'd): ($T_J = +125^\circ\text{C}$ unless otherwise specified)

Maximum $I^2\sqrt{t}$ for Fusing ($t = 0.1$ to 10ms , No Voltage Reapplied), $I^2\sqrt{t}$	
NTE5567, NTE5568, NTE5569	101.8KA ² √s
NTE5571	72.1KA ² √s
Low Level Value of Threshold Voltage ($16.7\% \times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)}$), $V_{T(TO)1}$	
NTE5567, NTE5568, NTE5569	0.94V
NTE5571	1.02V
High Level Value of Threshold Voltage ($\pi \times I_{T(AV)} < I < 20 \times \pi \times I_{T(AV)}$), $V_{T(TO)2}$	
NTE5567, NTE5568, NTE5569	1.08V
NTE5571	1.17V
Low Level Value of On–State Slope Resistance ($16.7\% \times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)}$), r_{t1}	
NTE5567, NTE5568, NTE5569	4.08mΩ
NTE5571	4.78mΩ
High Level Value of On–State Slope Resistance ($\pi \times I_{T(AV)} < I < 20 \times \pi \times I_{T(AV)}$), $V_{T(TO)2}$	
NTE5567, NTE5568, NTE5569	3.34mΩ
NTE5571	3.97mΩ
Maximum On–State Voltage ($I_{pk} = 157\text{A}$, $T_J = +25^\circ\text{C}$), V_{TM}	
NTE5567, NTE5568, NTE5569	1.60V
NTE5571	1.78V
Maximum Holding Current ($T_J = +25^\circ\text{C}$, Anode Supply 22V, Resistive Load, Initial $I_T = 2\text{A}$), I_H	200mA
Latching Current (Anode Supply 6V, Resistive Load), I_L	400mA
Maximum Rate of Rise of Turned–On Current, di/dt	
($V_{DM} = \text{Rated } V_{DRM}$, Gate Pulse = 20V, 15Ω, $t_p = 6\mu\text{s}$, $t_r = 0.1\mu\text{s}$ ax., $I_{TM} = (2 \times \text{Rated } di/dt) \text{ A}$)	
NTE5567, NTE5568	200A/μs
NTE5569, NTE5571	100A/μs
Typical Delay Time, t_d	0.9μs
($T_C = +25^\circ\text{C}$, $V_{DM} = \text{Rated } V_{DRM}$, DC Resistive Circuit, Gate Pulse = 10V, 15Ω Source, $t_p = 20\mu\text{s}$)	
Typical Turn–Off Time, t_q	110μs
($T_C = +125^\circ\text{C}$, $I_{TM} = 50\text{A}$, Reapplied $dv/dt = 20\text{V}/\mu\text{s}$, $dir/dt = -10\text{A}/\mu\text{s}$, $V_R = 50\text{V}$)	
Maximum Critical Rate of Rise of Off–State Voltage, dv/dt	
(Linear to 100% rated V_{DRM})	200V/μs
(Linear to 67% rated V_{DRM})	500V/μs
Maximum Peak Gate Power ($t_p \leq 5\text{ms}$), $P_{G(AV)}$	10W
Maximum Average Gate Power, P_{GM}	2.5W
Maximum Peak Positive Gate Current, I_{GM}	2.5A
Maximum Peak Positive Gate Voltage, $+V_{GM}$	20V
Maximum Peak Negative Gate Voltage, $-V_{GM}$	10V
DC Gate Current Required to Trigger (6V Anode–to–Cathode Applied), I_{GT}	50mA
DC Gate Voltage Required to Trigger (6V Anode–to–Cathode Applied, $T_J = +25^\circ\text{C}$), V_{GT}	2.5V
DC Gate Current Not to Trigger (Rated V_{DRM} Anode–to–Cathode Applied), I_{GD}	5.0mA
DC Gate Voltage Not to Trigger (Rated V_{DRM} Anode–to–Cathode Applied), V_{GD}	0.2V
Operating Junction Temperature Range, T_J	-40° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+125^\circ\text{C}$
Thermal Resistance	
Junction–to–Case (DC Operation), R_{thJC}	0.35K/W
Case–to–Heatsink (Mounting Surface Smooth, Flat, and Greased), R_{thCS}	0.25K/W
Mounting Torque (Non–Lubricated Threads), T	25 – 30 (2.8 – 3.4) lbf–in (Nm)

Note 1. Units may be broken over non–repetitively in the off–state direction without damage, if di/dt does not exceed 20A/μs.

Note 2. For voltage pulses with $t_p \leq 5\text{ms}$.

