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## NTE5598 & NTE5599 Silicon Controlled Rectifier (SCR) 1800 Amp RMS, 2.9” Dia. Hockey Puck

**Features:**

- Low On-State Voltage
- High di/dt Capability
- High dv/dt Capability
- Excellent Surge and I<sup>2</sup>t Ratings

**Applications:**

- Power Supplies
- Motor Control

**Absolute Maximum Ratings:**

Repetitive Peak Voltages, $V_{RRM}$ , $V_{DRM}$	
NTE5598 .....	600V
NTE5599 .....	1200V
Non-Repetitive Peak Reverse Blocking Voltage, $V_{RSM}$	
NTE5598 .....	700V
NTE5599 .....	1300V
Average On-State Current (180° Sine Wave), $I_{T(AV)}$	
$T_C = +55^\circ C$ .....	1780A
$T_C = +85^\circ C$ .....	1200A
RMS On-State Current, $I_{T(RMS)}$	
$T_C = +55^\circ C$ .....	2790A
$T_C = +85^\circ C$ .....	1880A
Peak One-Cycle Surge On-State Current (Non-Repetitive), $I_{TSM}$	
60Hz .....	27000A
50Hz .....	24650A
Rate of Rise of On-State Current, di/dt	
Repetitive .....	150A/ $\mu s$
Non-Repetitive .....	300A/ $\mu s$
I <sup>2</sup> t for Fusing for One Cycle (60Hz), I <sup>2</sup> t	3040000A <sup>2</sup> s
Peak Gate Power Dissipation, $P_{GM}$	16W
Average Gate Power Dissipation, $P_{G(av)}$	3W
Operating Temperature Range, $T_J$	-40° to +125°C
Storage Temperature Range, $T_{stg}$	-40° to +150°C
Mounting Force	5000 to 5500 lb. (2270 to 2500 kg.)
Maximum Thermal Resistance ( $T_J = +25^\circ C$ , Double Sided Cooling)	
Junction-to-Case, $R_{th(jc)}$ .....	0.023°C/W
Case-to-Sink, $R_{th(cs)}$ .....	0.0075°C/W

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

Max. Repetitive Peak Reverse Leakage Current ( $T_J = +125^\circ\text{C}$ , $V_R = V_{RRM}$ ), $I_{RRM}$ .....	75mA
Max. Repetitive Peak Forward Leakage Current ( $T_J = +125^\circ\text{C}$ , $V_D = V_{DRM}$ ), $I_{DRM}$ .....	75mA
Max. Peak On-State Voltage ( $I_{TM} = 1500\text{A Peak}$ , Duty Cycle $< 0.1\%$ ), $V_{TM}$ .....	1.35V
Max. Threshold Voltage, Low Level ( $T_J = +125^\circ\text{C}$ , $I = 15\%$ , $I_{T(av)}$ to $\pi I_{T(av)}$ ), $V_{(TO)1}$ .....	0.60559V
Max. Slope Resistance, Low Level ( $T_J = +125^\circ\text{C}$ , $I = 15\%$ , $I_{T(av)}$ to $\pi I_{T(av)}$ ), $r_{T1}$ .....	0.2681m $\Omega$
Max. Threshold Voltage, High Level ( $T_J = +125^\circ\text{C}$ , $I = \pi I_{T(av)}$ to $I_{TSM}$ ), $V_{(TO)2}$ .....	0.64284V
Max. Slope Resistance, High Level ( $T_J = +125^\circ\text{C}$ , $I = \pi I_{T(av)}$ to $I_{TSM}$ ), $r_{T2}$ .....	0.1906m $\Omega$
Max. $V_{TM}$ Coefficients, Low Level ( $T_J = +125^\circ\text{C}$ , $I = 15\%$ , $I_{T(av)}$ to $\pi I_{T(av)}$ )	
$A_1$ .....	-0.55126
$B_1$ .....	0.21303
$C_1$ .....	1.433E-04
$D_1$ .....	-0.003097
Max. $V_{TM}$ Coefficients, High Level ( $T_J = +125^\circ\text{C}$ , $I = \pi I_{T(av)}$ to $I_{TSM}$ )	
$A_1$ .....	-62.5287
$B_1$ .....	10.457
$C_1$ .....	0.001238
$D_1$ .....	-0.43650
Typical Turn-On Time ( $I_{TM} = 1000\text{A}$ , $V_D = 450\text{V}$ ), $t_{on}$ .....	3 $\mu\text{s}$
Typical Turn-Off Time, $t_q$	
( $T_J = +125^\circ\text{C}$ , $I_T = 250\text{A}$ , $di_R/dt = 50\text{A}/\mu\text{s}$ Reapplied, $dv/dt = 20\text{V}/\mu\text{s}$ Linear to 80% $V_{DRM}$ )	350 $\mu\text{s}$
Min. Critical $dv/dt$ - Exponential to $V_{DRN=M}$ ( $T_J = +125^\circ\text{C}$ ), $dv/dt$ .....	300V/ $\mu\text{s}$
Max. Gate Trigger Current ( $T_J = +25^\circ\text{C}$ , $V_D = 12\text{V}$ ), $I_{GT}$ .....	200mA
Max. Gate Trigger Voltage ( $T_J = +25^\circ\text{C}$ , $V_D = 12\text{V}$ ), $V_{GT}$ .....	3V
Max. Non-Triggering Gate Voltage ( $T_J = +125^\circ\text{C}$ , $V_D = V_{DRM}$ ), $V_{GDM}$ .....	0.15V
Peak Forward Gate Current, $I_{GTM}$ .....	4A
Peak Reverse Gate Voltage, $V_{GRM}$ .....	5V

