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## NTE5368 Silicon Controlled Rectifier (SCR) for High Speed Switching, 135 Amp, TO83

**Absolute Maximum Ratings:** ( $T_J = +125^\circ\text{C}$  unless otherwise specified)

Repetitive Peak Voltages, $V_{DRM}$ , $V_{RRM}$ .....	600V
Non-Repetitive Peak Reverse Blocking Voltage, $V_{RSM}$ .....	700V
Average On-State Current (180° Conduction, Half Sine Wave, $T_C = +85^\circ\text{C}$ ), $I_{T(AV)}$ .....	85A
RMS On-State Current (DC, $T_C = +77^\circ\text{C}$ ), $I_{T(RMS)}$ .....	135A
Continuous On-State Current, $I_T$ .....	175A
Peak One Half Cycle, Non-Repetitive Surge Current, $I_{TSM}$ (No Voltage Reapplied, Sinusoidal Half Wave)	
$t = 10\text{ms}$ .....	2450A
$t = 8.3\text{ms}$ .....	2560A
(100% $V_{RRM}$ Reapplied, Sinusoidal Half Wave)	
$t = 10\text{ms}$ .....	2060A
$t = 8.3\text{ms}$ .....	2160A
Maximum $I^2t$ for Fusing, $I^2t$ (No Voltage Reapplied, Sinusoidal Half Wave)	
$t = 10\text{ms}$ .....	30KA <sup>2</sup> s
$t = 8.3\text{ms}$ .....	27KA <sup>2</sup> s
(100% $V_{RRM}$ Reapplied, Sinusoidal Half Wave), $I^2t$	
$t = 10\text{ms}$ .....	21KA <sup>2</sup> s
$t = 8.3\text{ms}$ .....	19KA <sup>2</sup> s
Maximum $I^2\sqrt{t}$ for Fusing ( $t = 0.1$ to $10\text{ms}$ , No Voltage Reapplied), $I^2\sqrt{t}$ .....	300KA <sup>2</sup> $\sqrt{s}$
Max. Peak Positive Gate Current ( $t_p \leq 5\text{ms}$ ), $I_{GM}$ .....	5A
Max. Peak Positive Gate Voltage ( $t_p \leq 5\text{ms}$ ), $+V_{GM}$ .....	20V
Max. Peak Negative Gate Voltage ( $t_p \leq 5\text{ms}$ ), $-V_{GM}$ .....	5V
Average Gate Power ( $f = 50\text{Hz}$ , $d\% = 50$ ), $P_{G(AV)}$ .....	5W
Max. Peak Gate Power ( $f = 50\text{Hz}$ , $d\% = 50$ ), $P_{GM}$ .....	40W
Max. Critical Rate of Rise of Off-State Voltage (To 80% $V_{DRM}$ ), $dv/dt$ .....	500V/ $\mu\text{s}$
Max. Non-Repetitive Rate of Rise of Turned On Current, $di/dt$ ( $V_{DRM} = 600\text{V}$ , $I_{TM} = 2 \times di/dt$ ) .....	1000A/ $\mu\text{s}$
Operating Temperature Range, $T_{hs}$ .....	-40° to +125°C
Storage Temperature Range, $T_{stg}$ .....	-40° to +150°C
Thermal Resistance, Junction-to-Case, $R_{thJC}$ (DC Operation) .....	0.195K/W
Thermal Resistance, Case-to-Heatsink, $R_{thCS}$ (Mounting surface, smooth, flat and greased) .....	0.08K/W

**Absolute Maximum Ratings (Cont'd):** ( $T_J = +125^\circ\text{C}$  unless otherwise specified)

Max. Peak On-State Voltage ( $I_{TM} = 300\text{A}$ , $t_p = 10\text{ms}$ Sine Wave Pulse), $V_{TM}$ .....	2.15V
Low Level Threshold Voltage ( $[16.7\% \times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)}]$ ), $V_{T(TO)1}$ .....	1.46V
High Level Threshold Voltage ( $[I > \pi \times I_{T(AV)}]$ ), $V_{T(TO)2}$ .....	1.52V
Low level Forward Slope Resistance ( $[16.7\% \times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)}]$ ), $r_{t1}$ .....	2.32m $\Omega$
High level Forward Slope Resistance ( $[I > \pi \times I_{T(AV)}]$ ), $r_{t2}$ .....	2.34m $\Omega$
Repetitive Peak Off-State Current (Rated $V_{DRM}$ Applied), $I_{DRM}$ .....	30mA
Repetitive Peak Reverse Current (Rated $V_{RRM}$ Applied), $I_{RRM}$ .....	30mA
Max. Gate Current ( $V_A = 12\text{V}$ , $R_a = 6\Omega$ , $T_J = +25^\circ\text{C}$ ), $I_{GT}$ .....	200mA
Max. Gate Voltage ( $V_A = 12\text{V}$ , $R_a = 6\Omega$ , $T_J = +25^\circ\text{C}$ ), $V_{GT}$ .....	3V
Max. Holding Current ( $I_T > 30\text{A}$ , $T_J = +25^\circ\text{C}$ ), $I_H$ .....	600mA
Typical Latching Current ( $T_J = +25^\circ\text{C}$ , $V_A = 12\text{V}$ , $R_a = 6\Omega$ , $I_G = 1\text{A}$ ), $I_L$ .....	1000mA
Max. DC Gate Current Not to Trigger (Rated $V_{DRM}$ Applied), $I_{GD}$ .....	20mA
Max. DC Gate Voltage Not to Trigger (Rated $V_{DRM}$ Applied), $V_{GD}$ .....	0.25V
Typical Delay Time, $t_d$ ( $T_J = +25^\circ\text{C}$ , $V_{DM} = 600\text{V}$ , $I_{TM} = 50\text{A}$ DC, $t_p = 1\mu\text{s}$ , Resistive Load, Gate Pulse: 10V, 5 $\Omega$ Source) .....	0.80 $\mu\text{s}$
Max. Turn-Off Time ( $I_{TM} = 100\text{A}$ , Commutating $di/dt = 10\text{A}/\mu\text{s}$ , $V_R = 50\text{V}$ , $t_p = 200\mu\text{s}$ ), $t_q$ ...	10–20 $\mu\text{s}$

