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NTE5586 Silicon Controlled Rectifier (SCR) 600V, 360 Amps, TO93

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, $T_C = +85^\circ\text{C}$), $I_{T(AV)}$	230A
RMS On-State Current ($T_C = +78^\circ\text{C}$), $I_{T(RMS)}$	360A
Peak Gate Power ($t_p \leq 5\text{ms}$), P_{GM}	10W
Average Gate Power ($f = 50\text{Hz}$, $d\% = 50$), $P_{G(AV)}$	2W
Peak Positive Gate Current ($t_p \leq 5\text{ms}$), I_{GM}	3A
Peak Gate Voltage ($t_p \leq 5\text{ms}$), V_{GM}	
Positive	20V
Negative	5V
Critical Rate of Rise of Off-State Voltage (To 80% V_{DRM}), dv/dt	500V/ μs
Repetitive Peak Off-State Current (At V_{DRM}), I_{DRM}	30mA
Repetitive Peak Reverse Current (At V_{RRM}), I_{RRM}	30mA
On-State Voltage ($I_{pk} = 720\text{A}$, $t_p = 10\text{ms}$ Sine Pulse), V_{TM}	1.55V
Holding Current ($T_J = +25^\circ\text{C}$, Anode Supply 12V Resistive Load), I_H	600mA
Operating Temperature Range, T_J	-40° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case (DC Operation), R_{thJC}	0.10 $^\circ\text{C/W}$
Thermal Resistance, Case-to-Heat Sink, R_{thCS}	
Mounting Surface Smooth, Flat and Greased	0.04 $^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions			Min	Typ	Max	Unit
Peak, One-Cycle, Non-Repetitive Surge Current	I_{TSM}	$t = 10\text{ms}$	No Voltage Reapplied	Sinusoidal Half Wave, Initial	-	-	5700	A
		$t = 8.3\text{ms}$			-	-	5970	A
		$t = 10\text{ms}$	100% V_{RRM} Applied		-	-	4800	A
		$t = 8.3\text{ms}$			-	-	5000	A
I^2t for Fusing	I^2t	$t = 10\text{ms}$	No Voltage Reapplied	Sinusoidal Half Wave, Initial	-	-	163	KA ² s
		$t = 8.3\text{ms}$			-	-	148	KA ² s
		$t = 10\text{ms}$	100% V_{RRM} Applied		-	-	115	KA ² s
		$t = 8.3\text{ms}$			-	-	105	KA ² s
$I^2\sqrt{t}$ for Fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10ms , No Voltage Reapplied			-	-	1630	KA ² $\sqrt{\text{s}}$
Threshold Voltage, Low Level	$V_{T(TO)1}$	$(16.7\% \times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)})$			-	0.92	-	V
Threshold Voltage, High Level	$V_{T(TO)2}$	$(I > \pi \times I_{T(AV)})$			-	0.98	-	V
On-State Slope Resistance, Low Level	r_{t1}	$(16.7\% \times \pi \times I_{T(AV)} < I < \pi \times I_{T(AV)})$			-	0.88	-	m Ω
On-State Slope Resistance, High Level	r_{t2}	$(I > \pi \times I_{T(AV)})$			-	0.81	-	m Ω

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Latching Current	I_L	$T_J = +25^\circ\text{C}$, Anode Supply 12V Resistive Load	-	300	1000	mA	
Non-Repetitive Rate of Rise of Turned-On Current	di/dt	Gate Drive 20V, 20Ω , $t_r \leq 1\mu\text{s}$, Anode Voltage $\leq 80\% V_{\text{DRM}}$	-	-	1000	A/ μs	
Delay Time	t_d	Gate Current 1A, $di_g/dt = 1\text{A}/\mu\text{s}$, $V_d = 0.67\% V_{\text{DRM}}$	-	1.0	-	μs	
Turn-Off Time	t_q	$I_{\text{TM}} = 300\text{A}$, $di/dt = 20\text{A}/\mu\text{s}$, $V_R = 50\text{V}$, $dv/dt = 20\text{V}/\mu\text{s}$, Gate 0V 100Ω $t_p = 500\mu\text{s}$	-	100	-	μs	
DC Gate Current Required to Trigger	I_{GT}	$T_J = -40^\circ\text{C}$	Maximum required gate trigger current/voltage is the lowest value which will trigger the unit, 12V anode-to-cathode applied.	-	180	-	mA
		$T_J = +25^\circ\text{C}$		-	90	150	mA
		$T_J = +125^\circ\text{C}$		-	40	-	mA
DC Gate Voltage Required to Trigger	V_{GT}	$T_J = -40^\circ\text{C}$		-	2.9	-	V
		$T_J = +25^\circ\text{C}$		-	1.8	3.0	V
		$T_J = +125^\circ\text{C}$		-	1.2	-	V
DC Gate Current not to Trigger	I_{GD}	Maximum gate current/voltage not to trigger is the maximum value which will not trigger the unit with rated V_{DRM} anode-to-cathode applied.	-	10	-	mA	
DC Gate Voltage not to Trigger	V_{GD}		-	0.25	-	V	

