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NTE5369 Silicon Controlled Rectifier (SCR) for High Speed Switching, 125 Amp, TO83

Absolute Maximum Ratings:

Repetitive Peak Off-State Voltage (Note 1), V_{DRM}	1200V
Non-Repetitive Peak Off-State Voltage (Note 1), V_{DSM}	1200V
Repetitive Peak Reverse Voltage (Note 1), V_{RRM}	1200V
Non-Repetitive Peak Reverse Voltage (Note 1), V_{RSM}	1300V
Peak Forward Leakage Current, I_{DRM}	15mA
Peak Reverse Leakage Current, I_{RRM}	15mA
Maximum Average On-State Current (Note 2), $I_{T(AV)}$	
$T_C = +55^\circ C$	128A
$T_C = +85^\circ C$	83A
Nominal RMS On-State Current ($T_C = +25^\circ C$, Note 2), $I_{T(RMS)}$	260A
DC On-State Current ($T_C = +25^\circ C$), $I_{T(DC)}$	206A
Peak Non-Repetitive Surge Current ($t_p = 10ms$, Note 3), I_{TSM}	
$V_{RM} = 0.6V_{RRM}$	1700A
$V_{RM} \leq 10V$	1950A
I^2t Capacity for Fusing ($t_p = 10ms$, Note 3), I^2t	
$V_{RM} = 0.6V_{RRM}$	19000A ² s
$V_{RM} \leq 10V$	13700A ² s
Critical Rate of Rise of On-State Current (Note 4), $(di/dt)_{cr}$	
Repetitive	500A/ μ s
Non-Repetitive	1000A/ μ s
Peak Reverse Gate Voltage, V_{RGM}	5V
Mean Forward Gate Power, $P_{G(AV)}$	1.5W
Peak Forward Gate Power, P_{GM}	30W
Operating Temperature Range, T_J	-40° to +125°C
Storage Temperature Range, T_{stg}	-40° to +150°C
Thermal Resistance, Junction-to-Case, R_{thJC}	0.23K/W
Thermal Resistance, Case-to-Sink, R_{thCS}	0.08K/W

Note 1. De-rating factor of 0.13% per °C is applicable for T_J below +25°C.

Note 2. Single phase; 50Hz, 180° half-sinewave.

Note 3. Half-sinewave, +125°C T_J initial.

Note 4. $V_D = 67\% V_{DRM}$, $I_{FG} = 2A$, $t_r \leq 0.5\mu s$, $T_C = +125^\circ C$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Peak On-State Voltage	V_{TM}	$I_{TM} = 280\text{A}$	-	-	2.3	V
		$I_{TM} = 384\text{A}$	-	-	2.6	V
Threshold Voltage	V_{TO}		-	-	1.6	V
Slope Resistance	r_T		-	-	2.49	V
Critical Rate of Rise of Off-State Voltage	$(dv/dt)_{cr}$	$V_D = 80\% V_{DRM}$, Linear Ramp, Gate O/C	200	-	-	V/ μs
Peak Off-State Current	I_{DRM}	Rated V_{DRM}	-	-	20	mA
Peak Reverse Current	I_{RRM}	Rated V_{RRM}	-	-	20	mA
Gate Trigger Voltage	V_{GT}	Rated V_{DRM} , $V_D = 10\text{V}$, $I_T = 3\text{A}$, $T_J = +25^{\circ}\text{C}$	-	-	3.0	V
Gate Trigger Current	I_{GT}		-	-	200	mA
Gate Non-Trigger Voltage	V_{GD}		-	-	0.25	V
Holding Current	I_H	$T_J = +25^{\circ}\text{C}$	-	-	600	mA
Gate Controlled Turn-On Delay Time	t_{gd}	$V_D = 67\% V_{DRM}$, $I_{TM} = 500\text{A}$, $di/dt = 10\text{A}/\mu\text{s}$, $I_{FG} = 2\text{A}$, $t_r = 0.5\mu\text{s}$, $T = +25^{\circ}\text{C}$	-	0.4	1.0	μs
Turn-On Time	t_{gt}		-	0.8	2.0	μs
Recovered Charge	Q_{rr}	$I_{TM} = 100\text{A}$, $t_p = 500\mu\text{s}$, $di/dt = 10\text{A}/\mu\text{s}$, $V_R = 50\text{V}$	-	50	-	μC
Recovered Charge, 50% Chord	Q_{ra}		-	25	45	μC
Reverse recovery Current	I_{rm}		-	15	-	A
Reverse Recovery Time	t_{rr}		-	3.0	-	μs
Turn-Off Time	t_q	$I_{TM} = 100\text{A}$, $t_p = 500\mu\text{s}$, $V_R = 50\text{V}$, $di/dt = 10\text{A}/\mu\text{s}$, $V_{DR} = 80\% V_{DRM}$, $dV_r/dt = 20\text{V}/\mu\text{s}$	10	-	15	μs
		$I_{TM} = 100\text{A}$, $t_p = 500\mu\text{s}$, $V_R = 50\text{V}$, $di/dt = 10\text{A}/\mu\text{s}$, $V_{DR} = 80\% V_{DRM}$, $dV_r/dt = 200\text{V}/\mu\text{s}$	20	-	25	μs

