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## NTE5351 Silicon Controlled Rectifier (SCR) for High Speed Switching

**Features:**

- Fast Turn-Off Time
- High di/dt and dv/dt Capabilities
- Shorted-Emitter Gate-Cathode Construction
- Center Gate Construction

Non-Repetitive Peak Reverse Voltage (Gate Open, Note 1), $V_{RSOM}$ .....	700V
Non-Repetitive Peak Off-State Voltage (Gate Open, Note 1), $V_{DSOM}$ .....	700V
Repetitive Peak Reverse Voltage (Gate Open, Note 1), $V_{RROM}$ .....	600V
Repetitive Peak Off-State Voltage (Gate Open, Note 1), $V_{DROM}$ .....	600V
RMS On-State Current ( $T_C = +60^\circ\text{C}$ , $180^\circ$ conduction angle), $I_{T(RMS)}$ .....	5.0A
Average On-State Current ( $T_C = +60^\circ\text{C}$ , $180^\circ$ conduction angle), $I_{T(AV)}$ .....	3.2A
Peak Surge (Non-Repetitive) On-State Current, $I_{TSM}$ ( $T_C = +60^\circ\text{C}$ , for one full cycle at applied voltage)	
60Hz (Sinusoidal) .....	80A
50Hz (Sinusoidal) .....	65A
Rate of Change of On-State Current ( $V_D = 600\text{V}$ , $I_{GT} = 50\text{mA}$ , $t = 1$ to $8.3\text{ms}$ ), $di/dt$ .....	200A/ $\mu\text{s}$
Fusing Current ( $T_J = -40^\circ$ to $+100^\circ\text{C}$ , $t = 1$ to $8.3\text{ms}$ ), $I^2t$ .....	25A
Peak Forward Gate Power Dissipation ( $10\mu\text{s}$ Max, Note 2), $P_{GM}$ .....	3W
Peak Reverse Gate Power Dissipation ( $10\mu\text{s}$ Max, Note 2), $P_{RGM}$ .....	3W
Average Gate Power Dissipation ( $10\mu\text{s}$ Max, Note 2), $P_{G(AV)}$ .....	0.5W
Operating Case Temperature Range, $T_C$ .....	$-40^\circ$ to $+100^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	$8^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	$40^\circ\text{C/W}$
Lead Temperature (During Soldering, $1/32''$ from seating plane, 10sec max), $T_L$ .....	$+225^\circ\text{C}$

Note 1. These values do not apply if there is a positive gate signal. Gate must be negatively biased.

Note 2. Any product of gate current and gate voltage which results in a gate power less than the maximum is permitted.

**Electrical Characteristics:** (At "Maximum Ratings" and  $T_C = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Off-State Forward Current	$I_{DOM}$	$V_D = 600\text{V}$ , $T_C = +100^\circ\text{C}$ , Gate Open	–	0.5	3.0	mA
Peak Off-State Reverse Current	$I_{ROM}$	$V_D = 600\text{V}$ , $T_C = +100^\circ\text{C}$ , Gate Open	–	0.3	1.5	mA
Instantaneous On-State Voltage	$V_T$	$i_T = 30\text{A Peak}$	–	2.2	3.0	V
Instantaneous Holding Current	$i_{HO}$	Gate Open	–	20	50	mA
Critical Rate of Rise of Off-State Current	$dv/dt$	$V_D = 600\text{V}$ , exponential voltage rise, $T_C = +80^\circ\text{C}$ , Gate Open	100	250	–	V/ $\mu\text{s}$
DC Gate Trigger Current	$I_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	–	15	40	mA
DC Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	–	1.8	3.5	V
Gate Controlled Turn-On Time	$t_{gt}$	$V_{DX} = 600\text{V}$ , $I_{GT} = 300\text{mA}$ , $t_r = 0.1\mu\text{s}$ , $I_T = 2\text{A peak}$	–	0.7	–	$\mu\text{s}$
Circuit Commutated Turn-Off Time	$t_q$	$V_{CX} = 600\text{V}$ , $i_T = 2\text{A}$ , pulse duration = $50\mu\text{s}$ , $dv/dt = 100\text{V}/\mu\text{s}$ , $-di/dt = -10\text{A}/\mu\text{s}$ , $I_{GT} = 100\text{mA}$ , $V_{GT} = 0\text{V}$ (at turn-off), $T_C = +80^\circ\text{C}$	–	4	6	$\mu\text{s}$

