

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° conduction angle), $I_{T(RMS)}$	5.0A
Average On-State Current ($T_C = +60^\circ\text{C}$, 180° 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 8.3ms), di/dt	200A/ μs
Fusing Current ($T_J = -40^\circ$ to $+100^\circ\text{C}$, $t = 1$ to 8.3ms), 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° to $+100^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	8°C/W
Thermal Resistance, Junction-to-Ambient, R_{thJA}	40°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/ μs
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	–	μs
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	μs

