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## NTE54000 thru NTE54004 Silicon Controlled Rectifier (SCR) 55 Amp, TO220

**Description:**

The NTE54000 thru NTE54004 are half-wave, unidirectional, gate-controlled silicon controlled rectifiers (SCR) packaged in a TO220 type case featuring glass-passivated junctions to ensure long-term reliability and perimeter stability.

**Features:**

- High Voltage Capability
- High Surge Capability
- Glass-Passivated Chip

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$ , 60Hz with a resistive load unless otherwise specified)

Repetitive Peak Off-State Voltage, $V_{DRM}$	
NTE54000 .....	200V
NTE54001 .....	400V
NTE54002 .....	600V
NTE54003 .....	800V
NTE54004 .....	1000V
Repetitive Peak Reverse Voltage, $V_{RRM}$	
NTE54000 .....	200V
NTE54001 .....	400V
NTE54002 .....	600V
NTE54003 .....	800V
NTE54004 .....	1000V
RMS On-State Current, $I_{T(RMS)}$ .....	
55A	
On-State Current, $I_{T(AV)}$ .....	
35A	
Peak Surge (Non-Repetitive) On-State Current (More than One Full Cycle), $I_{TSM}$	
50Hz .....	550A
60Hz .....	650A
Peak Gate Current (10 $\mu$ s Max), $I_{GM}$ .....	
4A	
Peak Gate-Power Dissipation (10 $\mu$ s Max), $P_{GM}$ .....	
40W	
Average Gate Power Dissipation, $P_{G(AV)}$ .....	
800mW	
Peak On-State Voltage (at Max. Rated RMS Current, $T_C = +25^\circ\text{C}$ ), $V_{TM}$ .....	
1.8V	
RMS Surge (Non-Repetitive) On-State Current for Fusing (8.3ms), $I^2t$ .....	
1750A <sup>2</sup> sec	
Lead Temperature (During soldering, 1/16" from case, 10sec max), $T_L$ .....	
+230°C	
Operating Temperature Range, $T_{oper}$ .....	
-40° to +125°C	
Storage Temperature Range, $T_{stg}$ .....	
-40° to +150°C	
Typical Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	
0.5°C/W	

**Electrical Characteristics:**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Off-State Current NTE54000, NTE54001, NTE54002	$I_{DRM}$ , $I_{RRM}$	$V_{DRM}$ & $V_{RRM}$ = Max Rating, $T_C = +100^\circ\text{C}$	-	-	1.0	mA
NTE54003			-	-	1.5	mA
NTE54004			-	-	5.0	mA
DC Holding Current	$I_H$	Initial On-State Current = 400mA, Gate Open	-	-	60	mA
DC Gate Trigger Current	$I_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	5	-	40	mA
DC Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$ , $T_C = +25^\circ\text{C}$ , Note 1	-	-	1.5	V
Gate Controlled Turn-On Time	$t_{gt}$	$I_{GT} = 150\text{mA}$ , Min. Width = $15\mu\text{s}$ , Rise Time $\leq 0.1\mu\text{s}$	-	-	2.5	$\mu\text{s}$
Circuit Commutated Turn-Off Time	$t_q$	$I_T = 2\text{A}$ , $I_{GT} = 200\text{mA}$ at Turn-On, Pulse Duration = $50\mu\text{s}$ , $dv/dt = 20\text{V}/\mu\text{s}$ , $di/dt = -30\text{A}/\mu\text{s}$	-	-	35	$\mu\text{s}$
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$T_C = +100^\circ\text{C}$	500	-	-	$\text{V}/\mu\text{s}$
Max Rate of Rise of On-State Current	$di/dt$	$I_{GT} = 150\text{mA}$ , Rise Time $\leq 0.1\mu\text{s}$	-	-	175	$\text{A}/\mu\text{s}$

Note 1. Minimum non-trigger  $V_{GT}$  at  $+125^\circ\text{C}$  is 0.2V.

