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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, $I_{\text{T(RMS)}}$ 55A

On-State Current, $I_{\text{T(AV)}}$ 35A

Peak Surge (Non-Repetitive) On-State Current (More than One Full Cycle), I_{TSM}

50Hz	550A
60Hz	650A

Peak Gate Current (10 μs Max), I_{GM} 4A

Peak Gate-Power Dissipation (10 μs Max), P_{GM} 40W

Average Gate Power Dissipation, $P_{\text{G(AV)}}$ 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 1750A²sec

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	μs
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	μs
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.

