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## NTE5440 Silicon Controlled Rectifier (SCR) 800V, 12A, TO220 Isolated Tab

### Applications:

- Motor Control
- Overvoltage Crowbar Protection
- Capacitive Discharge Ignition
- Voltage Regulation
- Welding Equipment
- Capacitive Filter Soft-Start (Inrush Current Control)

### Absolute Maximum Ratings:

Repetitive Peak Voltages, $V_{DRM}$ , $V_{RRM}$ .....	800V
RMS On-State Current (Full Sine Wave, $T_C = +95^\circ\text{C}$ ), $I_{T(RMS)}$ .....	12A
Average On-State Current ( $T_C = +95^\circ\text{C}$ ), $I_{T(AV)}$ .....	10A
Non-Repetitive Surge Peak On-State Current (Full Cycle, $T_J$ Initial = $+25^\circ\text{C}$ ), $I_{TSM}$	
F = 50Hz .....	100A
F = 60Hz .....	120A
$I^2t$ Value for Fusing ( $t_p = 10\text{ms}$ ), $I^2t$ .....	$60\text{A}^2\text{s}$
Critical Rate of Rise of On-State Current ( $I_G = 2 \times I_{GT}$ , $t_r < 100\text{ns}$ , $T_J = +125^\circ\text{C}$ ), $di/dt$ ...	$100\text{A}/\mu\text{s}$
Peak Gate Current ( $t_p = 20\mu\text{s}$ , $T_J = +125^\circ\text{C}$ ), $I_{GM}$ .....	4A
Average Gate Power Dissipation ( $T_J = +125^\circ\text{C}$ ), $P_{G(AV)}$ .....	1W
Maximum Peak Reverse Gate Voltage, $V_{RGM}$ .....	5V
Isolation Voltage, $V_{ISO}$ .....	$2500V_{rms}$
Operating Junction Temperature Range, $T_J$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	$2.1^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	$60^\circ\text{C}/\text{W}$

### Electrical Characteristics: ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate-Trigger Current	$I_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	-	-	25	mA
Gate-Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	-	-	1.5	V
Voltage that will not Trigger any Device	$V_{GD}$	$V_D = 800\text{V}$ , $R_L = 3.3\text{k}\Omega$ , $T_J = +125^\circ\text{C}$	200	-	-	mV
Holding Current	$I_H$	$I_T = 500\text{mA}$ , Gate Open	-	-	40	mA

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Latching Current	$I_L$	$I_G = 1.2 I_{GT}$	-	-	60	mA
Rate of Rise of Off-State Voltage that will not Trigger any Device	dv/dt	$V_D = 67\% V_{DRM}$ , $T_J = +125^\circ\text{C}$ , Gate Open	500	-	-	V/ $\mu\text{s}$
On-State Voltage	$V_{TM}$	$I_{TM} = 32\text{A}$ , $t_p = 380\mu\text{s}$ , $T_J = +25^\circ\text{C}$	-	-	1.6	V
Off-State Current	$I_{DRM}$	$V_{DRM} = 800\text{V}$ , $T_J = +25^\circ\text{C}$	-	-	5	$\mu\text{A}$
Reverse Current	$I_{RRM}$	$V_{DRM} = 800\text{V}$ , $T_J = +125^\circ\text{C}$	-	-	2	mA

