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## NTE5460 Silicon Controlled Rectifier (SCR)

**Description:**

The NTE5460 is designed primarily for half-wave AC control applications such as motor controls, heating controls, and power supply crowbar circuits.

**Features:**

- Glass Passivated Junction with Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged Construction for Low Thermal Resistance, High Heat Dissipation, and Durability
- 300A Surge Current Capability
- Insulated Package Simplifies Mounting

**Absolute Maximum Ratings:**

Repetitive Peak Off-State Voltage ( $T_J = -40^\circ$ to $+125^\circ\text{C}$ , Note 1), $V_{DRM}$ .....	800V
Repetitive Peak Reverse Voltage ( $T_J = -40^\circ$ to $+125^\circ\text{C}$ , Note 1), $V_{RRM}$ .....	800V
On-State RMS Current ( $T_C = +70^\circ\text{C}$ , Full Cycle Sine Wave 50 to 60Hz, Note 2), $I_{T(RMS)}$ .....	25A
Peak Non-Repetitive Surge Current, $I_{TSM}$ (One Full Cycle, 60Hz, $T_C = +70^\circ\text{C}$ , Preceded and Followed by Rated Current) ....	300A
Circuit Fusing ( $t = 8.3\text{ms}$ ), $I^2t$ .....	$375\text{A}^2\text{s}$
Peak Gate Power ( $T_C = +70^\circ\text{C}$ , Pulse Width = $10\mu\text{s}$ ), $P_{GM}$ .....	20W
Average Gate Power ( $T_C = +70^\circ\text{C}$ , $t = 8.3\text{ms}$ ), $P_{G(AV)}$ .....	0.5W
Peak Gate Current ( $T_C = +70^\circ\text{C}$ , Pulse Width = $10\mu\text{s}$ ), $I_{GM}$ .....	2A
RMS Isolation Voltage ( $T_A = +25^\circ\text{C}$ , Relative Humidity $\leq 20\%$ ), $V_{(ISO)}$ .....	1500V
Operating Junction Temperature, $T_J$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Maximum Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	$1.5^\circ\text{C/W}$
Typical Thermal Resistance, Case-to-Sink, $R_{thCS}$ .....	$2.2^\circ\text{C/W}$
Maximum Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	$60^\circ\text{C/W}$

Note 1. Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

Note 2. The case temperature reference point for all  $T_C$  measurements is a point on the center lead of the package as close as possible to the plastic body.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Forward Blocking Current	$I_{DRM}$	$V_{DRM} = 800\text{V}, T_J = +25^\circ\text{C}$	-	-	10	$\mu\text{A}$
		$V_{DRM} = 800\text{V}, T_J = +125^\circ\text{C}$	-	-	2	$\text{mA}$
Peak Reverse Blocking Current	$I_{RRM}$	$V_{RRM} = 800\text{V}, T_J = +125^\circ\text{C}$	-	-	2	$\text{mA}$
Forward "ON" Voltage	$V_{TM}$	$I_{TM} = 50\text{A}$ , Note 3	-	-	1.8	$\text{V}$
DC Gate Trigger Current	$I_{GT}$	Anode Voltage = 12V, $R_L = 100\Omega$	-	-	40	$\text{mA}$
DC Gate Trigger Voltage	$V_{GT}$	Anode Voltage = 12V, $R_L = 100\Omega$	-	0.8	1.5	$\text{V}$
Gate Non-Trigger Voltage	$V_{GD}$	Anode Voltage = 800V, $R_L = 100\Omega, T_J = +125^\circ\text{C}$	0.2	-	-	$\text{V}$
Holding Current	$I_H$	Anode Voltage = 12V	-	20	40	$\text{mA}$
Turn-On Time	$t_{gt}$	$I_{TM} = 25\text{A}, I_{GT} = 40\text{mA}$	-	1.5	-	$\mu\text{s}$
Turn-Off Time	$t_q$	$V_{DRM} = 800\text{V}, I_{TM} = 25\text{A}, I_R = 25\text{A}$	-	15	-	$\mu\text{s}$
		$V_{DRM} = 800\text{V}, I_{TM} = 25\text{A}, I_R = 25\text{A}, T_J = +125^\circ\text{C}$	-	35	-	$\mu\text{s}$
Critical Rate of Rise of Off-State Voltage	$dv/dt$	Gate Open, $V_{DRM} = 800\text{V}$ , Exponential Waveform	-	100	-	$\text{V}/\mu\text{s}$

Note 3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

