

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° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+125^\circ\text{C}$
Maximum Thermal Resistance, Junction-to-Case, R_{thJC}	1.5°C/W
Typical Thermal Resistance, Case-to-Sink, R_{thCS}	2.2°C/W
Maximum Thermal Resistance, Junction-to-Ambient, R_{thJA}	60°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	μA
		$V_{DRM} = 800\text{V}, T_J = +125^\circ\text{C}$	-	-	2	mA
Peak Reverse Blocking Current	I_{RRM}	$V_{RRM} = 800\text{V}, T_J = +125^\circ\text{C}$	-	-	2	mA
Forward "ON" Voltage	V_{TM}	$I_{TM} = 50\text{A}$, Note 3	-	-	1.8	V
DC Gate Trigger Current	I_{GT}	Anode Voltage = 12V, $R_L = 100\Omega$	-	-	40	mA
DC Gate Trigger Voltage	V_{GT}	Anode Voltage = 12V, $R_L = 100\Omega$	-	0.8	1.5	V
Gate Non-Trigger Voltage	V_{GD}	Anode Voltage = 800V, $R_L = 100\Omega, T_J = +125^\circ\text{C}$	0.2	-	-	V
Holding Current	I_H	Anode Voltage = 12V	-	20	40	mA
Turn-On Time	t_{gt}	$I_{TM} = 25\text{A}, I_{GT} = 40\text{mA}$	-	1.5	-	μs
Turn-Off Time	t_q	$V_{DRM} = 800\text{V}, I_{TM} = 25\text{A}, I_R = 25\text{A}$	-	15	-	μs
		$V_{DRM} = 800\text{V}, I_{TM} = 25\text{A}, I_R = 25\text{A}, T_J = +125^\circ\text{C}$	-	35	-	μs
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 $\leq 2\%$.

