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## NTE5480 thru NTE5487 Silicon Controlled Rectifier (SCR) 8 Amp, TO64

**Description:**

The NTE5480 through NTE5487 are multi-purpose PNP silicon controlled rectifiers in a TO64 type package suited for industrial and consumer applications. These 8 amp devices are available in voltages ranging from 25V to 600V.

**Features:**

- Uniform Low-Level Noise-Immune Gate Triggering:  $I_{GT} = 10\text{mA Typ @ } T_C = +25^\circ\text{C}$
- Low Forward "ON" Voltage:  $v_T = 1\text{V Typ @ } 5\text{A @ } +25^\circ\text{C}$
- High Surge-Current Capability:  $I_{TSM} = 100\text{A Peak}$
- Shorted Emitter Construction

**Absolute Maximum Ratings:** ( $T_J = -40^\circ$  to  $+100^\circ\text{C}$  unless otherwise specified)

Peak Repetitive Forward and Reverse Blocking Voltage (Note 1), $V_{DRM}$ or $V_{RRM}$	
NTE5480 .....	25V
NTE5481 .....	50V
NTE5482 .....	100V
NTE5483 .....	200V
NTE5484 .....	300V
NTE5485 .....	400V
NTE5486 .....	500V
NTE5487 (This device is discontinued) .....	600V
Forward Current RMS, $I_{T(RMS)}$ .....	8A
Peak Forward Surge Current (One Cycle, 60Hz, $T_J = -40^\circ$ to $+100^\circ\text{C}$ , $I_{TSM}$ .....	100A
Circuit Fusing ( $t \leq 8.3\text{ms}$ , $T_J = -40^\circ$ to $+100^\circ\text{C}$ ), $I^2t$ .....	40A <sup>2</sup> s
Peak Gate Power, $P_{GM}$ .....	5W
Average Gate Power, $P_{G(AV)}$ .....	0.5W
Peak Gate Current, $I_{GM}$ .....	2A
Peak Gate Voltage (Note 2), $V_{GM}$ .....	10V
Operating Temperature Range, $T_J$ .....	$-40^\circ$ to $+100^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Typical Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	1.5°C/W
Typical Thermal Resistance, Case-to-Ambient, $R_{thJA}$ .....	50°C/W

- Note 1. Ratings apply for zero or negative gate voltage. Devices should not be tested for blocking capability in a manner such that the voltage applied exceeds the rated blocking voltage.
- Note 2. Devices should not be operated with a positive bias applied to the gate concurrently with a negative potential applied to the anode.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Peak Forward or Reverse Blocking Current	$I_{DRM}$ , $I_{RRM}$	Rated $V_{DRM}$ or $V_{RRM}$ , Gate Open	$T_J = +25^\circ\text{C}$	-	-	10	$\mu\text{A}$
			$T_J = +100^\circ\text{C}$	-	-	2	$\text{mA}$
Gate Trigger Current (Continuous DC)	$I_{GT}$	$V_D = 7\text{V}$ , $R_L = 100\Omega$ , Note 3		-	10	30	$\text{mA}$
			$T_C = -40^\circ\text{C}$	-	-	60	$\text{mA}$
Gate Trigger Voltage (Continuous DC)	$V_{GT}$	$V_D = 7\text{V}$ , $R_L = 100\Omega$		-	0.75	1.5	$\text{V}$
			$T_C = -40^\circ\text{C}$	-	-	2.5	$\text{V}$
			$T_J = +100^\circ\text{C}$	0.2	-	-	$\text{V}$
Forward "ON" Voltage	$V_{TM}$	$I_{TM} = 15.7\text{A}$ , Note 4	-	1.4	2.0	$\text{V}$	
Holding Current	$I_H$	$V_D = 7\text{V}$ , Gate Open		-	10	30	$\text{mA}$
			$T_C = -40^\circ\text{C}$	-	-	60	$\text{mA}$
Turn-On Time ( $t_d + t_r$ )	$t_{on}$	$I_G = 20\text{mA}$ , $I_F = 5\text{A}$ , $V_D = \text{Rated } V_{DRM}$	-	1	-	$\mu\text{s}$	
Turn-Off Time	$t_{off}$	$I_F = 5\text{A}$ , $I_R = 5\text{A}$ , $dv/dt = 30\text{V}/\mu\text{s}$		-	15	-	$\mu\text{s}$
			$T_J = +100^\circ\text{C}$ , $V_D = \text{Rated } V_{DRM}$	-	25	-	$\mu\text{s}$
Forward Voltage Application Rate (Exponential)	$dv/dt$	Gate Open, $T_J = +100^\circ\text{C}$ , $V_D = \text{Rated } V_{DRM}$	-	50	-	$\text{V}/\mu\text{s}$	

Note 3. For optimum operation, i.e. faster turn-on, lower switching losses, best  $di/dt$  capability, recommended  $I_{GT} = 200\text{mA}$  minimum.

Note 4. Pulsed, 1ms max., Duty Cycle  $\leq 1\%$ .

