



**ELECTRONICS, INC.**  
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## NTE5587, NTE5589, NTE5593 Silicon Controlled Rectifier for Phase Control Applications

**Features:**

- Low On-State Voltage
- High di/dt
- High dv/dt
- Excellent Surge and I<sup>2</sup>t Ratings

**Applications:**

- Power Supplies
- Battery Chargers
- Motor Controls

**Absolute Maximum Ratings and Electrical Characteristics:**

Repetitive Peak Voltages, V <sub>DRM</sub> & V <sub>R RM</sub>	
NTE5587 .....	600V
NTE5589 .....	1200V
NTE5593 .....	1600V
RMS On-State Current, I <sub>T(RMS)</sub> .....	550A
Average On-State Current, I <sub>T(AV)</sub> .....	350
Peak One-Cycle, Non-Repetitive On-State Surge Current, I <sub>TSM</sub>	
50Hz .....	9100A
60Hz .....	10,000A
Critical Rate-of-Rise of On-State Current, di/dt	
Repetitive .....	150A/μs
Non-Repetitive .....	800A/μs
I <sup>2</sup> t fo Fusing (8.2ms), I <sup>2</sup> t .....	416,000A <sup>2</sup> sec
Peak Gate Power Dissipation, P <sub>GM</sub> .....	16W
Average Gate Power Dissipation, P <sub>G(AV)</sub> .....	3W
Peak On-State Voltage (I <sub>TM</sub> = 625A, T <sub>J</sub> = +25°C), V <sub>TM</sub> .....	1.4V
Peak Forward Leakage Current (At V <sub>DRM</sub> , T <sub>J</sub> = +125°C), I <sub>DRM</sub> .....	30mA
Peak Reverse Leakage Current (At V <sub>R RM</sub> , T <sub>J</sub> = +125°C), I <sub>R RM</sub> .....	30mA
Gate Current to Trigger (V <sub>D</sub> = 12V, T <sub>J</sub> = +25°C), I <sub>GT</sub> .....	150mA
Gate Voltage to Trigger (V <sub>D</sub> = 12V, T <sub>J</sub> = +25°C), V <sub>GT</sub> .....	3V
Non-Trigging Gate Voltage (At V <sub>DRM</sub> , T <sub>J</sub> = +125°C), V <sub>GDM</sub> .....	0.15V

**Absolute Maximum Ratings and Electrical Characteristics (Cont'd):**

Peak Forward Gate Current, $I_{GTM}$ .....	4A
Peak Reverse Gate Voltage, $V_{GRM}$ .....	5V
Typical Turn-Off Time, $t_q$ ( $I_T = 250A$ , $di_R/dt = 25A/\mu s$ , re-applied, $dv/dt = 20V/\mu s$ , linear to $0.8V_{DRM}$ , $T_J = +125^\circ C$ ) .....	150 $\mu s$
Typical Turn-On Time ( $V_D = 100V$ , $I_T = 100A$ ), $t_{on}$ .....	7 $\mu s$
Minimum Critical $dv/dt$ exponential to $V_{DRM}$ ( $T_J = +125^\circ C$ ), $dv/dt$ .....	300V/ $\mu s$
Operating Junction Temperature Range, $T_J$ .....	-40° to +125°C
Storage Temperature Range, $T_{stg}$ .....	-40° to +150°C
Maximum Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	0.10°C/W
Maximum Thermal Resistance, Case-to-Sink (Lubricated), $R_{thCS}$ .....	0.05°C/W
Mounting Torque .....	360in.-lb.
Mounting Torque (Lubricated) .....	400kg-cm

