ELECTRONICS, INC.
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NTE5386 & NTE5387
Silicon Controlled Rectifier (SCR)
for High Speed Switching

Maximum Ratings and Electrical Characteristics: (T_J = +125°C unless otherwise specified)

Repetitive Peak Voltages, V_{DRM}, V_{RRM}
- NTE5386 . . . . . 600V
- NTE5387 . . . . . 1200V

Non–Repetitive Peak Off–State Voltage, V_{DSM}
- NTE5386 . . . . . 600V
- NTE5387 . . . . . 1200V

Non–Repetitive Peak Reverse Blocking Voltage, V_{RSM}
- NTE5386 . . . . . 700V
- NTE5387 . . . . . 1300V

Average On–State Current, $I_{T(AV)}$
- (+55°C heatsink temperature, double side cooled) 745A
- (+85°C heatsink temperature, single side cooled) 261A

RMS On–State Current (+25°C heatsink temperature, double side cooled), $I_{T(RMS)}$ 1535A

Continuous On–State Current (+25°C heatsink temperature, double side cooled), I_T 1180A

Peak One–Cycle Surge (Non–Repetitive) On–State Current, I_{TSM}
- (t = 10ms, 60% V_{RRM} re–applied) 9500A
- (t = 10ms, $V_R \le 10V$) 10450A

Maximum Permissible Surge Energy ($V_R \le 10V$), I^2t
- (t = 10ms) . . . . . 546000A^2sec
- (t = 3ms) . . . . . 400000A^2sec

Peak Forward Gate Current (Anode Positive with Respect to Cathode), I_{FGM} 20A

Peak Forward Gate Voltage (Anode Positive with Respect to Cathode), V_{FGM} 23V

Peak Reverse Gate Voltage, V_{RGM} 5V

Average Gate Power, $P_{G(AV)}$ 4W

Peak Gate Power (100μs Pulse Width), P_{GM} 120W

Rate of Rise of Off–State Voltage (To 80% V_{DRM}, Gate Open–Circuit), dv/dt 200V/μs

Rate of Rise of On–State Current, di/dt
- (Gate Drive 20V, 20Ω with $t_r \le 1\mu s$, Anode voltage ≤ 80% V_{DRM})
  - Repetitive 500A/μs
  - Non–Repetitive 1000A/μs

Operating Temperature Range, T_C . . . . . –40° to +125°C

Storage Temperature Range, T_{stg} . . . . . –40° to +150°C

Thermal Resistance, Junction–to–Heatsink, R_{thJHS}
- Double Side Cooled . . . . . 0.047°C/W
- Single Side Cooled . . . . . 0.094°C/W

Maximum Ratings and Electrical Characteristics (Cont'd): (T_J = +125°C unless otherwise specified)

Peak On−State Voltage (I_{TM} = 1500A), V_{TM} 1.9V
Forward Conduction Threshold Voltage, V_O 1.43V
Forward Conduction Slope Resistance, r 0.31mΩ
Repetitive Peak Off−State Current (At Rated V_{DRM}), I_{DRM} 75mA
Repetitive Peak Reverse Current (At Rated V_{RRM}), I_{RRM} 75mA
Maximum Gate Current Required to Fire All Devices (T_J = +25°C, V_A = 6V, I_A = 2A), I_{GT} . . 300mA
Maximum Gate Voltage Required to Fire All Devices (T_J = +25°C, V_A = 6V, I_A = 2A), V_{GT} 3V
Maximum Holding Current (T_J = +25°C, V_A = 6V, I_A = 1A), I_H 1A
Maximum Gate Voltage Which Will Not Trigger Any Device, V_{GD} 0.25V
Typical Stored Charge (I_{TM} = 800A, dir/dt 50A/μs, V_{RM} = 50V, 50% Chord Value), Q_{rr} 150μC
Circuit Commutated Turn−Off Time Available Down To, t_q
(I_{TM} = 800A, dir/dt = 50A/μs, V_{RM} = 50V)
Maximum (dv/dt = 200V/μs to 80% V_{DRM}) . . . . . 20−35μs
Typical (dv/dt = 20V/μs to 80% V_{DRM}) . . . . . 15−30μs