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NTE5374 & NTE5375 Silicon Controlled Rectifier (SCR) for High Speed Switching

Maximum Ratings and Electrical Characteristics: ($T_J = +125^\circ\text{C}$ unless otherwise specified)

| | |
|--|--------------------------|
| Repetitive Peak Voltages, V_{DRM}, V_{RRM} | |
| NTE5374 | 600V |
| NTE5375 | 1200V |
| Non-Repetitive Peak Off-State Voltage, V_{DSM} | |
| NTE5374 | 600V |
| NTE5375 | 1200V |
| Non-Repetitive Peak Reverse Blocking Voltage, V_{RSM} | |
| NTE5374 | 700V |
| NTE5375 | 1300V |
| Average On-State Current ($T_C = +85^\circ\text{C}$, half sinewave), $I_{T(AV)}$ | |
| NTE5374 | 195A |
| NTE5375 | 175A |
| RMS On-State Current, $I_{T(RMS)}$ | 355A |
| Continuous On-State Current, I_T | 355A |
| Peak One-Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} | |
| ($t = 10\text{ms}$, 60% V_{RRM} re-applied) | |
| NTE5374 | 4700A |
| NTE5375 | 3250A |
| ($t = 10\text{ms}$, $V_R \leq 10\text{V}$) | |
| NTE5374 | 5170A |
| NTE5374 | 3575A |
| Maximum Permissible Surge Energy, I^2t | |
| ($t = 10\text{ms}$, $V_R \leq 10\text{V}$) | |
| NTE5374 | 134000A ² sec |
| NTE5375 | 63900A ² sec |
| ($t = 3\text{ms}$, $V_R \leq 10\text{V}$) | |
| NTE5374 | 98000A ² sec |
| NTE5375 | 47000A ² sec |
| Peak Forward Gate Current (Anode Positive with Respect to Cathode), I_{FGM} | 18A |
| Peak Forward Gate Voltage (Anode Positive with Respect to Cathode), V_{FGM} | 12V |
| Peak Reverse Gate Voltage, V_{RGM} | 5V |
| Average Gate Power, $P_{G(AV)}$ | 1.5W |
| Peak Gate Power (100 μs Pulse Width), P_{GM} | 60W |
| Rate of Rise of Off-State Voltage (To 80% V_{DRM} , Gate Open-Circuit), dv/dt | 200V/ μs |

Maximum Ratings and Electrical Characteristics (Cont'd): ($T_J = +125^\circ\text{C}$ unless otherwise specified)

Rate of Rise of On-State Current, di/dt

(Gate Drive 20V, 20Ω with $t_r \leq 1\mu\text{s}$, Anode voltage $\leq 80\% V_{\text{DRM}}$)

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|----------------------|----------------------|
| Repetitive | 500A/ μs |
| Non-Repetitive | 1000A/ μs |

Peak On-State Voltage ($I_{\text{TM}} = 600\text{A}$), V_{TM}

| | |
|---------------|--------|
| NTE5374 | 1.8V |
| NTE5375 | 2.074V |

Forward Conduction Threshold Voltage, V_O

| | |
|---------------|-------|
| NTE5374 | 1.4V |
| NTE5375 | 1.55V |

Forward Conduction Slope Resistance, r

| | |
|---------------|----------------|
| NTE5374 | 0.67m Ω |
| NTE5375 | 0.87m Ω |

Repetitive Peak Off-State Current (At Rated V_{DRM}), I_{DRM}

Repetitive Peak Reverse Current (At Rated V_{RRM}), I_{RRM}

Maximum Gate Current Required to Fire All Devices ($T_J = +25^\circ\text{C}$, $V_A = 6\text{V}$, $I_A = 1\text{A}$), I_{GT} ..

Maximum Gate Voltage Required to Fire All Devices ($T_J = +25^\circ\text{C}$, $V_A = 6\text{V}$, $I_A = 1\text{A}$), V_{GT}

Maximum Holding Current ($T_J = +25^\circ\text{C}$, $V_A = 6\text{V}$, $I_A = 1\text{A}$), I_H

Maximum Gate Voltage Which Will Not Trigger Any Device, V_{GD}

Typical Stored Charge ($I_{\text{TM}} = 300\text{A}$, $di/dt = 20\text{A}/\mu\text{s}$, $V_{\text{RM}} = 50\text{V}$, 50% Chord Value), Q_{rr}

| | |
|---------------|------------------|
| NTE5374 | 25 μC |
| NTE5375 | 45 μC |

Maximum Circuit Commutated Turn-Off Time, t_q

($I_{\text{TM}} = 300\text{A}$, $di/dt = 20\text{A}/\mu\text{s}$, $V_{\text{RM}} = 50\text{V}$, $dv/dt = 200\text{V}/\mu\text{s}$ to $80\% V_{\text{DRM}}$)

| | |
|---------------|------------------|
| NTE5374 | 10 μs |
| NTE5375 | 20 μs |

Operating Temperature Range, T_C

Storage Temperature Range, T_{stg}

Thermal Resistance, Junction-to-Case, R_{thJC}

