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NTE56068 & NTE56069 TRIAC, 16A, High Commutation

Description:

The NTE56068 and NTE56069 are glass passivated, high commutation TRIACs in an isolated full-pack type package designed for use in circuits where high static and dynamic dV/dt and high dI/dt can occur. These devices will commute the full rated RMS current at the maximum rated junction temperature, without the aid of a snubber.

Absolute Maximum Ratings:

| | |
|---|----------------------------------|
| Repetitive Peak Off-State Voltage (Note 1), V_{DRM} | |
| NTE56068 | 600V |
| NTE56069 | 800V |
| RMS On-State Current (Full Sine Wave, $T_{HS} \leq 38^{\circ}C$), $I_T(RMS)$ | 16A |
| Non-Repetitive Peak On-State Current, I_{TSM} | |
| (Full Sine Wave, $T_J = +25^{\circ}C$ prior to Surge) | |
| $t = 20ms$ | 140A |
| $t = 16.7ms$ | 150A |
| I^2t for Fusing ($t = 10ms$), I^2t | $98A^2sec$ |
| Repetitive Rate-of-Rise of On-State Current after Triggering, dI_T/dt | |
| ($I_{TM} = 20A$, $I_G = 0.2A$, $dI_G/dt = 0.2A/\mu s$) | $100A/\mu s$ |
| Peak Gate Current, I_{GM} | 2A |
| Peak Gate Voltage, V_{GM} | 5V |
| Peak Gate Power, P_{GM} | 5W |
| Average Gate Power (Over Any 20ms Period), $P_{G(AV)}$ | 500mW |
| Operating Junction Temperature, T_J | $+125^{\circ}C$ |
| Storage Temperature Range, T_{stg} | -40° to $+150^{\circ}C$ |
| Thermal Resistance, Junction-to-Heatsink (Full or Half Cycle), R_{thJHS} | |
| With Heatsink Compound | 4.0K/W |
| Without Heatsink Compound | 5.5K/W |
| Typical Thermal Resistance, Junction-to-Ambient, R_{thJA} | 55K/W |

Note 1. Although not recommended, off-state voltages up to 800V may be applied without damage, but the TRIAC may switch to the on-state. The rate-of-rise of current should not exceed $15A/\mu s$.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|-----------------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Gate Trigger Current MT ₂ (+), G (+) | I _{GT} | V _D = 12V, I _T = 0.1A, Note 2 | 2 | 18 | 50 | mA |
| MT ₂ (+), G (-) | | | 2 | 21 | 50 | mA |
| MT ₂ (-), G (-) | | | 2 | 34 | 50 | mA |
| Latching Current MT ₂ (+), G (+) | I _L | V _D = 12V, I _T = 0.1A | - | 31 | 60 | mA |
| MT ₂ (+), G (-) | | | - | 34 | 90 | mA |
| MT ₂ (-), G (-) | | | - | 30 | 60 | mA |
| Holding Current | I _H | V _D = 12V, I _T = 0.1A | - | 31 | 60 | mA |
| On-State Voltage | V _T | I _T = 20A | - | 1.2 | 1.5 | V |
| Gate Trigger Voltage | V _{GT} | V _D = 12V, I _T = 0.1A | - | 0.7 | 1.5 | V |
| | | V _D = 400V, I _T = 0.1A, T _J = +125°C | 0.25 | 0.4 | - | V |
| Off-State Leakage Current | I _D | V _D = V _{DRMmax} , T _J = +125°C | - | 0.1 | 0.5 | mA |
| Dynamic Characteristics | | | | | | |
| Critical Rate-of-Rise of Off-State Voltage | dV _D /dt | V _{DM} = 67% V _{DRMmax} , T _J = +125°C, Exponential Waveform, Gate Open | 1000 | 4000 | - | V/μs |
| Critical Rate-of-Change of Commutating Current | di _{com} /dt | V _{DM} = 400V, T _J = +125°C, I _T RMS = 16A, without Snubber, Gate Open | - | 28 | - | A/ms |
| Gate Controlled Turn-On Time | t _{gt} | I _{TM} = 20A, V _D = V _{DRMmax} , I _G = 0.1A, di _G /dt = 5A/μs | - | 2 | - | μs |
| Isolation Characteristics | | | | | | |
| RMS Isolation Voltage from All 3 Pins to External Heatsink | V _{ISOL} | f = 50 – 60Hz, Sinusoidal Waveform, R.H. ≤ 65%, Clean and Dustfree | - | - | 2500 | V |
| Capacitance from T2 to External Heatsink | C _{ISOL} | f = 1MHz | - | 10 | - | pF |

Note 2. Device does not trigger in the MT₂ (-), G (+) quadrant.

