

NTE56058 thru NTE56060 TRIAC, 16A

Description:

The NTE56058 through NTE56060 are glass passivated TRIACs in an isolated full-pack type package designed for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

Absolute Maximum Ratings:

| | |
|--|----------------------|
| Repetitive Peak Off-State Voltage, V_{DRM} | |
| NTE56058 (Note 1) | 500V |
| NTE56059 (Note 1) | 600V |
| NTE56060 | 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, $T_J = +125^{\circ}C$ prior to Surge, with Reapplied V_{DRMmax}) | |
| t = 20ms | 140A |
| t = 16.7ms | 150A |
| I^2t for Fusing (t = 10ms), I^2t | 98A ² sec |
| Repetitive Rate-of-Rise of On-State Current after Triggering, di_T/dt | |
| ($I_{TM} = 20A$, $I_G = 0.2A$, $di_G/dt = 0.2A/\mu s$) | |
| MT ₂ (+), G (+) | 50A/ μs |
| MT ₂ (+), G (-) | 50A/ μs |
| MT ₂ (-), G (-) | 50A/ μs |
| MT ₂ (-), G (+) | 10A/ μs |
| 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°C |
| Storage Temperature Range, T_{stg} | -40° to +150°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/ μs .

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 | – | 5 | 35 | mA |
| MT ₂ (+), G (–) | | | – | 8 | 35 | mA |
| MT ₂ (–), G (–) | | | – | 10 | 35 | mA |
| MT ₂ (–), G (+) | | | – | 22 | 70 | mA |
| Latching Current MT ₂ (+), G (+) | I _L | V _D = 12V, I _T = 0.1A | – | 7 | 40 | mA |
| MT ₂ (+), G (–) | | | – | 20 | 60 | mA |
| MT ₂ (–), G (–) | | | – | 8 | 40 | mA |
| MT ₂ (–), G (+) | | | – | 10 | 60 | mA |
| Holding Current | I _H | V _D = 12V, I _T = 0.1A | – | 6 | 30 | mA |
| On-State Voltage | V _T | I _T = 20A | – | 1.2 | 1.6 | 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 | 100 | 250 | – | V/μs |
| Critical Rate-of-Change of Commutating Voltage | dV _{com} /dt | V _{DM} = 400V, T _J = +95°C, I _T RMS = 16A, dI _{com} /dt = 7.2A/ms, Gate Open | – | 20 | – | V/μs |
| 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} | R.H. ≤ 65%, Clean and Dustfree | – | – | 1500 | V |
| Capacitance from T2 to External Heatsink | C _{ISOL} | f = 1MHz | – | 12 | – | pF |

