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## NTE56063 & NTE56064 TRIAC, 8A, High Commutation

**Description:**

The NTE56063 and NTE56064 are glass passivated, high commutation TRIACs in an isolated full-pack type package designed for use in motor control 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), $V_{DRM}$                               |                      |
| NTE56063 .....  | 600V                 |
| NTE56064 .....  | 800V                 |
| RMS On-State Current (Full Sine Wave, $T_{HS} \leq 73^{\circ}C$ ), $I_T(RMS)$ ..... | 8A                   |
| Non-Repetitive Peak On-State Current, $I_{TSM}$                                     |                      |
| (Full Sine Wave, $T_J = +25^{\circ}C$ prior to Surge)                               |                      |
| t = 20ms .....  | 65A                  |
| t = 16.7ms .....  | 71A                  |
| $I^2t$ for Fusing (t = 10ms), $I^2t$ .....  | 21A <sup>2</sup> sec |
| Repetitive Rate-of-Rise of On-State Current after Triggering, $dI_T/dt$             |                      |
| ( $I_{TM} = 20A$ , $I_G = 0.2A$ , $dI_G/dt = 0.2A/\mu s$ ) .....                    | 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°C               |
| Storage Temperature Range, $T_{stg}$ .....  | -40° to +150°C       |
| Thermal Resistance, Junction-to-Heatsink (Full or Half Cycle), $R_{thJHS}$          |                      |
| With Heatsink Compound .....  | 4.5K/W               |
| Without Heatsink Compound .....   | 6.5K/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 6A/ $\mu s$ .

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

| Parameter  | Symbol                | Test Conditions  | Min  | Typ  | Max  | Unit |
|--|-----------------------|--|------|------|------|------|
| <b>Static Characteristics</b>                              |                       |  |      |      |      |      |
| Gate Trigger Current<br>MT <sub>2</sub> (+), G (+)         | I <sub>GT</sub>       | V <sub>D</sub> = 12V, I <sub>T</sub> = 0.1A, Note 2  | 2    | 18   | 50   | mA   |
| MT <sub>2</sub> (+), G (-)                                 |                       |  | 2    | 21   | 50   | mA   |
| MT <sub>2</sub> (-), G (-)                                 |                       |  | 2    | 34   | 50   | mA   |
| Latching Current<br>MT <sub>2</sub> (+), G (+)             | I <sub>L</sub>        | V <sub>D</sub> = 12V, I <sub>T</sub> = 0.1A  | -    | 31   | 60   | mA   |
| MT <sub>2</sub> (+), G (-)                                 |                       |  | -    | 34   | 90   | mA   |
| MT <sub>2</sub> (-), G (-)                                 |                       |  | -    | 30   | 60   | mA   |
| Holding Current  | I <sub>H</sub>        | V <sub>D</sub> = 12V, I <sub>T</sub> = 0.1A  | -    | 31   | 60   | mA   |
| On-State Voltage   | V <sub>T</sub>        | I <sub>T</sub> = 10A   | -    | 1.3  | 1.65 | V    |
| Gate Trigger Voltage                                       | V <sub>GT</sub>       | V <sub>D</sub> = 12V, I <sub>T</sub> = 0.1A  | -    | 0.7  | 1.5  | V    |
|  |                       | V <sub>D</sub> = 400V, I <sub>T</sub> = 0.1A, T <sub>J</sub> = +125°C  | 0.25 | 0.4  | -    | V    |
| Off-State Leakage Current                                  | I <sub>D</sub>        | V <sub>D</sub> = V <sub>DRMmax</sub> , T <sub>J</sub> = +125°C   | -    | 0.1  | 0.5  | mA   |
| <b>Dynamic Characteristics</b>                             |                       |  |      |      |      |      |
| Critical Rate-of-Rise of Off-State Voltage                 | dV <sub>D</sub> /dt   | V <sub>DM</sub> = 67% V <sub>DRMmax</sub> , T <sub>J</sub> = +125°C, Exponential Waveform, Gate Open             | 1000 | 4000 | -    | V/μs |
| Critical Rate-of-Change of Commutating Current             | di <sub>com</sub> /dt | V <sub>DM</sub> = 400V, T <sub>J</sub> = +95°C, I <sub>T</sub> RMS = 8A, without Snubber, Gate Open              | -    | 14   | -    | A/ms |
| Gate Controlled Turn-On Time                               | t <sub>gt</sub>       | I <sub>TM</sub> = 12A, V <sub>D</sub> = V <sub>DRMmax</sub> , I <sub>G</sub> = 0.1A, di <sub>G</sub> /dt = 5A/μs | -    | 2    | -    | μs   |
| <b>Isolation Characteristics</b>                           |                       |  |      |      |      |      |
| RMS Isolation Voltage from All 3 Pins to External Heatsink | V <sub>ISOL</sub>     | f = 50 – 60Hz, Sinusoidal Waveform, R.H. ≤ 65%, Clean and Dustfree   | -    | -    | 2500 | V    |
| Capacitance from T2 to External Heatsink                   | C <sub>ISOL</sub>     | f = 1MHz   | -    | 10   | -    | pF   |

Note 2. Device does not trigger in the MT<sub>2</sub> (-), G (+) quadrant.

