



**ELECTRONICS, INC.**  
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## NTE56004 thru NTE56010 TRIAC, 15 Amp

The NTE56004 thru NTE56010 series of TRIACs are designed primarily for full-wave AC control applications, such as solid-state relays, motor controls, heating controls and power supplies; or wherever full-wave silicon gate controlled solid-state devices are needed. TRIAC type thyristors switch from a blocking to a conducting state for either polarity of applied anode voltage with positive or negative gate triggering.

**Features:**

- Blocking Voltage from 200 to 800 Volts
- All Diffused and Glass Passivated Junctions
- Small, Rugged, TO220 package for Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering specified in Four Quadrants

**Absolute Maximum Ratings:**

Peak Repetitive Off-State Voltage, ( $T_J = -40^\circ$ to $125^\circ\text{C}$ ), $V_{DRM}$	
NTE56004 .....	200V
NTE56006 .....	400V
NTE56008 .....	600V
NTE56010 .....	800V
Peak Gate Voltage, $V_{GM}$ .....	10V
On-State Current RMS (Full Cycle Sine Wave 50 to 60Hz, $T_C = +90^\circ\text{C}$ ), $I_{T(RMS)}$ .....	15A
Circuit Fusing ( $t = 8.3\text{ms}$ ) $I^2t$ .....	93A <sup>2</sup> s
Peak Surge Current (One Full Cycle, 60Hz, $T_C = +80^\circ\text{C}$ ), $I_{TSM}$	
Preceded and followed by rated current .....	150A
Peak Gate Power ( $T_C = +80^\circ\text{C}$ , Pulse Width = $2\mu\text{s}$ ), $P_{GM}$ .....	20W
Average Gate Power ( $T_C = +80^\circ\text{C}$ , $t = 8.3\text{ms}$ ), $P_{G(AV)}$ .....	500mW
Peak Gate Current, $I_{GM}$ .....	2A
Operating Junction Temperature Range, $T_J$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	$2^\circ\text{C/W}$

**Electrical Characteristics** ( $T_C = 25^\circ\text{C}$ , and either polarity of MT2 to MT1 Voltage, unless otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated $V_{DRM}$ , or $V_{RRM}$ , Gate open) $T_J=25^\circ\text{C}$ $T_J=125^\circ\text{C}$	$I_{DRM}$ , $I_{RRM}$	– –	– –	10 2	$\mu\text{A}$ mA
Peak On-State Voltage ( $I_{TM} = 21\text{ A Peak}$ ; Pulse Width = 1 to 2ms, Duty Cycle $\leq 2\%$ )	$V_{TM}$	–	1.3	1.6	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 12\text{Vdc}$ , $R_L = 100\text{ Ohms}$ ) MT2(+) G(+), MT2(+) G(-), MT2(-) G(-) MT2(-), G(+)	$I_{GT}$	– –	– –	50 75	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 12\text{Vdc}$ , $R_L = 100\text{ Ohms}$ ) MT2(+) G(+), MT2(+) G(-) MT2(-) G(-) MT2(-) G(+) ( $V_D = \text{Rated } V_{DRM}$ , $R_L = 10\text{k Ohms}$ , $T_J = 110^\circ\text{C}$ ) MT2(+) G(+), MT2(-) G(-), MT2(+) G(-) MT2(-) G(+)	$V_{GT}$	– – – 0.2 0.2	– 0.9 1.1 1.4 – –	– 2 2 2.5 – –	Volts
Holding Current (Either Direction) ( $V_D = 12\text{Vdc}$ , $I_T = 200\text{mA}$ , Gate Open)	$I_H$	–	6	40	mA
Turn-On Time ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 17\text{A}$ ) ( $I_{GT} = 120\text{mA}$ , Rise Time = $0.1\mu\text{s}$ , Pulse Width = $2\mu\text{s}$ )	$t_{gt}$	–	1.5	–	$\mu\text{s}$
Critical Rate of Rise of Commutation Voltage ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 21\text{ A}$ , Commutating $di/dt = 8\text{A/ms}$ , Gate Unenergized, $T_C = 80^\circ\text{C}$ )	$dv/dt(c)$	–	5	–	$\text{V}/\mu\text{s}$

