



ELECTRONICS, INC.  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089  
<http://www.nteinc.com>



## NTE56030 & NTE56031 TRIAC, 40 Amp TO218 Isolated Tab

### **Description:**

The NTE56030 and NTE56031 are 40 Amp TRIACs in a TO218 type package with an isolated tab designed to be driven directly with IC and MOS devices.

### **Applications:**

- Phase Control
- Static Switching
- Light Dimming
- Motor Speed Control
- Kitchen Equipment
- Power Tools
- Solenoid Controls:  
     Dishwashers  
     Washing Machines

### **Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Peak Repetitive Off-State Voltage ( $I_{GT} = 50\text{mA}$ ), $V_{DRM}$	400V
NTE56030 .....	400V
NTE56031 .....	600V
RMS On-State Current ( $T_C = +95^\circ\text{C}$ , Full Sine Wave), $I_T(\text{RMS})$ .....	40A
Non-Repetitive Surge Peak On-State Current (Full Cycle, Initial $T_J = +25^\circ\text{C}$ ), $I_{TSM}$	
50Hz .....	400A
60Hz .....	420A
$I^2t$ Value for Fusing ( $t_p = 10\text{ms}$ ), $I^2t$ .....	880A <sup>2</sup> s
Critical Rate of Rise of On-State Current ( $I_G = 2 \times I_{GT}$ , $t_r < 100\text{ns}$ , $T_J = +125^\circ\text{C}$ ), $di/dt$ ...	100A/ $\mu\text{s}$
Peak Gate Current ( $t_p = 20\mu\text{s}$ , $T_J = +125^\circ\text{C}$ ), $I_{GM}$ .....	4A
Average Gate Power Dissipation ( $T_J = +125^\circ\text{C}$ ), $P_{G(AV)}$ .....	1W
Isolation Voltage, $V_{ISO}$ .....	2500V <sub>RMS</sub>
Operating Junction Temperature Range, $T_J$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Typical Thermal Resistance, Junction-to-Case, $R_{thJC(AC)}$ .....	1.1 $^\circ\text{C}/\text{W}$
Typical Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	50 $^\circ\text{C}/\text{W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Off-State Current	$I_{DRM}$	$T_J = +25^\circ\text{C}$ , $V_{DRM} = V_{RRM}$	-	-	5	$\mu\text{A}$
Peak Reverse Current	$I_{RRM}$	$T_J = +125^\circ\text{C}$ , $V_{DRM} = V_{RRM}$	-	-	3	$\text{mA}$
Gate Trigger Current Quadrant I, II, III	$I_{GT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$ , Note 1	-	-	50	$\text{mA}$
Quadrant IV			-	-	100	$\text{mA}$

Note 1. Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GTmax}$ .  
 Note 2. For both polarities of A2 referenced to A1.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}, R_L = 30\Omega$	-	-	1.3	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = V_{DRM}, T_J = +125^\circ\text{C}, R_L = 3.3\text{k}\Omega$	0.2	-	-	V
Holding Current	$I_H$	$I_T = 100\text{mA}, \text{Note 2}$	-	-	75	mA
Latching Current Quadrant I, III, IV	$I_L$	$I_G = 1.2I_{GT}$	-	-	75	mA
Quadrant II			-	-	1600	mA
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_D = 67\%V_{DRM}, \text{Gate Open}, T_J = +125^\circ\text{C}, \text{Note 2}$	500	-	-	$\text{V}/\mu\text{s}$
Critical Rate of Rise of Commutation Voltage	$dv/dt(c)$	$di/dt(c) = 13.3\text{A/ms}, T_J = +125^\circ\text{C}, \text{Note 2}$	10	-	-	$\text{V}/\mu\text{s}$
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 35\text{A}, t_p = 380\mu\text{s}, \text{Note 2}$	-	-	1.55	V
Threshold Voltage	$V_{TO}$	$T_J = +125^\circ\text{C}, \text{Note 2}$	-	-	0.85	V
Dynamic Resistance	$r_D$	$T_J = +125^\circ\text{C}, \text{Note 2}$	-	-	16	$\text{m}\Omega$

Note 1. Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GTmax}$ .

Note 2. For both polarities of A2 referenced to A1.

