



**ELECTRONICS, INC.**  
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## NTE56033 TRIAC, 45 Amp

**Features:**

- Blocking Voltage of 600V
- Glass-Passivated Chip
- Gate Triggering Guaranteed in Four Modes
- Excellent Thermal Impedance and High Reliability Construction

**Absolute Maximum Ratings:**

Peak Repetitive Off-State Voltage (1/2 Sine Wave 6.3μs), $V_{DRM}$ .....	600V
On-State RMS Current ( $T_C = +60^\circ\text{C}$ , 360° Conduction Angle), $I_T(\text{RMS})$ .....	40A
Peak Non-Repetitive Surge Current ( $+25^\circ < T_J \text{ initial} < +110^\circ\text{C}$ , One Full Cycle), $I_{TSM}$	
60Hz .....	420A
50Hz .....	400A
Circuit Fusing ( $t = 10\text{ms}$ ), $I^2t$ .....	800A <sup>2</sup> s
Peak Gate Current ( $t = 10\mu\text{s}$ , Note 1), $I_{GM}$ .....	±10A
Peak Gate Voltage ( $t = 10\mu\text{s}$ , Note 1), $V_{GM}$ .....	±16V
Peak Gate Power ( $t = 10\mu\text{s}$ , Note 1), $P_{GM}$ .....	40W
Average Gate Power, $P_{G(AV)}$ .....	1W
Operating Junction Temperature Range, $T_J$ .....	-40° to +110°C
Storage Temperature Range, $T_{stg}$ .....	-40° to +125°C
Thermal Resistance, Contact (with Grease), $R_{thCH}$ .....	0.2°C/W
Thermal Resistance, Junction-to-Case, $R_{thJC(DC)}$ .....	1.33°C/W
Thermal Resistance, Junction-to-Case ( $F = 50\text{Hz}$ , 360° Conduction Angle), $R_{thJC(AC)}$ .....	1°C/W

Note 1. For either polarity of gate voltage with reference to MT<sub>1</sub>.

Note 2. For either polarity of MT<sub>2</sub> voltage with reference to MT<sub>1</sub>.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Forward Blocking Current	$I_{\text{DRM}}$	$T_J = +110^\circ\text{C}$ , $V_D = 600\text{V}$ , Gate Open, Note 2	–	0.75	4.0	mA
Gate Trigger Current Quadrant I, II, III	$I_{\text{GT}}$	$V_D = 12\text{V}$ , $R_L = 33\Omega$ , Pulse Duration $> 20\mu\text{s}$ , Note 1	1	–	50	mA
Quadrant IV			1	–	75	mA
Gate Trigger Voltage	$V_{\text{GT}}$	$V_D = 12\text{V}$ , $R_L = 33\Omega$ , Pulse Duration $> 20\mu\text{s}$ , Note 1	–	–	2.5	V
Gate Non-Trigger Voltage	$V_{\text{GD}}$	$V_D = 600\text{V}$ , $T_J = +110^\circ\text{C}$ , $R_L = 3\text{k}$ , Pulse Duration $> 20\mu\text{s}$ , Note 1	0.2	–	–	V
Holding Current	$I_{\text{H}}$	$V_D = 12\text{V}$ , $I_T = 1\text{A}$ , Gate Open, Note 2	–	30	80	mA
Peak On-State Voltage	$V_{\text{TM}}$	$I_{\text{TM}} = 60\text{A}$ , $t_p = 10\text{ms}$ , Note 2	–	–	1.6	V
Gate Controlled Turn-On Time	$t_{\text{gt}}$	$V_D = 600\text{V}$ , $I_{\text{TM}} = 40\text{A}$ , $I_G = 1\text{A}$ , $di_G/dt = 10\text{A}/\mu\text{s}$ , Note 1	–	2.5	–	$\mu\text{s}$
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_D = 600\text{V}$ , Gate Open, $T_J = +110^\circ\text{C}$ , Note 2	50	150	–	$\text{V}/\mu\text{s}$
Critical Rate of Rise of Commutation Voltage	$dv/dt(c)$	$V_D = 600\text{V}$ , $I_{\text{TM}} = 40\text{A}$ , $T_C = +60^\circ\text{C}$ Commutating $di/dt = 18\text{A}/\text{ms}$ , Note 2	–	5	–	$\text{V}/\mu\text{s}$

Note 1. For either polarity of gate voltage with reference to  $MT_1$ .

Note 2. For either polarity of  $MT_2$  voltage with reference to  $MT_1$ .

