



**ELECTRONICS, INC.**  
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## NTE56068 & NTE56069 TRIAC, 16A, High Commutation

**Description:**

The NTE56068 and NTE56069 are glass passivated, high commutation TRIACs in an isolated full-pack type package designed for use in 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:**

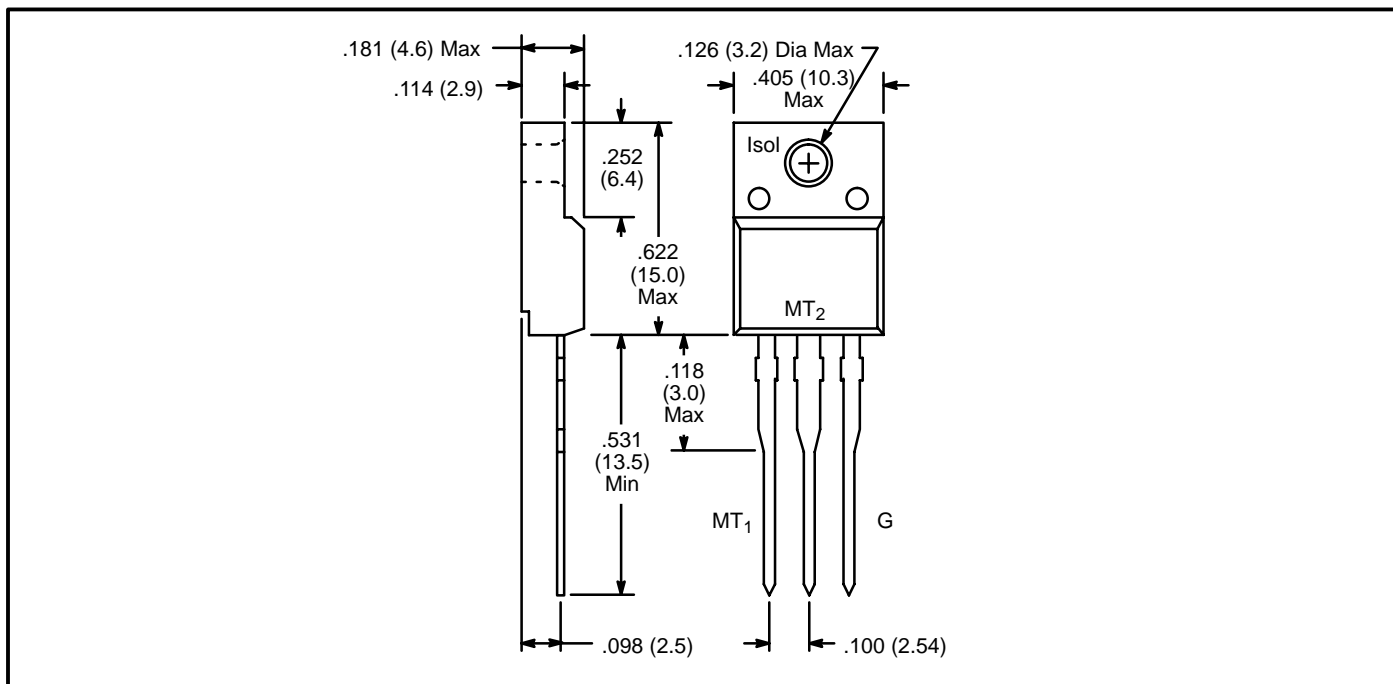
Repetitive Peak Off-State Voltage (Note 1), $V_{DRM}$	
NTE56068 .....	600V
NTE56069 .....	800V
RMS On-State Current (Full Sine Wave, $T_{HS} \leq 38^{\circ}C$ ), $I_T(RMS)$ .....	16A
Non-Repetitive Peak On-State Current, $I_{TSM}$	
(Full Sine Wave, $T_J = +25^{\circ}C$ prior to Surge)	
$t = 20ms$ .....	140A
$t = 16.7ms$ .....	150A
$I^2t$ for Fusing ( $t = 10ms$ ), $I^2t$ .....	$98A^2sec$
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, $T_J$ .....	$+125^{\circ}C$
Storage Temperature Range, $T_{stg}$ .....	$-40^{\circ}$ to $+150^{\circ}C$
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  $15A/\mu s$ .

**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 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 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> = 20A	-	1.2	1.5	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> = +125°C, I <sub>T</sub> RMS = 16A, without Snubber, Gate Open	-	28	-	A/ms
Gate Controlled Turn-On Time	t <sub>gt</sub>	I <sub>TM</sub> = 20A, 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.



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