



ELECTRONICS, INC.
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NTE56058 thru NTE56060 TRIAC, 16A

Description:

The NTE56058 through NTE56060 are glass passivated TRIACs in an isolated full-pack type package designed for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

Absolute Maximum Ratings:

Repetitive Peak Off-State Voltage, V_{DRM}	
NTE56058 (Note 1)	500V
NTE56059 (Note 1)	600V
NTE56060	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, $T_J = +125^{\circ}C$ prior to Surge, with Reapplied V_{DRMmax})	
$t = 20ms$	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	
($I_{TM} = 20A$, $I_G = 0.2A$, $dI_G/dt = 0.2A/\mu s$)	
$MT_2 (+)$, $G (+)$	$50A/\mu s$
$MT_2 (+)$, $G (-)$	$50A/\mu s$
$MT_2 (-)$, $G (-)$	$50A/\mu s$
$MT_2 (-)$, $G (+)$	$10A/\mu s$
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° 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
Static Characteristics						
Gate Trigger Current MT ₂ (+), G (+)	I _{GT}	V _D = 12V, I _T = 0.1A	-	5	35	mA
MT ₂ (+), G (-)			-	8	35	mA
MT ₂ (-), G (-)			-	10	35	mA
MT ₂ (-), G (+)			-	22	70	mA
Latching Current MT ₂ (+), G (+)	I _L	V _D = 12V, I _T = 0.1A	-	7	40	mA
MT ₂ (+), G (-)			-	20	60	mA
MT ₂ (-), G (-)			-	8	40	mA
MT ₂ (-), G (+)			-	10	60	mA
Holding Current	I _H	V _D = 12V, I _T = 0.1A	-	6	30	mA
On-State Voltage	V _T	I _T = 20A	-	1.2	1.6	V
Gate Trigger Voltage	V _{GT}	V _D = 12V, I _T = 0.1A	-	0.7	1.5	V
		V _D = 400V, I _T = 0.1A, T _J = +125°C	0.25	0.4	-	V
Off-State Leakage Current	I _D	V _D = V _{DRMmax} , T _J = +125°C	-	0.1	0.5	mA
Dynamic Characteristics						
Critical Rate-of-Rise of Off-State Voltage	dV _D /dt	V _{DM} = 67% V _{DRMmax} , T _J = +125°C, Exponential Waveform, Gate Open	100	250	-	V/μs
Critical Rate-of-Change of Commutating Voltage	dV _{com} /dt	V _{DM} = 400V, T _J = +95°C, I _T RMS = 16A, dI _{com} /dt = 7.2A/ms, Gate Open	-	20	-	V/μs
Gate Controlled Turn-On Time	t _{gt}	I _{TM} = 20A, V _D = V _{DRMmax} , I _G = 0.1A, dI _G /dt = 5A/μs	-	2	-	μs
Isolation Characteristics						
RMS Isolation Voltage from All 3 Pins to External Heatsink	V _{ISOL}	R.H. ≤ 65%, Clean and Dustfree	-	-	1500	V
Capacitance from T2 to External Heatsink	C _{ISOL}	f = 1MHz	-	12	-	pF

