

NTE56070 & NTE56071 TRIAC, 25A, High Commutation

Description:

The NTE56070 and NTE56071 are glass passivated, high commutation TRIACs in a TO220 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}	
NTE56070	600V
NTE56071	800V
RMS On-State Current (Full Sine Wave, $T_{MB} \leq 91^{\circ}C$), $I_T(RMS)$	25A
Non-Repetitive Peak On-State Current, I_{TSM}	
(Full Sine Wave, $T_J = +25^{\circ}C$ prior to Surge)	
$t = 20ms$	190A
$t = 16.7ms$	209A
I^2t for Fusing ($t = 10ms$), I^2t	$180A^2sec$
Repetitive Rate-of-Rise of On-State Current after Triggering, dI_T/dt	
($I_{TM} = 30A$, $I_G = 0.2A$, $dI_G/dt = 0.2A/\mu s$)	$100A/\mu s$
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° to $+150^{\circ}C$
Thermal Resistance, Junction-to-Mounting Base, R_{thJMB}	
Full Cycle	1.0K/W
Half Cycle	1.4K/W
Typical Thermal Resistance, Junction-to-Ambient, R_{thJA}	60K/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, Note 2	2	18	50	mA
MT ₂ (+), G (–)			2	21	50	mA
MT ₂ (–), G (–)			2	34	50	mA
Latching Current MT ₂ (+), G (+)	I _L	V _D = 12V, I _T = 0.1A	–	31	60	mA
MT ₂ (+), G (–)			–	34	90	mA
MT ₂ (–), G (–)			–	30	60	mA
Holding Current	I _H	V _D = 12V, I _T = 0.1A	–	31	60	mA
On-State Voltage	V _T	I _T = 30A	–	1.3	1.55	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 _{DRM} max, 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 _{DRM} max, T _J = +125°C, Exponential Waveform, Gate Open	1000	4000	–	V/μs
Critical Rate-of-Change of Commutating Current	dI _{com} /dt	V _{DM} = 400V, T _J = +125°C, I _T RMS = 25A, without Snubber, Gate Open	–	44	–	A/ms
Gate Controlled Turn-On Time	t _{gt}	I _{TM} = 12A, V _D = V _{DRM} max, I _G = 0.1A, dI _G /dt = 5A/μs	–	2	–	μs

Note 2. Device does not trigger in the MT₂ (–), G (+) quadrant.

