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NTE56042 thru NTE56044
TRIAC, 16A, Sensitive Gate

Description:

The NTE56042 through NTE56044 are glass passivated, sensitive gate TRIACs in an isolated full–pack type package designed for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.

Absolute Maximum Ratings:

Repetitive Peak Off–Sate Voltage, V_{DRM}
- NTE56042 (Note 1) 500V
- NTE56043 (Note 1) 600V
- NTE56044 . . . . . 800V

RMS On–State Current (Full Sine Wave, $T_{HS} \le 38°C$), $I_T(RMS)$ 16A

Non–Repetitive Peak On–State Current, I_{TSM}
(Full Sine Wave, $T_J = +125°C$ prior to Surge, with Reapplied V_{DRM}max)
- 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/μs
- MT_2 (+), G (–) 50A/μs
- MT_2 (–), G (–) 50A/μs
- MT_2 (–), G (+) 10A/μs

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°C

Storage Temperature Range, T_{stg} . . . . . –40° to +150°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/μs.

Electrical Characteristics: (T_J = +25°C unless otherwise specfied)

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	–	2.5	10	mA
MT_2 (+), G (–)			–	4.0	10	mA
MT_2 (–), G (–)			–	5.0	10	mA
MT_2 (–), G (+)			–	11	25	mA
Latching Current MT_2 (+), G (+)	I_L	V_D = 12V, I_T = 0.1A	–	3.2	30	mA
MT_2 (+), G (–)			–	16	40	mA
MT_2 (–), G (–)			–	4.0	30	mA
MT_2 (–), G (+)			–	5.5	40	mA
Holding Current	I_H	V_D = 12V, I_T = 0.1A	–	4.0	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	$V_D = V_{DRM}$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	–	50	–	V/µs
Gate Controlled Turn–On Time	t_{gt}	I_{TM} = 20A, $V_D = V_{DRM}$max, I_G = 0.1A, dI_G/dt = 5A/µs	–	2	–	µs
Isolation Characteristics (T_{hs} = +25°C unless otherwise specified)						
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