



ELECTRONICS, INC.

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NTE5699 TRIAC – 800V_{RM}, 25A TO220 Full Pack

Description:

The NTE5699 TRIAC is designed primarily for full-wave AC control applications, such as lighting systems, heater controls, motor controls, and power supplies; or wherever full wave silicon gate controlled solid state devices are needed. TRIAC type thyristors switch from a blocking to a conducting state for either polarity of applied voltage with positive or negative gate triggering.

Features:

- Blocking Voltage – 800 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, TO220 Full Pack for Low Thermal Resistance, High Heat Dissipation, and Durability
- Gate Triggering Guaranteed in Four Modes

Absolute Maximum Ratings:

Peak Repetitive Off-State Voltage, V_{DRM} ($T_J = -40^\circ$ to $+125^\circ\text{C}$, 1/2 Sine Wave 50 to 60Hz, Gate Open, Note 1)	800V
Peak Gate Voltage ($t \leq 2\mu\text{s}$), V_{GM}	$\pm 10\text{V}$
On-State Current RMS, $I_{T(RMS)}$ ($T_C = +80^\circ\text{C}$, Full Cycle Sine Wave 50 to 60Hz, Note 2)	25A
Peak Non-Repetitive Surge Current, I_{TSM} (One Full Cycle, 60Hz, $T_C = +125^\circ\text{C}$, Preceded and followed by rated current)	250A
Peak Gate Power ($t \leq 2\mu\text{s}$), P_{GM}	20W
Average Gate Power ($T_C = +80^\circ\text{C}$, $t \leq 8.3\text{ms}$), $P_{G(AV)}$	500mW
Peak Gate Current ($t \leq 2\mu\text{s}$), I_{GM}	2A
RMS Isolation Voltage ($T_A = +25^\circ\text{C}$, Relative Humidity $\leq 20\%$), $V_{(ISO)}$	1500V
Operating Junction Temperature Range, T_J	-40° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.8°C/W
Typical Thermal Resistance, Case-to-Sink, R_{thCS}	2.2°C/W
Thermal Resistance, Junction-to-Ambient, R_{thJA}	60°C/W

Note 1. Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

Note 2. The case temperature reference point for all T_C measurements is a point on the center lead of the package as close as possible to the plastic body.

Electrical Characteristics: ($T_C = +25^\circ\text{C}$ and either polarity of MT2 to MT1, unless otherwise specified)

Characteristics	Symbol	Min	Typ	Max	Unit
Peak Blocking Current (Rated V_{DRM} , Gate Open) $T_J = +25^\circ\text{C}$ $T_J = +125^\circ\text{C}$	I_{DRM}	– –	– –	10 2	μA mA
Peak On–State Voltage ($I_{\text{TM}} = 35\text{A}$ Peak; Peak Pulse Width $\leq 2\text{ms}$, Duty Cycle $\leq 2\%$)	V_{TM}	–	1.4	1.85	V
Peak Gate Trigger Current (Main Terminal Voltage = 12Vdc, $R_L = 100\ \Omega$) MT2(+), G(+) MT2(+), G(–) MT2(–), G(–) MT2(–), G(+)	I_{GT}	– – – –	20 20 20 30	50 50 50 75	mA
Peak Gate Trigger Voltage (Main Terminal Voltage = 12Vdc, $R_L = 100\ \Omega$) MT2(+), G(+) MT2(+), G(–) MT2(–), G(–) MT2(–), G(+) (Main Terminal Voltage = Rated V_{DRM} , $R_L = 10\text{k}\Omega$, $T_J = +110^\circ\text{C}$) MT2(+), G(+); MT2(+), G(–); MT2(–), G(–) MT2(–), G(+)	V_{GT}	– – – – 0.2 0.2	1.1 1.1 1.1 1.3 0.4 0.4	2.0 2.0 2.0 2.5 – –	V
Holding Current (Main Terminal Voltage = 12Vdc, Gate Open $I_T = 200\text{mA}$)	I_H	–	10	50	mA
Turn–On Time (Rated V_{DRM} , $I_{\text{TM}} = 35\text{A}$, $I_G = 120\text{mA}$)	t_{gt}	–	1.5	–	μs
Critical Rate of Rise of Off–State Voltage (Rated V_{DRM} , Exponential Waveform, $T_C = +125^\circ\text{C}$)	dv/dt	–	40	–	V/ μs
Critical Rate of Rise of Commutation Voltage (Rated V_{DRM} , $I_{\text{TM}} = 35\text{A}$, Commutating $di/dt = 13.4\text{A/ms}$, Gate Unenergized, $T_C = +80^\circ\text{C}$)	dv/dt(c)	–	5	–	V/ μs

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