



ELECTRONICS, INC.

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## NTE5680 thru NTE5687 TRIAC, 25 Amp

### Description:

The NTE5680 thru NTE5687 series of medium power TRIACs are bidirectional triode thyristors which may be switched from off-state to conduction for either polarity of applied voltage with positive or negative gate triggering. These devices are designed for control of AC loads in applications such as lighting, heating, and motor speed control, as well as static switching relays.

### Absolute Maximum Ratings:

Repetitive Peak Off-State and Reverse Voltage ( $T_J = +100^\circ\text{C}$ ), $V_{\text{DRM}}$ , $V_{\text{RRM}}$	
NTE5680	25V
NTE5681	50V
NTE5682	100V
NTE5683	200V
NTE5684	300V
NTE5685	400V
NTE5686	500V
NTE5687	600V
RMS On-State Current ( $T_C = +75^\circ\text{C}$ , 360° Conduction), $I_{\text{T(RMS)}}$	
	25A
Peak Surge (Non-Repetitive) On-State Current (One-Cycle, 50Hz or 60Hz), $I_{\text{TSM}}$	
	250A
Peak Gate-Trigger Current (3 $\mu\text{s}$ Max), $I_{\text{GTM}}$	
	4A
Peak Gate-Power Dissipation ( $I_{\text{GT}} \leq I_{\text{GTM}}$ , 3 $\mu\text{s}$ Max), $P_{\text{GM}}$	
	40W
Average Gate Power Dissipation, $P_{\text{G(AV)}}$	
	0.8W
Storage Temperature Range, $T_{\text{stg}}$	
	-40° to +150°C
Operating Temperature Range ( $T_J$ ), $T_{\text{opr}}$	
	-40° to +100°C
Thermal Resistance, Junction-to-Case, $R_{\text{thJC}}$	
	1.8°C/W

**Electrical Characteristics:** (At Maximum Ratings,  $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Off-State Current	$I_{DROM}$	Gate Open, $I_T = 100\text{A}$ (Peak)	–	–	4	mA
Maximum On-State Voltage	$V_T$	$I_T = 100\text{A}$ (Peak)	–	–	2.5	V
DC Holding Current	$I_H$	Gate Open	–	–	60	mA
Critical Rate-of-Rise of Off-State Voltage	Critical dv/dt	Gate Open, $V_D = \text{Rated } V_{DROM}$ , $T_C = +100^\circ\text{C}$	–	40	–	V/ $\mu\text{s}$
Critical Rate-of-Rise of Commutation	Commutating dv/dt	Gate Open, $V_D = \text{Rated } V_{DROM}$ , $I_T = 25\text{A}$ , $T_C = +75^\circ\text{C}$	–	3	–	V/ $\mu\text{s}$
DC Gate Trigger Current MT <sub>2</sub> (+), Gate (+); MT <sub>2</sub> (-), Gate (-) MT <sub>2</sub> (+), Gate (-); MT <sub>2</sub> (-), Gate (+)	$I_{GT}$	$V_D = 24\text{V}$ , $R_L = 12\Omega$	–	–	100 150	mA mA
DC Gate Trigger Voltage	$V_{GT}$	$V_D = 24\text{V}$ , $R_L = 12\Omega$	–	–	2.5	V
Gate-Controlled Turn-On Time	$t_{gt}$	$V_D = \text{Rated } V_{DROM}$ , $I_{GT} = 300\text{mA}$ , $t_r = 0.1\mu\text{s}$ , $I_t = 10\text{A}$ (Peak)	–	3	–	$\mu\text{s}$

