



**ELECTRONICS, INC.**

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## NTE5638, NTE5638-06, NTE5638-08 TRIAC – 8A Isolated Tab

**Description:**

The NTE5638 is an 8 Amp TRIAC in a TO220 type package designed to be driven directly with IC and MOS devices and features proprietary, void-free glass passivated chips.

This device is a bi-directional triode thyristor and may be switched from off-state to conduction for either polarity of applied voltage with positive or negative gate trigger current. The NTE5638 is designed for control applications in lighting, heating, cooling and static switching relays.

**Absolute Maximum Ratings:**

Repetitive Peak Off-State Voltage (Gate Open, $T_J = +110^\circ\text{C}$ , Note 1), $V_{\text{DRM}}$	
NTE5638 .....	400V
NTE5638-06 .....	600V
NTE5638-08 .....	800V
RMS On-State Current ( $T_C = +80^\circ\text{C}$ , Conduction Angle of $360^\circ\text{C}$ ), $I_{\text{T(RMS)}}$ .....	
8A	
Peak Surge (Non-Repetitive) On-State Current (One Cycle, 50Hz or 60Hz), $I_{\text{TSM}}$ .....	
80A	
Peak Gate-Trigger Current ( $3\mu\text{s}$ Max), $I_{\text{GTM}}$ .....	
2A	
Peak Gate-Power Dissipation ( $I_{\text{GT}} \leq I_{\text{GTM}}$ for $3\mu\text{s}$ Max), $P_{\text{GM}}$ .....	
20W	
Average Gate-Power Dissipation, $P_{\text{G(AV)}}$ .....	
200mW	
Operating Temperature Range, $T_J$ .....	
$-40^\circ$ to $+150^\circ\text{C}$	
Storage Temperature Range, $T_{\text{stg}}$ .....	
$-40^\circ$ to $+110^\circ\text{C}$	
Typical Thermal Resistance, Junction-to-Case, $R_{\text{thJC}}$ .....	
$2.5^\circ\text{C/W}$	

Note 1. All values apply in either direction.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Off-State Current	$I_{\text{DRM}}$	$V_{\text{DRM}} = \text{Max}$ , Gate Open, $T_J = +110^\circ\text{C}$	-	-	0.5	mA
Max. On-State Voltage	$V_{\text{TM}}$	$I_T = 8\text{A}$	-	-	1.6	V
DC Holding Current	$I_H$	Gate Open, Note 1	-	-	25	mA
Critical Rate-of-Rise of Off-State Voltage	Critical dv/dt	$V_D = V_{\text{DRM}}$ , Gate Open, $T_C = +100^\circ\text{C}$ , Note 1	-	30	-	V/ $\mu\text{s}$
Critical Rate-of-Rise of Commutation Voltage	Commutation dv/dt	$V_D = V_{\text{DRM}}$ , $I_T = 8\text{A}$ , $T_C = +80^\circ\text{C}$ , Gate Unenergized, Note 1	-	2	-	V/ $\mu\text{s}$
DC Gate Trigger Current $T_2$ (+) Gate (+), $T_2$ (-) Gate (-) $T_2$ (+) Gate (-), $T_2$ (-) Gate (+)	$I_{\text{GT}}$	$V_D = 12\text{V}$ , $R_L = 60\Omega$	-	-	10	mA

Note 1. All values apply in either direction.

**Electrical Characteristics (Cont'd):** ( $T_C = +25^\circ\text{C}$ , Maximum Ratings unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $R_L = 60\Omega$	-	-	2.2	V
Gate-Controlled Turn-On Time	$t_{gt}$	$V_D = V_{DRM}$ , $I_{GT} = 80\text{mA}$ , $t_r = 0.1\mu\text{s}$ , $i_T = 10\text{A (Peak)}$	-	2.2	-	$\mu\text{s}$

