



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089

NTE310

Integrated Thyristor/Rectifier (ITR) TV Horizontal Deflection & Trace Switch

Absolute Maximum Ratings:

Repetitive Peak Forward Off-State and Reverse Voltage, V_{DRM} , V_{RRM}	800V
RMS On-State Current, I_{TRMSM} , I_{FRMSM}	8A
Mean On-State Current ($T_C = +80^\circ\text{C}$), I_{TAVM} , I_{FAVM}	
Thyristor	3.4A
Diode	3.45A
Repetitive Peak On-State Current, I_{TRM} , I_{FRM}	50A
Surge Current ($t = 10\text{ms}$, $t_{vi} = +100^\circ\text{C}$), I_{TSM} , I_{FSM}	
Thyristor	80A
Diode	60A
Non-Repetitive Rate of Rise of On-State Current, di/dt_{crit}	500A/ μs
Repetitive Rate of Rise of On-State Current ($I_{TM} = 20\text{A}$, $t_{vi} = +100^\circ\text{C}$, $V_{DM} = 640\text{V}$), di/dt_{crit} (Pulse Generator Data: $v_L = 8\text{V}$, $i_K = 0.25\text{A}$, $di_G/dt \geq 0.25\text{A}/\mu\text{s}$)	
$f_o = 50\text{Hz}$	300A/ μs
$f_o = 16\text{kHz}$	100A/ μs
Rate of Rise of Off-State Voltage ($t_{vi} = +100^\circ\text{C}$, $V_D = 536\text{V}$), dv/dt_{crit}	400V/ μs
Rate of Rise of Voltage Subsequent to Prior On-State Current, dv/dt_{crit} $t_{vi} = +100^\circ\text{C}$, $V_D = 536\text{V}$	200V/ μs
Peak Gate Power Losses ($t_g \leq 10\mu\text{s}$), P_{GM}	10W
Total Mean Gate Power Loss for One Cycle, P_G	2W
Operating Temperature Range, T_{opr}	-40° to $+100^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+130^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	2.3 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	
Without Heatsink	35 $^\circ\text{C}/\text{W}$
On Vertical Cooling Fin 60mm x 60mm x 1.5mm, Al or Cu, Roughened Surface ..	10 $^\circ\text{C}/\text{W}$

Electrical Characteristics:

Maximum On-State Voltage ($t_{vi} = +25^\circ\text{C}$, $i_T = i_F = 10\text{A}$), V_T , V_F	
Thyristor	2.16V
Diode	2.2V
Threshold Voltage, $V_{(TO)}$	
Thyristor	1.6V
Diode	1.4V
Forward Slope Resistance, r_T , r_F	
Thyristor	53 Ω
Diode	70 Ω

Electrical Characteristics (Cont'd):

Maximum Gate Trigger Voltage ($t_{vi} = +25^{\circ}\text{C}$, $V_D = 6\text{V}$, $R_A = 20\Omega$), V_{GT}	2.0V
Minimum Gate Trigger Voltage ($t_{vi} = +100^{\circ}\text{C}$, $V_D = 6\text{V}$, $R_A = 20\Omega$), V_{GT}	0.1V
Maximum Gate Trigger Current ($t_{vi} = +25^{\circ}\text{C}$, $V_D = 6\text{V}$, $R_A = 20\Omega$), I_{GT}	50mA
Maximum Holding Current ($t_{vi} = +25^{\circ}\text{C}$, $V_D = 6\text{V}$, $R_A = 20\Omega$), I_H	100mA
Maximum Latching Current ($t_{vi} = +25^{\circ}\text{C}$, $V_D = 6\text{V}$, $R_{GK} \geq 20\Omega$), I_L	210mA
(Pulse Generator Data: $i_G = 0.25\text{A}$, $di_G/dt = 0.25\text{A}/\mu\text{s}$, $t_g = 4\mu\text{s}$)	
Typical Capacitance, Anode–Cathode at Zero Voltage ($t_{vi} = +25^{\circ}\text{C}$, $f_o = 16\text{kHz}$), C_{zero}	250pF
Maximum Lag Charge ($t_{vi} = +100^{\circ}\text{C}$, $i_{FM} = 10\text{A}$, $-di_F/dt = 10\text{A}/\mu\text{s}$), Q_S	0.96 μAs
Maximum Forward Off–State and Reverse Current ($t_{vi} = +100^{\circ}\text{C}$, $v_D = 800\text{V}$), i_D , i_R	1.5mA
Maximum Gate Controlled Delay Time ($t_{vi} = +25^{\circ}\text{C}$, $V_D = 536\text{V}$, $i_{TM} = 5\text{A}$), t_{gd}	0.8 μs
(Pulse Generator Data: $i_G = 0.25\text{A}$, $di_G/dt = 0.5\text{A}/\mu\text{s}$)	
Maximum Pulse Turn–Off Time ($t_{vi} = +100^{\circ}\text{C}$), t_{qp}	2.9 μs
Typical Pulse Turn–Off Time ($t_{vi} = +80^{\circ}\text{C}$, $f_o = 16\text{kHz}$), t_{qp}	1.8 μs
Maximum Turn–On Voltage Peak ($t_{vi} = +25^{\circ}\text{C}$, $i_{FM} = 1\text{A}$, $di_F/dt = 5\text{A}/\mu\text{s}$), u_{FRM}	3V
Maximum Reverse Recovery Time ($t_{vi} = +25^{\circ}\text{C}$, $i_{FM} = 10\text{A}$, $-di_F/dt = 10\text{A}/\mu\text{s}$), t_{rr}	0.7 μs

