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

Electrical Characteristics:

Maximum On–State Voltage (t_{vi} = +25°C, $i_T = i_F$ = 10A), 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 53Ω
  Diode 70Ω

Electrical Characteristics (Cont'd):

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