ELECTRONICS, INC.
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BLOOMFIELD, NJ 07003
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NTE5371 & NTE5372
Silicon Controlled Rectifier (SCR)
for High Speed Switching
125 Amp, TO94

Features:
- All Diffused Design
- Center Amplifying Gate
- High Surge Current Capability
- Low Thermal Impedance
- High Speed Performance

Applications:
- Inverters
- Choppers
- Induction Heating
- All Types of Force–Commutated Converters

Maximum Ratings and Electrical Characteristics:

Max. Repetitive Peak Voltages, V_{RRM}, V_{DRM}
- NTE5371 . . . . . 600V
- NTE5372 . . . . . 1200V

Max. Non–Repetitive Peak Voltage, V_{RSM}
- NTE5371 . . . . . 700V
- NTE5372 . . . . . 1300V

Average On–State Current (180° Conduction, Half Sine Wave, T_C = +85°C), $I_{T(AV)}$ 85A

Max. RMS On–State Current (DC at T_C = +77°C), $I_{T(RMS)}$ 135A

Max. Peak One Half–Cycle Non–Repetitive Surge Current (T_J = +125°C, Sinusoidal Half Wave), I_{TSM}
- (No Voltage Reapplied)
  - (t = 10ms) 2450A
  - (t = 8.3ms) 2560A
- (100% V_{RRM} Reapplied)
  - (t = 10ms) 2060A
  - (t = 8.3ms) 2160A

Max. Permissible Surge Energy (T_J = +125°C, Sinusoidal Half Wave), I^2t
- (No Voltage Reapplied)
  - (t = 10ms) . . . . . 30KA^{2}s
  - (t = 8.3ms) . . . . . 27KA^{2}s
- (100% V_{RRM} Reapplied)
  - (t = 10ms) . . . . . 21KA^{2}s
  - (t = 8.3ms) . . . . . 19KA^{2}s

Maximum Ratings and Electrical Characteristics (Cont'd):

Max. $I^2\sqrt{t}$ for Fusing (t = 0.1 to 10ms, No Voltage Reapplied), $I^2\sqrt{t}$ . . . . . 300KA$^2\sqrt{s}$

Max. Peak On−State Voltage (I_{TM} = 300A, T_J = +125°C, t_p = 10ms Sine Wave Pulse), V_{TM} . . 2.15V

Threshold Voltage (T_J = +125°C), $V_{T(TO)}$

Low Level (16.7% x π x $I_{T(AV)}$ < I < π x $I_{T(AV)}$) 1.46V

High Level (I > π x $I_{T(AV)}$) 1.52V

Forward Slope Resistance (T_J = +125°C), r_t

Low Level (16.7% x π x $I_{T(AV)}$ < I < π x $I_{T(AV)}$) 2.32Ω

High Level (I > π x $I_{T(AV)}$) 2.34Ω

Max. Holding Current (T_J = +25°C, I_T > 30A), I_H 600mA

Typical Latching Current (T_J = +25°C, V_A = 12V, R_a = 6Ω, I_G = 1A), I_L 1000mA

Max. Non−Repetitive Rate of Rise of On−State Current (T_J = +25°C, V_{DRM} = Rated V_{DRM}), di/dt

(I_{TM} = I_{TM} = 2 x di/dt) 1000A/μs

Typical Delay Time (T_J = +125°C, V_{DRM} = Rated V_{DRM}), t_d

(I_{TM} = 50A DC, t_p = 1μs, Resistive Load, Gate Pulse: 10V, 5Ω Source) 0.80μs

Max. Turn−Off Time, t_q

(T_J = +125°C, I_{TM} = 100A, Commutating di/dt = 10A/μs, V_R = 50V, t_p = 200μs)

NTE5371 . . . . . 10 to 20μs

NTE5372 . . . . . 15 to 30μs

Max. Critical Rate of Rise of Off−State Voltage, dv/dt

(T_J = +125°C, Linear To 80% V_{DRM}) 500V/μs

Max. Peak Reverse and Off−State Leakage Current, I_{RRM}, I_{DRM}

(T_J = +125°C, Rated V_{DRM}/V_{RRM} Applied) 30mA

Max. Peak Gate Power (T_J = +125°C, f = 50Hz, d% = 50), P_{GM} 40W

Max. Average Gate Power (T_J = +125°C, f = 50Hz, d% = 50), $P_{G(AV)}$ 5W

Max. Peak Positive Gate Current (T_J = +125°C, $t_p \le$ 5ms), I_{GM} 5A

Max. Peak Gate Voltage (T_J = +125°C, $t_p \le$ 5ms), V_{GM}

Positive 20V

Negative 5V

Max. DC Gate Current Required to Trigger (T_J = +25°C, V_A = 12V, R_a = 6Ω), I_{GT} 200mA

Max. DC Gate Voltage Required to Trigger (T_J = +25°C, V_A = 12V, R_a = 6Ω), V_{GT} 3V

Max. DC Gate Current not to Trigger (T_J = +125°C, Rated V_{DRM} Applied), I_{GD} 20mA

Max. DC Gate Voltage not to Trigger (T_J = +125°C, Rated V_{DRM} Applied), V_{GD} 250mV

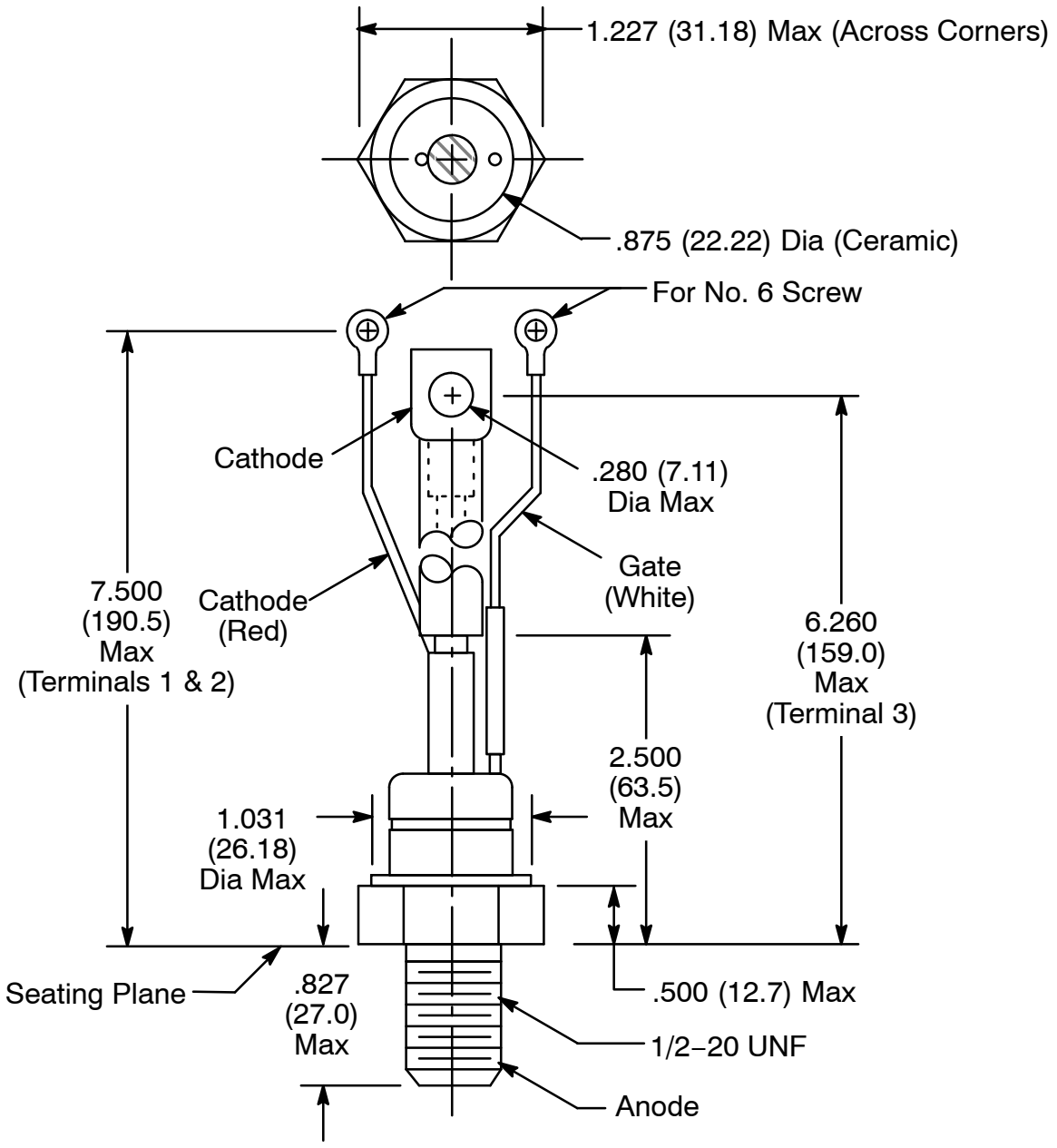
Maximum Operating Temperature Range, T_J . . . . . −40° to +125°C

Maximum Storage Temperature Range, T_{stg} . . . . . −40° to +150°C

Maximum Thermal Resistance, Junction−to−Case (DC Operation), R_{thJC} 0.195K/W

Maximum Thermal Resistance, Case−to−Heatsink, R_{thCS}

(Mounting Surface Smooth, Flat and Greased) 0.08K/W


1.227 (31.18) Max (Across Corners)
.875 (22.22) Dia (Ceramic)
For No. 6 Screw
Cathode
.280 (7.11)
Dia Max
Gate
(White)
7.500
(190.5)
Max
(Terminals 1 & 2)
Cathode
(Red)
6.260
(159.0)
Max
(Terminal 3)
2.500
(63.5)
Max
1.031
(26.18)
Dia Max
Seating Plane
.827
(27.0)
Max
.500 (12.7) Max
1/2–20 UNF
Anode