

T500 SERIES

T500, TO-84 (Outline Drawing) Also Available with Flag Lead, TO-83 Package

Ordering Information:

Select the complete part number you desire from the following table:

| Type | Voltage * | | Current | | Turn-off | | Gate Current | | Leads | |
|------|--|------|---------------------------|------|--------------------------|------|-------------------------|------|-------|------|
| | V _{DRM} & V _{RRM} (Volts) | Code | I _{T(av)} (A) | Code | t _q (μsec) | Code | I _{GT} (mA) | Code | Case | Code |
| T500 | 700 | 07 | 40 | 40 | 100 (Typ.) | 0 | 100 | 5 | TO-94 | AQ |
| | 800 | 08 | | | | | | | | |
| | 900 | 09 | | | | | | | | |
| | 1000 | 10 | | | | | | | | |
| | 1100 | 11 | 80 | 80 | | | 150 | 4 | TO-83 | AB |
| | 1200 | 12 | | | | | | | | |
| | 1300 | 13 | | | | | | | | |
| | 1400 | 14 | | | | | | | | |
| 1500 | 15 | | | ** | | | | | | |
| 1600 | 16 | | | | | | | | | |

* For 600V and Below, see T510

** For Lower I_{GT} Consult Factory

Example: Type T500 rated at 80A average with V_{DRM} = 1600V, I_{GT} = 150MA, and standard flexible lead, order as:

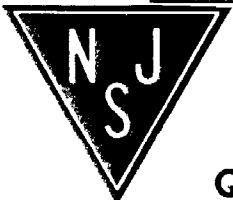
| Type | Voltage | Current | Turn-off | Gate Current | Leads |
|---------|---------|---------|----------|--------------|-------|
| T 5 0 0 | 1 6 | 8 0 | 0 | 4 | A Q |

Features:

- Center Fired, di/namic Gate
- All Diffused Design
- Low V_{TM}
- Compression Bonded Encapsulation
- Low Thermal Impedance
- High Surge Current Capability
- Low Gate Current

Applications:

- Phase control
- Motor Control
- Power Supplies



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Quality Semi-Conductors

Electrical and Thermal Characteristics

| Characteristics | Symbol | Test Conditions | T500_40 | T500_80 | Units |
|---|-------------------|---|----------------------------|---------|------------------------------|
| Current - Conducting State Maximums | | | | | |
| Forward Voltage Drop | V_{TM} | $T_j = 25^\circ\text{C}$, $I_{TM} = 500\text{A}$ | 3.7 | 2.2 | Volts |
| Voltage - Blocking State Maximums | | | | | |
| Rep. Peak Forward Blocking Voltage (Rated Limit) | V_{DRM} | | 1600 | 1600 | Volts |
| Repetitive Peak Reverse Voltage (Rated Limit) | V_{RRM} | | 1600 | 1600 | Volts |
| Non-Rep. Trans. Peak Rev. Voltage (Rated Limit) | V_{RSM} | $t_p \leq 5.0 \text{ msec}$ | 1800 | 1800 | Volts |
| Forward Leakage Current | I_{DRM} | $T_j = 125^\circ\text{C}$, $V_{DRM} = \text{Rated}$ | 10 | 10 | mA |
| Reverse Leakage Current | I_{RRM} | $T_j = 125^\circ\text{C}$, $V_{RRM} = \text{Rated}$ | 10 | 10 | mA |
| Switching | | | | | |
| Typical Turn-off Time | t_q | $I_T = 50\text{A}$, $di/dt = 5 \text{ A}/\mu\text{sec}$, reapplied $dv/dt = 20\text{V}/\mu\text{sec}$ linear to $0.8 V_{DRM}$, $T_j = 125^\circ\text{C}$ | 100 | 100 | μsec |
| Typical Turn-on Time | t_{on} | $I_T = 100\text{A}$, $V_D = 100\text{V}$ | 4 | 4 | μsec |
| Minimum Critical dv/dt Exponential to V_{DRM} | dv/dt | $T_j = 125^\circ\text{C}$ | 300 | 300 | $\text{V}/\mu\text{sec}$ |
| Thermal | | | | | |
| Maximum Resistance, Junction to Case | $R_{\theta(j-c)}$ | | 0.28 | 0.28 | $^\circ\text{C}/\text{Watt}$ |
| Maximum Resistance, Case to Sink (Lubricated) | $R_{\theta(c-s)}$ | | 0.12 | 0.12 | $^\circ\text{C}/\text{Watt}$ |
| Gate - Maximum Parameters | | | | | |
| Gate Current to Trigger | I_{GT} | $T_j = 25^\circ\text{C}$, $V_D = 12\text{V}$ | (See Ordering Information) | | mA |
| Gate Voltage to Trigger | V_{GT} | $T_j = 25^\circ\text{C}$, $V_D = 12\text{V}$ | 3 | 3 | Volts |
| Non-Triggerring Gate Voltage | V_{GDM} | $T_j = 125^\circ\text{C}$, $V_{DRM} = \text{Rated}$ | 0.15 | 0.15 | Volts |
| Peak Forward Gate Current | I_{GTM} | | 4 | 4 | Amperes |
| Peak Reverse Gate Voltage | V_{GRM} | | 5 | 5 | Volts |

Absolute Maximum Ratings

| Characteristics | Symbol | T500_40 | T500_80 | Units |
|---|--------------|-------------|-------------|------------------------|
| RMS Forward Current | $I_{T(rms)}$ | 63 | 125 | Amperes |
| Average Forward Current | $I_{T(av)}$ | 40 | 80 | Amperes |
| One-half Cycle Surge Current | I_{TSM} | 1200 | 1800 | Amperes |
| 3 Cycle Surge Current | I_{TSM} | 950 | 1300 | Amperes |
| 10 Cycle Surge Current | I_{TSM} | 800 | 1170 | Amperes |
| Minimum Rate of Rise of On-State Current (Non-repetitive) | di/dt | 800 | 800 | Amperes/ μs |
| I^2t (for Fusing), ≥ 8.3 milliseconds | I^2t | 6000 | 13500 | A^2sec |
| Peak Gate Power Dissipation | P_{GM} | 16 | 16 | Watts |
| Average Gate Power Dissipation | $P_{G(av)}$ | 3 | 3 | Watts |
| Storage Temperature | T_{stg} | -40 to +150 | -40 to +150 | $^\circ\text{C}$ |
| Operating Temperature | T_j | -40 to +125 | -40 to +125 | $^\circ\text{C}$ |
| Mounting Torque (Lubricated) | | 130 | 130 | in-lb |