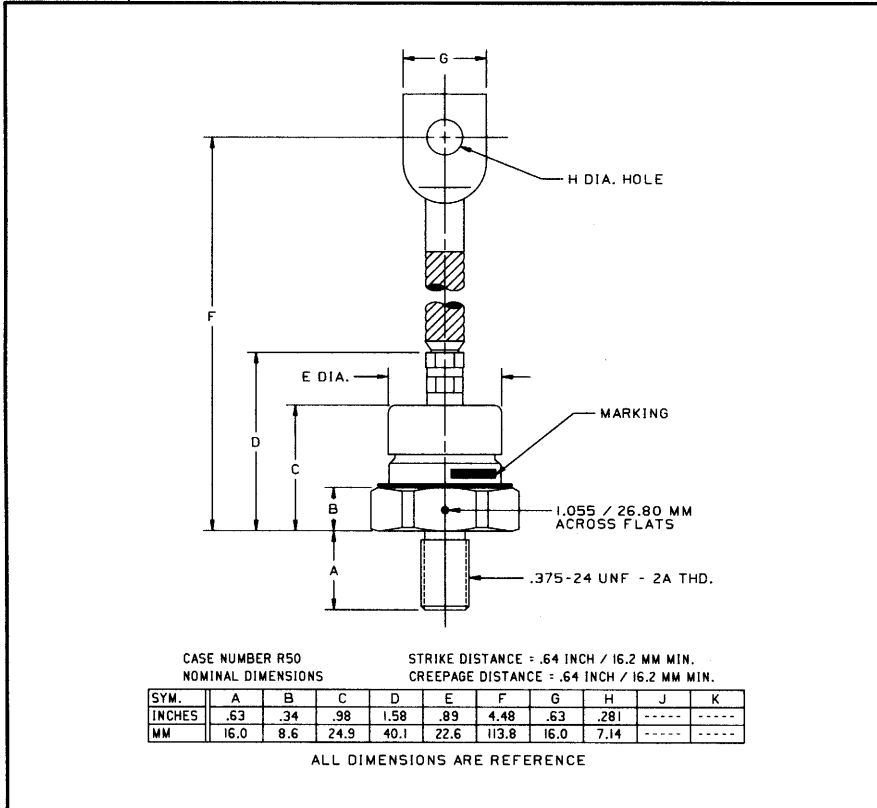


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**Fast Recovery Rectifier**  
100 Amperes Average  
1200 Volts



R502\_\_10/R503\_\_10 (Outline Drawing)



R502\_\_10/R503\_\_10  
Fast Recovery Rectifier  
100 Amperes Average, 1200 Volts

**Ordering Information:**

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

| Type                           | Voltage                     |      | Current                   |      | Recovery Time             |      | Leads |      |
|--------------------------------|-----------------------------|------|---------------------------|------|---------------------------|------|-------|------|
|                                | V <sub>RRM</sub><br>(Volts) | Code | I <sub>F(av)</sub><br>(A) | Code | t <sub>rr</sub><br>(nsec) | Code | Case  | Code |
| R502<br>(Standard<br>Polarity) | 200                         | 02   | 100                       | 10   | 300                       | RS   | DO-8  | WA   |
|                                | 400                         | 04   |                           |      |                           |      |       |      |
|                                | 600                         | 06   |                           |      |                           |      |       |      |
| R503<br>(Reverse<br>Polarity)  | 800                         | 08   |                           |      |                           |      |       |      |
|                                | 1000                        | 10   |                           |      |                           |      |       |      |
|                                | 1200                        | 12   |                           |      |                           |      |       |      |

**Example:** Type R502 rated at 100A average with V<sub>RRM</sub> = 1200V,  
Recovery Time = 300nsec and standard flexible lead, order as:

| Type    | Voltage |   | Current |   | Time | Leads |   |
|---------|---------|---|---------|---|------|-------|---|
| R 5 0 2 | 1       | 2 | 1       | 0 | RS   | W     | A |

**Features:**

- Fast Recovery Times
- Soft Recovery Characteristics
- Standard and Reverse Polarities
- Flag Lead and Stud Top Terminals Available
- High Surge Current Ratings
- High Rated Blocking Voltages
- Special Electrical Selection for Parallel and Series Operation
- Glazed Ceramic Seal Gives High Voltage Creepage and Strike Paths

**Applications:**

- Inverters
- Choppers
- Transmitters
- Free Wheeling Diode

R502\_10/R503\_10  
**Fast Recovery Rectifier**  
 100 Amperes Average, 1200 Volts

## Absolute Maximum Ratings

| Characteristics                               | Symbol       | R502_10/R503_10 | Units       |
|---|--------------|-----------------|-------------|
| RMS Forward Current                           | $I_{F(rms)}$ | 150             | Amperes     |
| Average Forward Current                       | $I_{F(av)}$  | 100             | Amperes     |
| One-half Cycle Surge Current                  | $I_{FSM}$    | 2200            | Amperes     |
| 3 Cycle Surge Current                         | $I_{FSM}$    | 1800            | Amperes     |
| 10 Cycle Surge Current                        | $I_{FSM}$    | 1350            | Amperes     |
| $I^2t$ (for Fusing), Times = 8.3 milliseconds | $I^2t$       | 20000           | $A^2sec$    |
| Storage Temperature                           | $T_{stg}$    | -40 to +200     | $^{\circ}C$ |
| Operating Temperature                         | $T_j$        | -40 to +150     | $^{\circ}C$ |
| Mounting Torque (Lubricated)                  |              | 120             | in-lb       |

## Electrical and Thermal Characteristics

| Characteristics | Symbol | Test Conditions | R502_10/R503_10 | Units |
|-----------------|--------|-----------------|-----------------|-------|
|-----------------|--------|-----------------|-----------------|-------|

### Current - Conducting State Maximums

|                              |          |                                    |     |       |
|------------------------------|----------|------------------------------------|-----|-------|
| Forward Voltage Drop         | $V_{FM}$ | $T_j = 25^{\circ}C, I_{FM} = 450A$ | 4.5 | Volts |
| Typical Forward Voltage Drop | $V_{FM}$ | $T_j = 25^{\circ}C, I_{FM} = 100A$ | 2.7 | Volts |

### Voltage - Blocking State Maximums

|   |           |   |      |       |
|---|-----------|---|------|-------|
| Repetitive Peak Reverse Voltage (Rated Limit)   | $V_{RRM}$ |   | 1200 | Volts |
| Non-rep. Trans. Peak Rev. Voltage (Rated Limit) | $V_{RSM}$ | $V \leq 5.0msec$                        | 1400 | Volts |
| Reverse Leakage Current, mA peak                | $I_{RRM}$ | $T_j$ at max., $V_{RRM} = \text{Rated}$ | 45   | mA    |

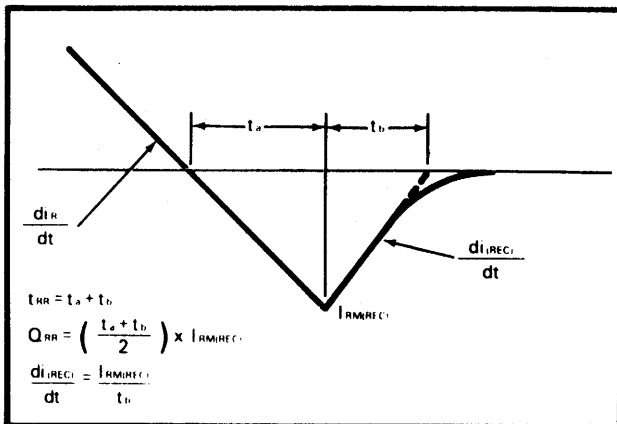
### Switching

|                               |          |  |     |      |
|-------------------------------|----------|--|-----|------|
| Maximum Reverse Recovery Time | $t_{rr}$ | $I_{FM} = 314A, t_p = 40\mu sec,$<br>$di_F/dt = 25A/\mu sec, T_C = 25^{\circ}C$  | 300 | nsec |
| Maximum Reverse Recovery Time | $t_{rr}$ | $I_{FM} = 314A, t_p = 40\mu sec,$<br>$di_F/dt = 25A/\mu sec, T_C = 150^{\circ}C$ | 650 | nsec |

### Thermal

|   |                   |      |                  |
|---|-------------------|------|------------------|
| Maximum Resistance, Junction to Case          | $R_{\theta(j-c)}$ | 0.28 | $^{\circ}C/Watt$ |
| Maximum Resistance, Case to Sink (Lubricated) | $R_{\theta(c-s)}$ | 0.12 | $^{\circ}C/Watt$ |

Reverse Recovery Wave Form



Transient Thermal Impedance Vs. Time

