

## HIGH RELIABILITY FAST RECOVERY RECTIFIER

Qualified per MIL-PRF-19500/308

- 150°C Junction Temperature
- VRRM 50 to 400 Volts
- 50 Amps Current Rating

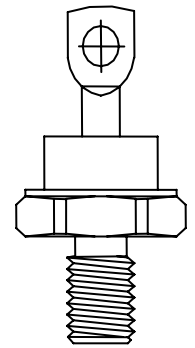
### DEVICES

|        |         |         |         |         |          |          |
|--------|---------|---------|---------|---------|----------|----------|
| 1N3909 | 1N3912  | 1N3910A | 1N3913A | 1N3911R | 1N3909AR | 1N3912AR |
| 1N3910 | 1N3913  | 1N3911A | 1N3909R | 1N3912R | 1N3910AR | 1N3913AR |
| 1N3911 | 1N3909A | 1N3912A | 1N3910R | 1N3913R | 1N3911AR |          |

LEVELS  
 JAN  
 JANTX  
 JANTXV

### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = +25°C unless otherwise noted)

| Parameters / Test Conditions   | Symbol           | Value                          | Unit |
|--|------------------|--------------------------------|------|
| Peak Reverse Voltage   | V <sub>RWM</sub> | 1N3909 / A / R / AR            | 50   |
|  |                  | 1N3910 / A / R / AR            | 100  |
|  |                  | 1N3911 / A / R / AR            | 200  |
|  |                  | 1N3912 / A / R / AR            | 300  |
|  |                  | 1N3913 / A / R / AR            | 400  |
| Peak Working Reverse Voltage   | V <sub>RRM</sub> | 1N3909 / A / R / AR            | 50   |
|  |                  | 1N3910 / A / R / AR            | 100  |
|  |                  | 1N3911 / A / R / AR            | 200  |
|  |                  | 1N3912 / A / R / AR            | 300  |
|  |                  | 1N3913 / A / R / AR            | 400  |
| Average Forward Current, T <sub>C</sub> = 100°                               | I <sub>F</sub>   | 50                             | A    |
| Peak Surge Forward Current @<br>8.3ms, half sinewave, T <sub>C</sub> = 100°C | I <sub>FSM</sub> | 1N3909 / R Thru 1N3913 / R     | 300  |
|  |                  | 1N3909A / AR Thru 1N3913A / AR | 400  |
| Thermal Resistance, Junction to Case   | R <sub>θJC</sub> | 0.8                            | °C/W |
| Operating Case Temperature Range   | T <sub>j</sub>   | -65°C to 150°C                 | °C   |
| Storage Temperature Range  | T <sub>STG</sub> | -65°C to 175°C                 | °C   |



DO-203AB (DO-5)

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = +25°C, unless otherwise noted)

| Parameters / Test Conditions  | Symbol          | Min. | Max.       | Unit |
|---|-----------------|------|------------|------|
| Forward Voltage<br>I <sub>FM</sub> = 50A, T <sub>C</sub> = 25°C*    | V <sub>FM</sub> |      | 1.4        | V    |
| Forward Voltage<br>I <sub>FM</sub> = 400A, T <sub>C</sub> = 150°C** | V <sub>FM</sub> |      | 2.75       | V    |
| Reverse Current<br>V <sub>RM</sub> = 50V, T <sub>C</sub> = 25°C     | I <sub>RM</sub> |      | 15         | μA   |
| V <sub>RM</sub> = 100V, T <sub>C</sub> = 25°C                       |                 |      |            |      |
| V <sub>RM</sub> = 200V, T <sub>C</sub> = 25°C                       |                 |      |            |      |
| V <sub>RM</sub> = 300V, T <sub>C</sub> = 25°C                       |                 |      |            |      |
| V <sub>RM</sub> = 400V, T <sub>C</sub> = 25°C                       |                 |      |            |      |
| Reverse Current<br>V <sub>RM</sub> = 50V, T <sub>C</sub> = 150°C    | I <sub>RM</sub> |      | 6          | mA   |
| V <sub>RM</sub> = 100V, T <sub>C</sub> = 150°C                      |                 |      |            |      |
| V <sub>RM</sub> = 200V, T <sub>C</sub> = 150°C                      |                 |      |            |      |
| V <sub>RM</sub> = 300V, T <sub>C</sub> = 150°C                      |                 |      |            |      |
| V <sub>RM</sub> = 400V, T <sub>C</sub> = 150°C                      |                 |      |            |      |
| Reverse Recovery Time<br>V <sub>RM</sub> = 30V, I <sub>F</sub> = 1A | T <sub>rr</sub> |      | 200<br>150 | ns   |

\* Pulse test: Pulse width 300 μsec, Duty cycle 2%

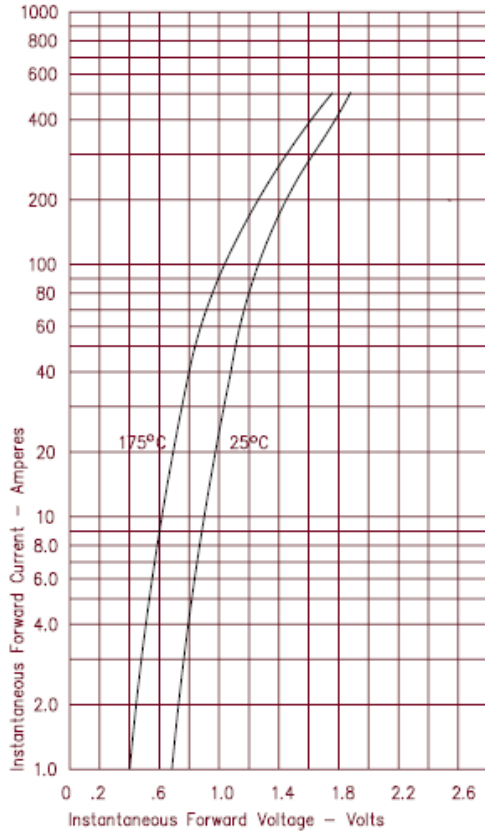
\*\* Pulse test: Pulse width 800 μsec

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### GRAPHS

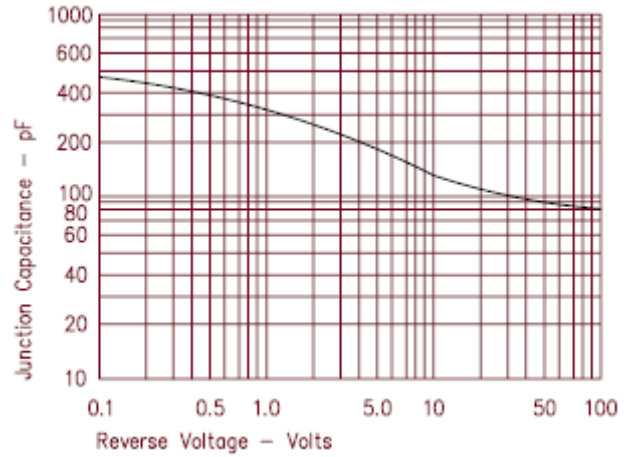
**FIGURE 1**

**TYPICAL FORWARD CHARACTERISTICS**



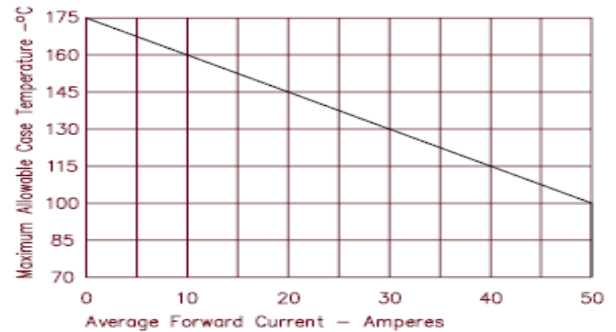
**FIGURE 3**

**TYPICAL JUNCTION CAPACITANCE**



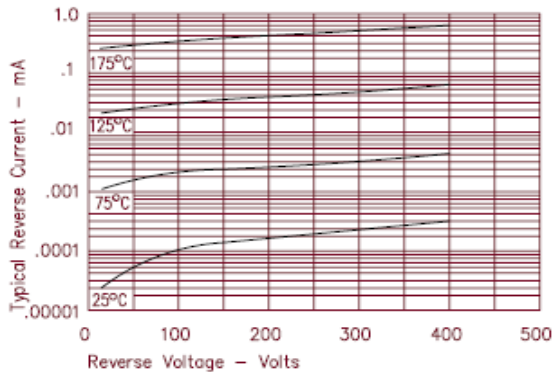
**FIGURE 4**

**FORWARD CURRENT DERATING**



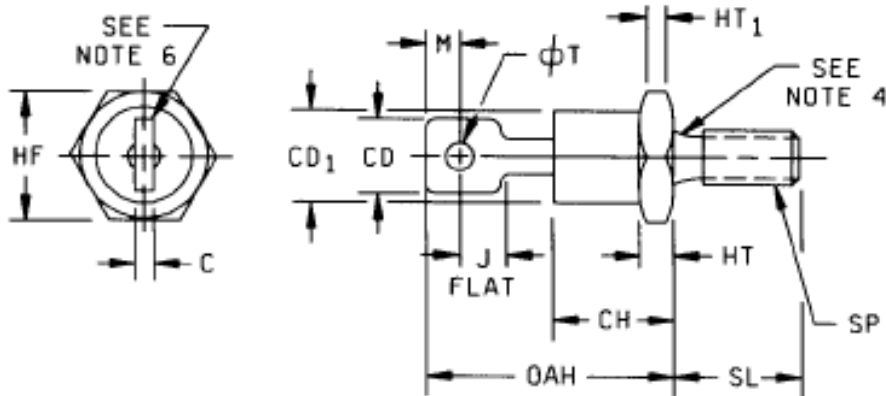
**FIGURE 2**

**TYPICAL REVERSE CHARACTERISTICS**



## HIGH RELIABILITY FAST RECOVERY RECTIFIER

### PACKAGE DIMENSIONS



#### NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Units must not be damaged by torque of 30 inch-pounds applied to 0.250-28 UNF-2B nut assembled on thread.
- Diameter of unthreaded portion 0.249 inch (6.32 mm) max and 0.220 inch (5.59 mm) minimum.
- Complete threads to extend to within 2.5 threads of seating plane.
- Angular orientation for this terminal is underlined, however the major surfaces over dimension CD shall be flat and the minimum distance from the hole to any point on the periphery shall be 0.030 inch (0.76mm) outside dimension J.
- Max pitch diameter of plated threads shall be basic pitch diameter 0.2268 inch (5.76 mm) reference FED-STD-H28.
- (Screw Thread Standards for Federal Services.)
- A chamfer or undercut on one or both ends of the hex portion is optional: Minimum base diameter at seating plane. 0.600 inch (15.24 mm)
- Reversed (anode to stud) units shall be marked with an "R" following the last digit in the type number.

| Ltr      | Dimensions                        |       |                                   |       |
|----------|-----------------------------------|-------|-----------------------------------|-------|
|          | Inches                            |       | Millimeters                       |       |
|          | Min                               | Max   | Min                               | Max   |
| C        | 0.030                             | 0.080 | 0.76                              | 2.03  |
| CD       | 0.250                             | 0.375 | 6.35                              | 9.52  |
| CD1      |                                   | 0.667 |                                   | 16.94 |
| CH       |                                   | 0.450 |                                   | 11.43 |
| HF       | 0.669                             | 0.688 | 16.99                             | 17.48 |
| HT       | 0.115                             | 0.200 | 2.93                              | 5.08  |
| HT1      | 0.060                             |       | 1.53                              |       |
| J        | 0.156                             |       | 3.97                              |       |
| M        | 0.030                             |       | 0.77                              |       |
| OAH      | 0.750                             | 1.000 | 19.05                             | 25.40 |
| $\phi T$ | 0.140                             | 0.175 | 3.56                              | 04.44 |
| SL       | 0.422                             | 0.453 | 10.72                             | 11.50 |
| SP       | .250-28 UNF-2A<br>THD NF optional |       | 6.35-28 UNF-2A<br>THD NF optional |       |

Physical dimensions (DO-5)