



## VOIDLESS-HERMETICALLY SEALED FAST RECOVERY GLASS RECTIFIERS

Qualified per MIL-PRF-19500/424

*Qualified Levels:  
JAN, JANTX  
and JANTXV*

### DESCRIPTION

This “fast recovery” rectifier diode series is military qualified and is ideal for high-reliability applications where a failure cannot be tolerated. These industry-recognized 3.0 amp rated rectifiers for working peak reverse voltages from 100 to 600 volts are hermetically sealed with voidless-glass construction using an internal “*Category I*” metallurgical bond. Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speed requirements including fast and ultrafast device types in both through-hole and surface mount packages.

**Important:** For the latest information, visit our website <http://www.microsemi.com>.

### FEATURES

- JEDEC registered 1N5186 thru 1N5190 series.
- Voidless hermetically sealed glass package.
- Working Peak Reverse Voltage 100 to 600 volts.
- Internal “*Category I*” metallurgical bond.
- JAN, JANTX, and JANTXV qualifications are available per MIL-PRF-19500/424.
- RoHS compliant versions available (commercial grade only).

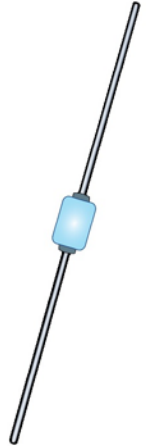
### APPLICATIONS / BENEFITS

- Fast recovery 3 amp 100 to 600 volt rectifiers.
- Military and other high-reliability applications.
- General rectifier applications including bridges, half-bridges, catch diodes, etc.
- High forward surge current capability.
- Extremely robust construction.
- Low thermal resistance.
- Controlled avalanche with peak reverse power capability.
- Inherently radiation hard as described in Microsemi “[MicroNote 050](#)”.

### MAXIMUM RATINGS

| Parameters/Test Conditions   | Symbol                              | Value                      | Unit  |    |
|--|-------------------------------------|----------------------------|-------|----|
| Junction and Storage Temperature                                   | T <sub>J</sub> and T <sub>STG</sub> | -65 to +175                | °C    |    |
| Thermal Resistance Junction-to-Lead <sup>(1)</sup>                 | R <sub>θJL</sub>                    | 20                         | °C/W  |    |
| Forward Surge Current @ 8.3 ms half-sine, T <sub>A</sub> = +150 °C | I <sub>FSM</sub>                    | 80                         | A     |    |
| Working Peak Reverse Voltage                                       | V <sub>RWM</sub>                    | 1N5186                     | 100   | V  |
|  |                                     | 1N5187                     | 200   |    |
|  |                                     | 1N5188                     | 400   |    |
|  |                                     | 1N5190                     | 600   |    |
| Average Rectified Forward Current                                  | I <sub>O</sub>                      | @ T <sub>A</sub> = +25 °C  | 3.0   | A  |
|  |                                     | @ T <sub>A</sub> = +150 °C | 0.700 |    |
| Maximum Reverse Recovery Time                                      | t <sub>rr</sub>                     | 1N5186                     | 150   | ns |
|  |                                     | 1N5187                     | 200   |    |
|  |                                     | 1N5188                     | 250   |    |
|  |                                     | 1N5190                     | 400   |    |
| Solder Temperature @ 10 s  | T <sub>SP</sub>                     | 260                        | °C    |    |

**Notes:** 1. At 3/8 inch (10 mm) lead length from body.



“B” Package

#### MSC – Lawrence

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Lawrence, MA 01841  
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Tel: (978) 620-2600  
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#### MSC – Ireland

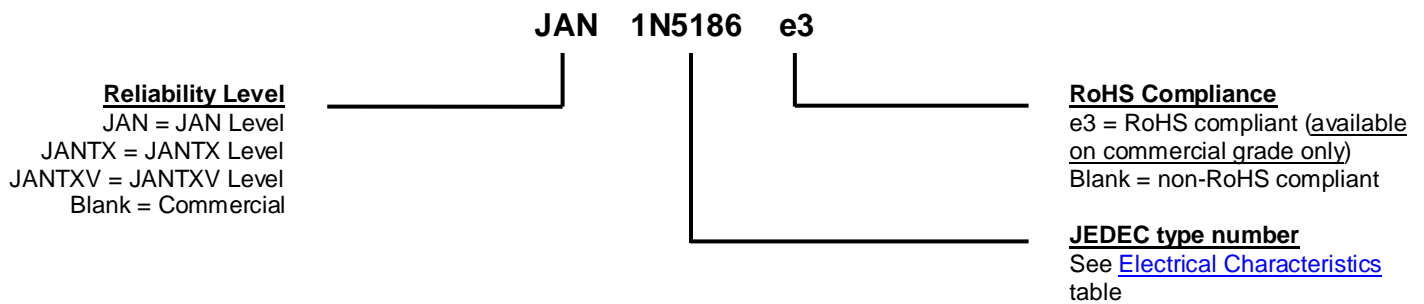
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#### Website:

[www.microsemi.com](http://www.microsemi.com)

**MECHANICAL and PACKAGING**

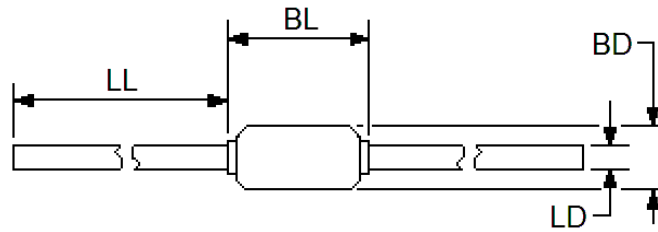
- CASE: Hermetically sealed voidless hard glass with tungsten slugs.
- TERMINALS: Tin/lead (Sn/Pb) over nickel (Ni) coat or RoHS compliant matte-tin (commercial grade only) over copper.
- MARKING: Body is coated and marked with part number.
- POLARITY: Cathode band.
- TAPE & REEL option: Standard per EIA-296. Consult factory for quantities.
- WEIGHT: 797 milligrams.
- See [Package Dimensions](#) on last page.

**PART NOMENCLATURE**

**SYMBOLS & DEFINITIONS**

| Symbol     | Definition  |
|------------|---|
| $V_{(BR)}$ | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.  |
| $V_{RWM}$  | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range.  |
| $V_F$      | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current.  |
| $I_R$      | Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and temperature.   |
| $t_{rr}$   | Reverse Recovery Time: The time interval between the instant the current passes through zero when changing from the forward direction to the reverse direction and a specified decay point after a peak reverse current occurs. |

**ELECTRICAL CHARACTERISTICS**

| TYPE   | MINIMUM BREAKDOWN VOLTAGE | FORWARD VOLTAGE      |           | MAXIMUM REVERSE CURRENT |                |
|--------|---------------------------|----------------------|-----------|-------------------------|----------------|
|        | $V_{(BR)}$ @ 100 $\mu$ A  | $V_F$ @ 9 A (pulsed) |           | $I_R$ @ $V_{RWM}$       |                |
|        | Volts                     | MIN Volts            | MAX Volts | 25 °C $\mu$ A           | 100 °C $\mu$ A |
| 1N5186 | 120                       | 0.9                  | 1.5       | 2.0                     | 100            |
| 1N5187 | 240                       | 0.9                  | 1.5       | 2.0                     | 100            |
| 1N5188 | 480                       | 0.9                  | 1.5       | 2.0                     | 100            |
| 1N5190 | 660                       | 0.9                  | 1.5       | 2.0                     | 100            |

**PACKAGE DIMENSIONS**


| Symbol    | Dimension |       |             |       | Notes |
|-----------|-----------|-------|-------------|-------|-------|
|           | Inch      |       | Millimeters |       |       |
|           | Min       | Max   | Min         | Max   |       |
| <b>BD</b> | 0.115     | 0.155 | 2.92        | 3.94  | 3     |
| <b>LD</b> | 0.038     | 0.042 | 0.97        | 1.07  |       |
| <b>BL</b> | 0.150     | 0.300 | 3.81        | 7.62  | 4     |
| <b>LL</b> | 1.00      | 1.50  | 25.40       | 38.10 |       |

**NOTES:**

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Dimension BD shall be measured at the largest diameter. The BL dimension shall include the entire body including slugs.
4. Dimension BL shall include the sections of the lead over which the diameter is uncontrolled.  
This uncontrolled area is defined as the zone between the edge of the diode body and extending .050 inch (1.27 mm) onto the leads.
5. In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi$ x symbology.