



FAST RECOVERY RECTIFIERS

DESCRIPTION

This 1N3879 – 1N3883 rectifier device is suitable for applications in DC power supplies, inverters, converters, choppers and ultrasonic systems as well as other applications. It can also be used as a free-wheeling diode. It is available in both standard and reverse polarities. Microsemi also offers numerous other products to meet higher and lower power voltage regulation applications.

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

FEATURES

- Very low forward voltage.
- Fast recovery time.
- Low thermal resistance.
- Mechanically rugged.
- Both polarities available.
- RoHS compliant devices available by adding “e3” suffix.

APPLICATIONS / BENEFITS

- 6 amps current rating.
- Short reverse recovery time.
- High surge capability.
- Hermetically sealed.

MAXIMUM RATINGS

| Parameters/Test Conditions | Symbol | Value | Unit |
|--|-------------------------------------|------------------|------|
| Junction and Storage Temperature | T _J and T _{STG} | -65 to +175 | °C |
| Thermal Resistance Junction-to-Case | R _{θJC} | 2.0 | °C/W |
| Working Peak Reverse Voltage | 1N3879(R) | V _{RWM} | V |
| | 1N3880(R) | 50 | |
| | 1N3881(R) | 100 | |
| | 1N3882(R) | 200 | |
| | 1N3883(R) | 300 | |
| Repetitive Peak Reverse Voltage | 1N3879(R) | V _{RRM} | V |
| | 1N3880(R) | 50 | |
| | 1N3881(R) | 100 | |
| | 1N3882(R) | 200 | |
| | 1N3883(R) | 300 | |
| Maximum Non-Repetitive Sinusoidal Surge Current (8.3 ms) | I _{FSM} | 200 | Amps |



**DO-203AA (DO-4)
Package**

MSC – Lawrence

6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158
(978) 620-2600
Fax: (978) 689-0803

MSC – Ireland

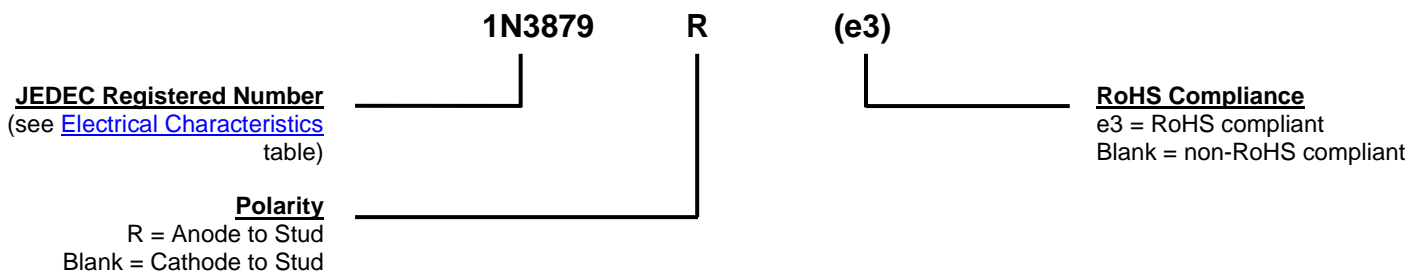
Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:

www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Hermetically sealed metal and glass case body with 10-32 UNF3A threaded stud.
- TERMINALS: Tin-lead plated or RoHS compliant matte-tin plating on nickel.
- MARKING: MSC, date code, and symbol.
- WEIGHT: 5 grams (approximate).
- Maximum Stud Torque: 10-15 inch pounds.
- See [Package Dimensions](#) on last page.

PART NOMENCLATURE

SYMBOLS & DEFINITIONS

| Symbol | Definition |
|-------------|---|
| C_J | Junction Capacitance: The junction capacitance in pF at a specified frequency. |
| $I_{F(AV)}$ | Average Forward Current: The average forward current dc value, no alternating component. |
| I_{FSM} | Maximum Forward Surge Current: The forward current, surge peak or rated forward surge current. |
| I_{RM} | Maximum Reverse Current: The maximum reverse (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. |
| V_{FM} | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. |
| V_{RRM} | Repetitive Peak Reverse Voltage: The peak reverse voltage including all repetitive transient voltages but excluding all non-repetitive transient voltages. |
| V_{RWM} | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range excluding all transient voltages (ref JESD282-B). Also sometimes known as PIV. |

ELECTRICAL CHARACTERISTICS

| Type | Typical Junction Capacitance C_J | Average Forward Current $I_{F(AV)}$ | Maximum Forward Voltage V_{FM} | Maximum Reverse Current I_{RM} | | Maximum Reverse Recovery Time t_{rr} |
|---|------------------------------------|-------------------------------------|---|------------------------------------|-----------------------------------|--|
| | | $T_C = 100\text{ }^\circ\text{C}$ | $T_J = 25\text{ }^\circ\text{C}$ | $T_J = 25\text{ }^\circ\text{C}$ | $T_J = 150\text{ }^\circ\text{C}$ | |
| 1N3879(R) 1N3880(R) 1N3881(R) 1N3882(R) 1N3883(R) | 115 pF ⁽¹⁾ | 6 A | 1.4 V @ $I_{FM} = 20\text{ A}$ ⁽²⁾ | 15 μA @ V_{RRM} | 3 mA @ V_{RRM} | 200 ns ⁽³⁾ |

- NOTES:**
1. $V_R = 10\text{ V}$, $f = 1\text{ Mhz}$, $T_J = 25\text{ }^\circ\text{C}$.
 2. $I_{FM} = 20\text{ A}$, $T_J = 25\text{ }^\circ\text{C}$. Pulse test: pulse width 300 μsec , duty cycle 2%.
 3. $I_F = 1\text{ A}$, $V_R = 30\text{ A}$, $di/dt = 25\text{ A}/\mu\text{s}$, $T_C = 55\text{ }^\circ\text{C}$.

GRAPHS

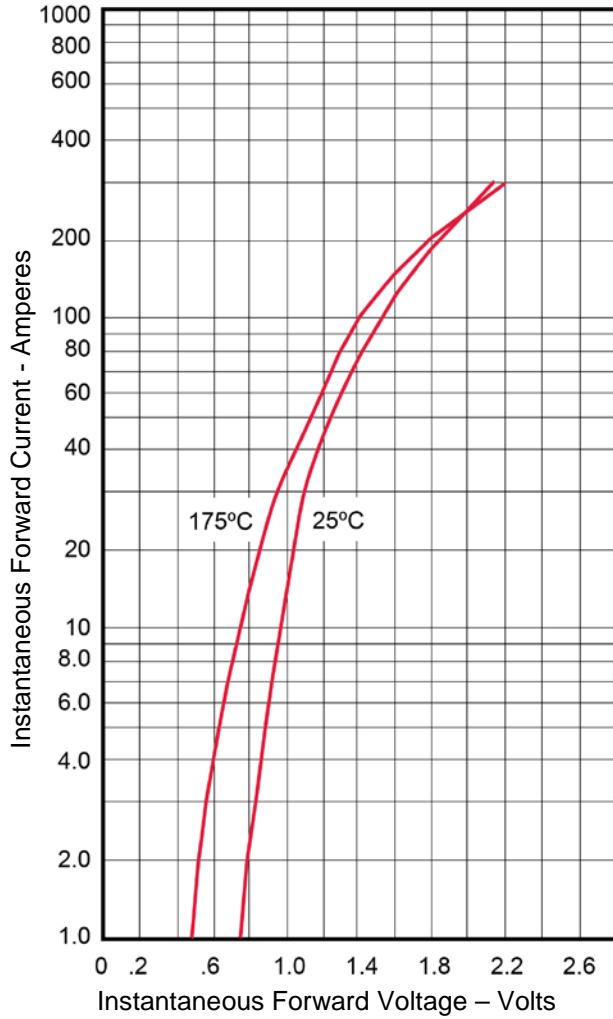


FIGURE 1
Typical Forward Characteristics

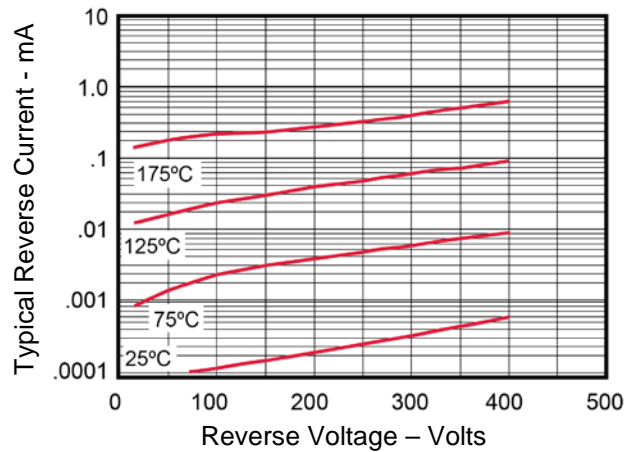


FIGURE 2
Typical Reverse Characteristics

GRAPHS (continued)

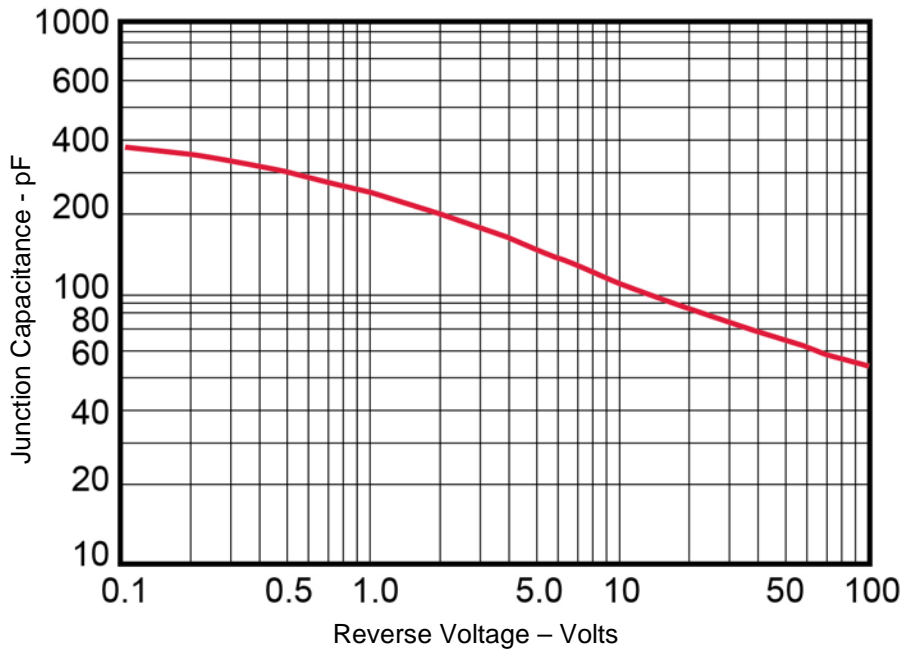


FIGURE 3
Typical Junction Capacitance

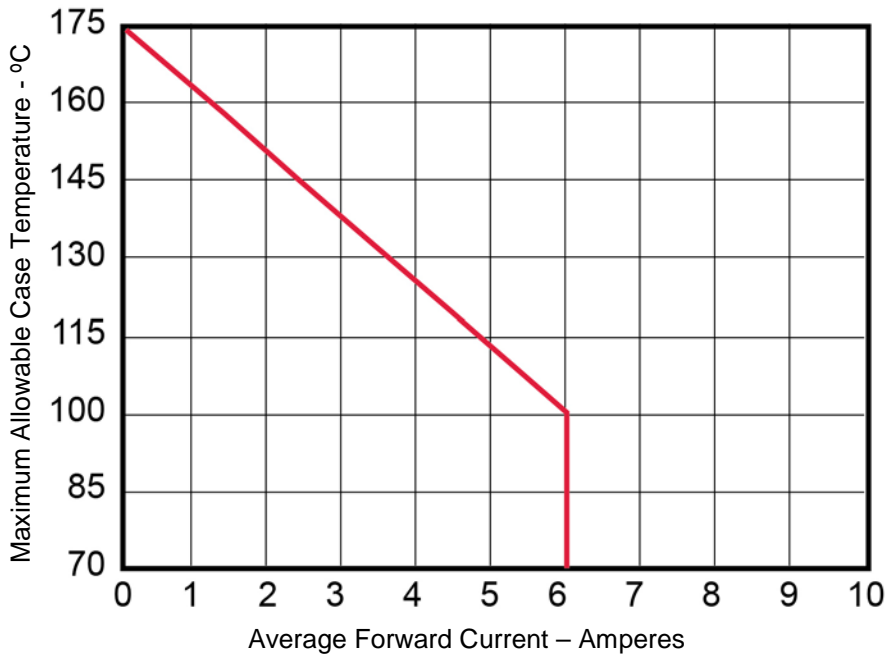
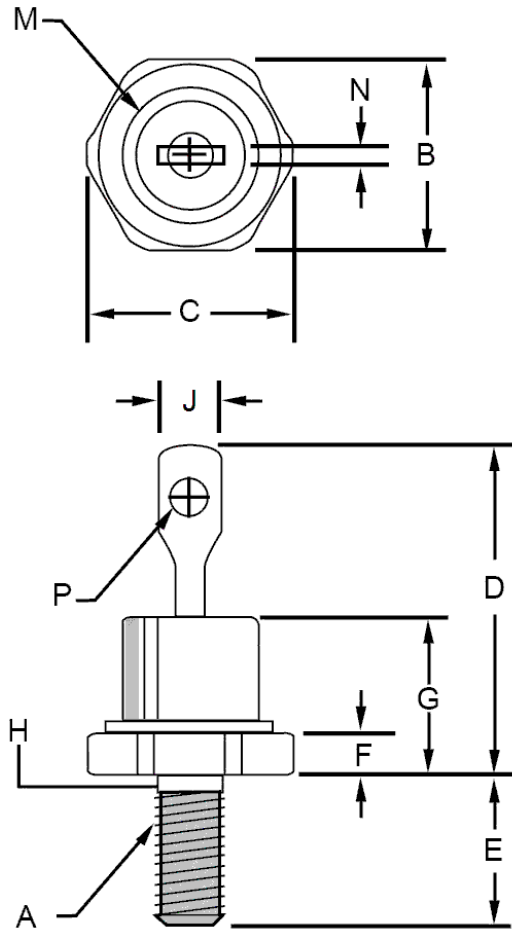


FIGURE 4
Forward Current Derating

PACKAGE DIMENSIONS

NOTES:

1. 10-32 UNF3A threads.
2. Full threads within 2 ½ threads.
3. Standard polarity: stud is cathode. Reverse polarity: stud is anode.

| Ltr | Dimensions | | | | Notes |
|-----|------------|------|-------------|-------|-------|
| | Inches | | Millimeters | | |
| | Min | Max | Min | Max | |
| A | - | - | - | - | 1 |
| B | .424 | .437 | 10.77 | 11.10 | |
| C | - | .505 | - | 12.82 | |
| D | - | .800 | - | 20.32 | |
| E | .422 | .453 | 10.72 | 11.50 | |
| F | .075 | .175 | 1.90 | 4.44 | |
| G | - | .405 | - | 10.29 | |
| H | .163 | .189 | 4.14 | 4.80 | 2 |
| J | - | .250 | - | 6.35 | |
| M | - | .424 | - | 10.77 | Dia. |
| N | .020 | .065 | .510 | 1.65 | |
| P | .060 | - | 1.52 | - | Dia. |