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## 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	$R_{\theta JC}$	2.0	°C/W	
Working Peak Reverse Voltage	1N3879(R)	$V_{RWM}$	50	V
	1N3880(R)		100	
	1N3881(R)		200	
	1N3882(R)		300	
	1N3883(R)		400	
Repetitive Peak Reverse Voltage	1N3879(R)	$V_{RRM}$	50	V
	1N3880(R)		100	
	1N3881(R)		200	
	1N3882(R)		300	
	1N3883(R)		400	
Maximum Non-Repetitive Sinusoidal Surge Current (8.3 ms)	$I_{FSM}$	200	Amps	



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

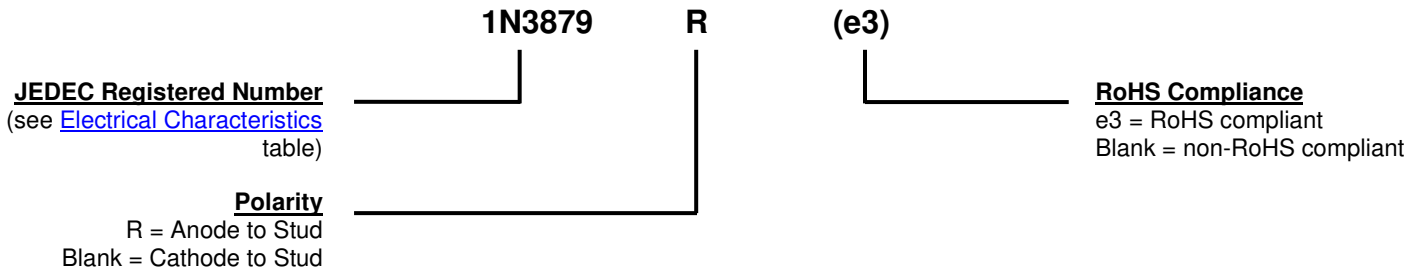
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**MECHANICAL and PACKAGING**

- 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**

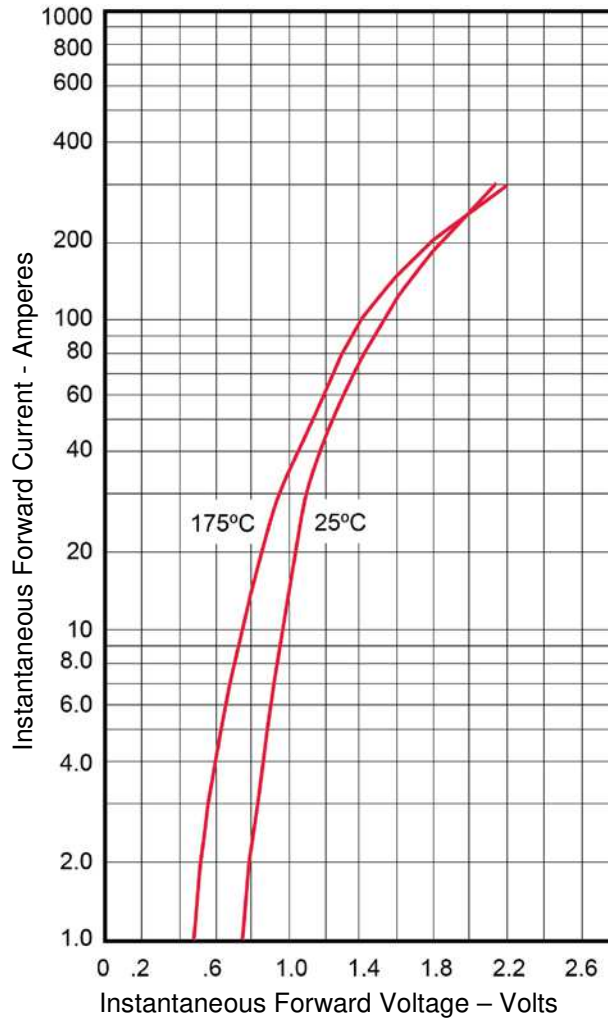
Symbol	Definition
$C_J$	Junction Capacitance: The junction capacitance in pF at a specified frequency.
$I_{F(AV)}$	Average Forward Current: The average forward current dc value, no alternating component.
$I_{FSM}$	Maximum Forward Surge Current: The forward current, surge peak or rated forward surge current.
$I_{RM}$	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**

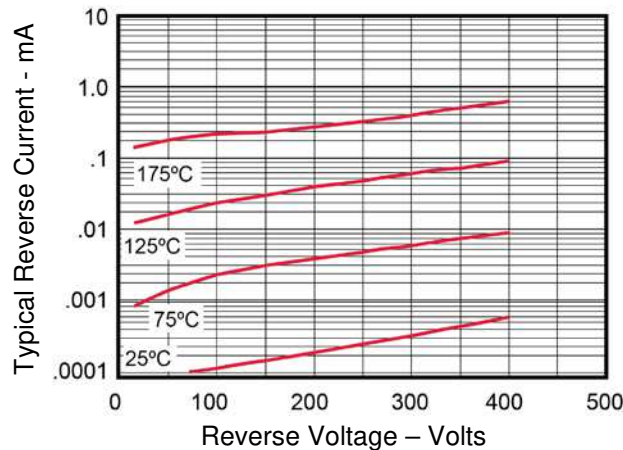
Type	Typical Junction Capacitance $C_J$	Average Forward Current $I_{F(AV)}$	Maximum Forward Voltage $V_{FM}$	Maximum Reverse Current $I_{RM}$		Maximum Reverse Recovery Time $t_{rr}$
		$T_C = 100\text{ }^\circ\text{C}$	$T_J = 25\text{ }^\circ\text{C}$	$T_J = 25\text{ }^\circ\text{C}$	$T_J = 150\text{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

- 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  $\mu\text{sec}$ , 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

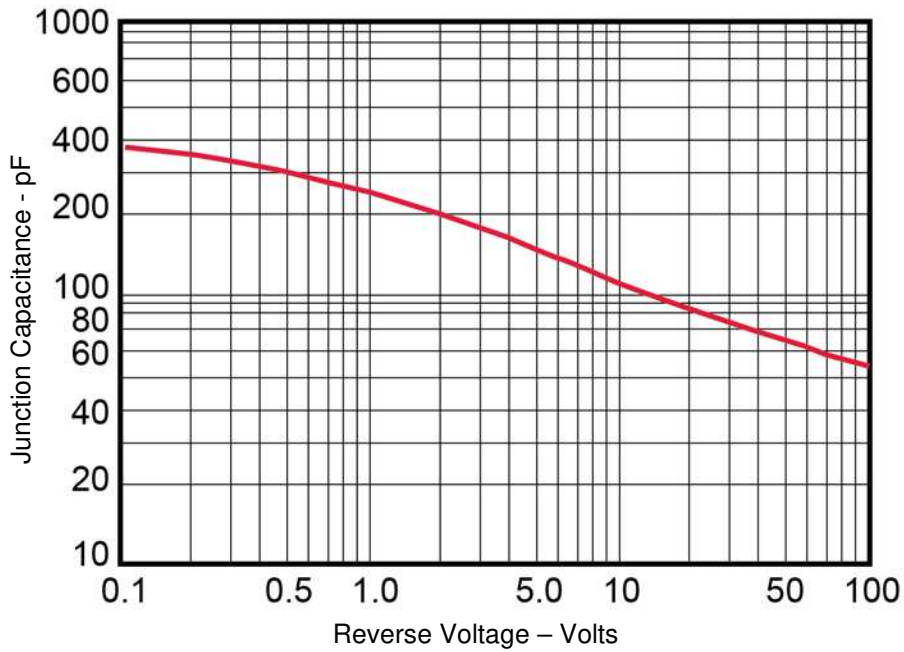


**FIGURE 1**  
Typical Forward Characteristics

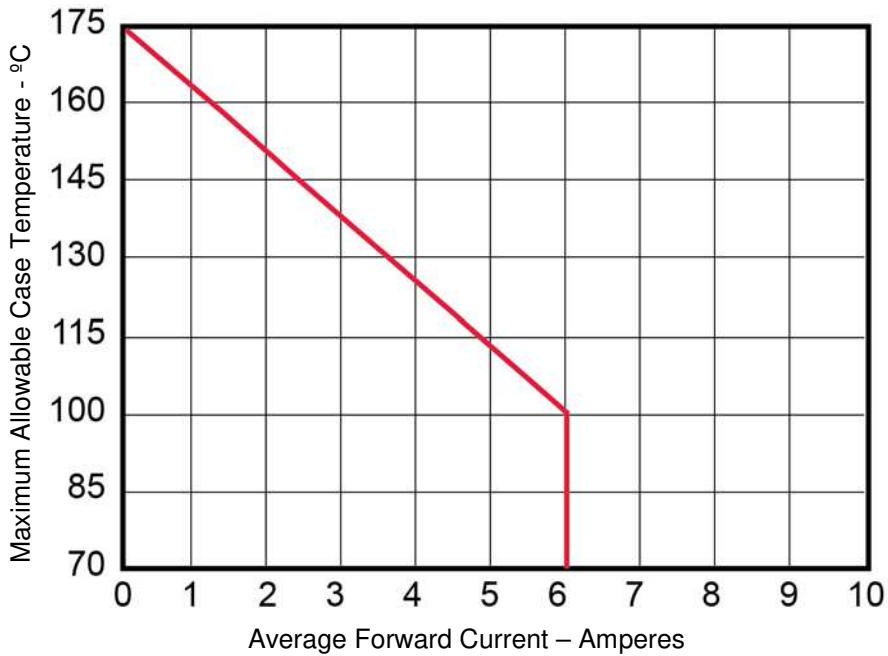


**FIGURE 2**  
Typical Reverse Characteristics

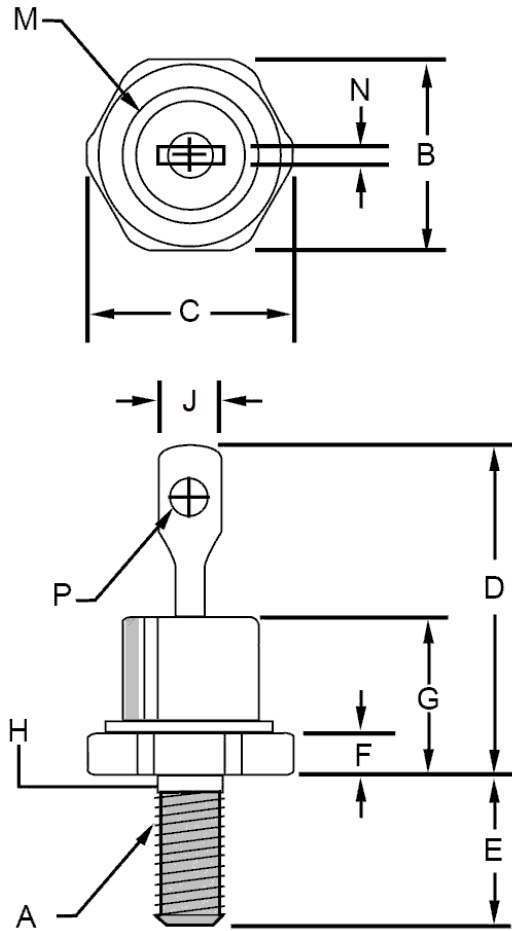
GRAPHS (continued)



**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.