RoHS
Available on commercial versions

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.

DO-203AA (DO-4) Package

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	^oC
Thermal Resistance Junction-to-Case		$R_{\Theta JC}$	2.0	$^oC/W$
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

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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

1N3879 R (e3)

JEDEC Registered Number
(see Electrical Characteristics table)

Polarity
R = Anode to Stud
Blank = Cathode to Stud

RoHS Compliance
e3 = RoHS compliant
Blank = non-RoHS compliant

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 °C	T_J = 25 °C	T_J = 25 °C	T_J = 150 °C	
1N3879(R) 1N3880(R) 1N3881(R) 1N3882(R) 1N3883(R)	115 pF (1)	6 A	1.4 V @ I_{FM} = 20 A (2)	15 µA @ V_{RRM}	3 mA @ V_{RRM}	200 ns (3)

NOTES: 1. V_R = 10 V, f = 1 Mhz, T_J = 25 °C.
2. I_{FM} = 20 A, T_J = 25 °C. Pulse test: pulse width 300 µsec, duty cycle 2%.
3. I_F = 1 A, V_R = 30 A, di/dt = 25 A/µs, T_C = 55 °C.

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GRAPHS

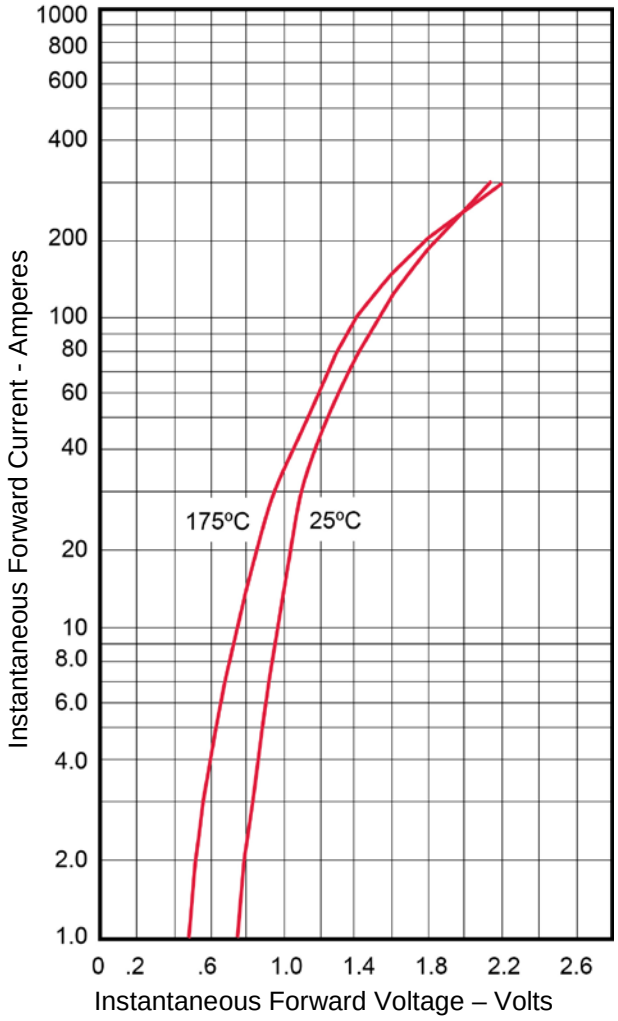

FIGURE 1
Typical Forward Characteristics

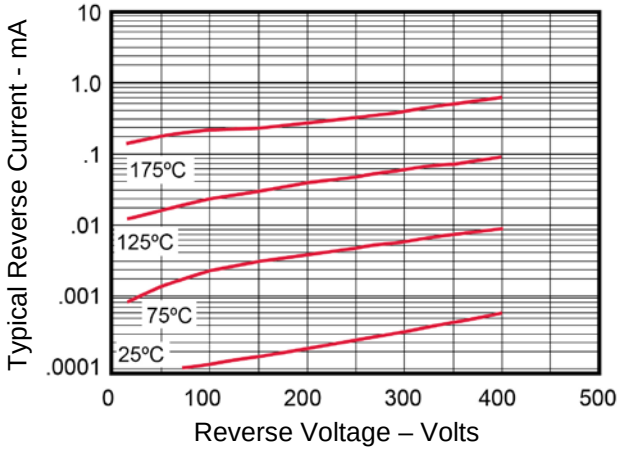

FIGURE 2
Typical Reverse Characteristics

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GRAPHS (continued)

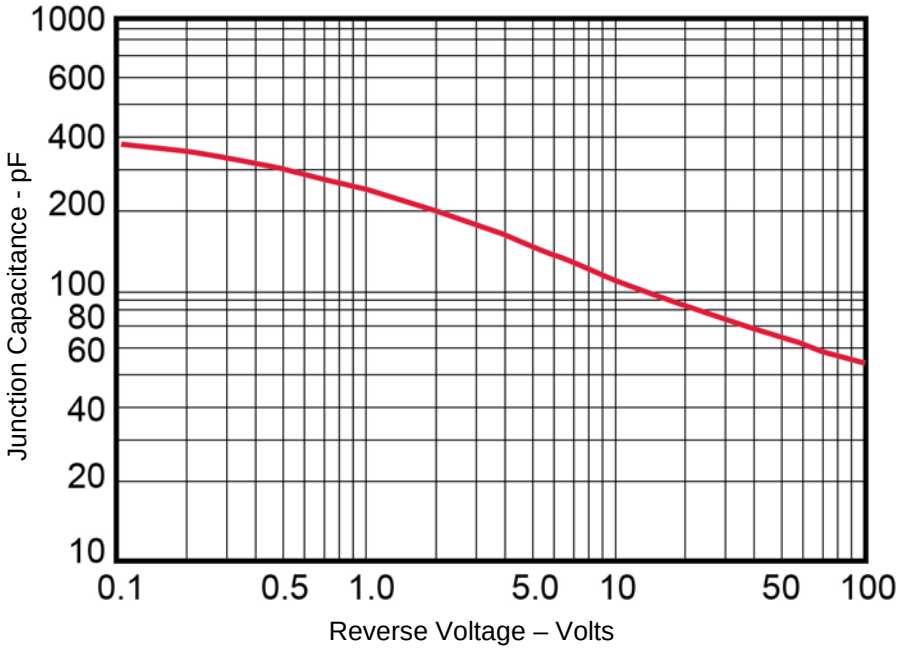

FIGURE 3
Typical Junction Capacitance

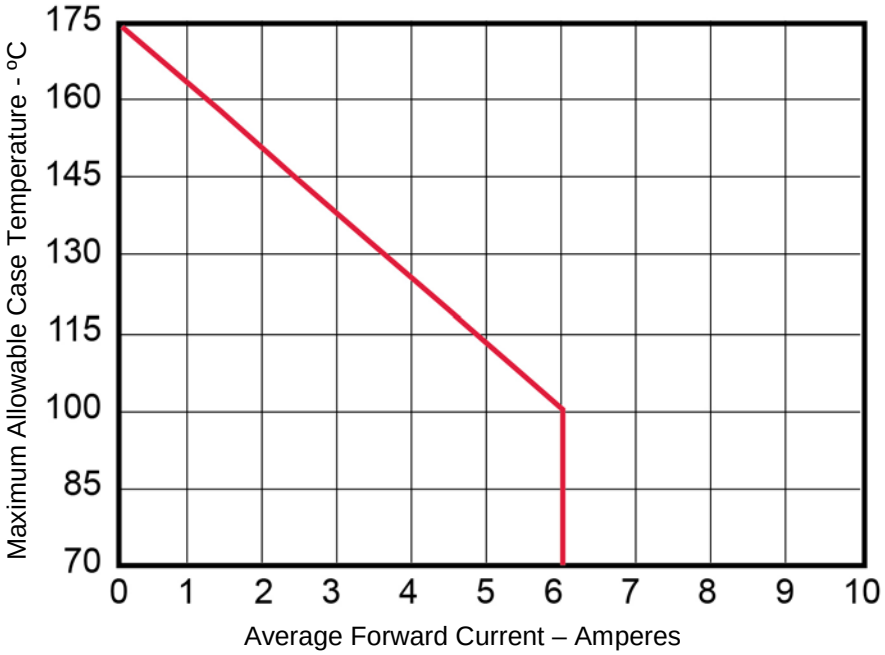

FIGURE 4
Forward Current Derating

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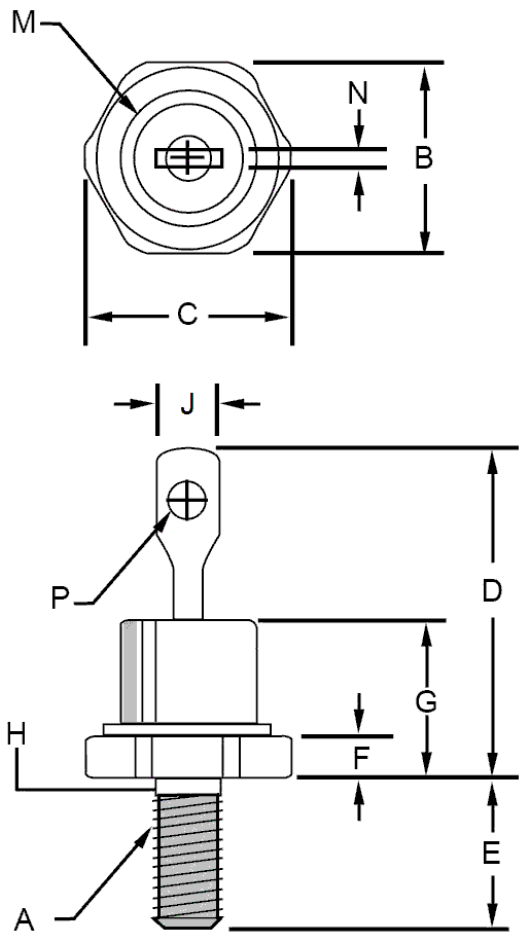
PACKAGE DIMENSIONS



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.

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