

## 2.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

### Product Summary

$V_{RRM}$ (V)	$I_o$ (A)	$V_F(\text{MAX})$ (V) @ +25°C	$I_R(\text{MAX})$ (mA) @ +25°C
30	2.0	0.42	1.0

### Description and Applications

This MBR230S1F is a single rectifier packaged in SOD123F. Ideally suited for low voltage, high frequency rectification or as free-wheeling and polarity protection diodes in surface mount applications where compact size and weight are critical to the system. Typical applications are AC-DC and DC-DC converters, reverse battery protection, and "O-ring" of multiple supply voltages and any other application where performance and size are critical.

### Features and Benefits

- Low Forward Voltage ( $V_F$ ) Minimizes Conduction Losses and Improving Efficiency
- Guard Ring Die Construction for Transient Protection
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

### Mechanical Data

- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe Solderable per MIL-STD-202, Method 208 **(e3)**
- Polarity: Cathode Band
- Weight: 0.0016 grams (approximate)

SOD123F



Top View

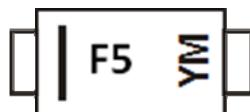
### Ordering Information (Note 4)

Part Number	Case	Packaging
MBR230S1F-7	SOD123F	3000/Tape & Reel

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

### Marking Information



F5 = Product Type Marking Code

YM = Date Code Marking

Y = Year (ex.: B = 2014)

M = Month (ex: 9 = September)

#### Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021
Code	B	C	D	E	F	G	H	I

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

## Maximum Ratings (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		
Working Peak Reverse Voltage	$V_{RWM}$	30	V
DC Blocking Voltage	$V_{RM}$		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	21	V
Average Rectified Output Current	$I_O$	2.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	30	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	50	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	120	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 5)	$P_{TOT}$	0.84	W
Operating Temperature Range	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

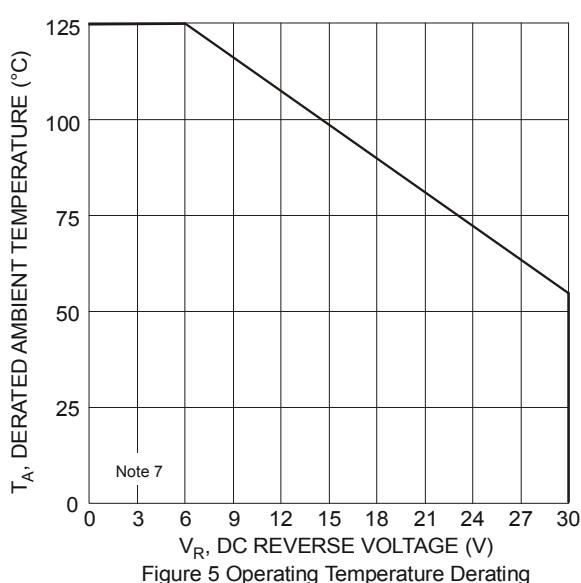
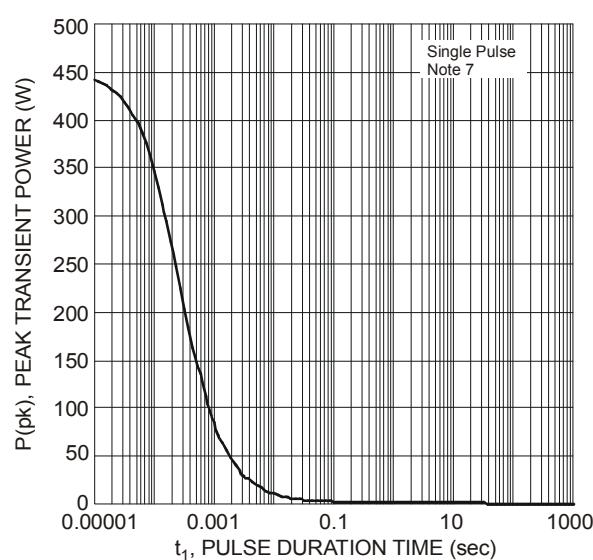
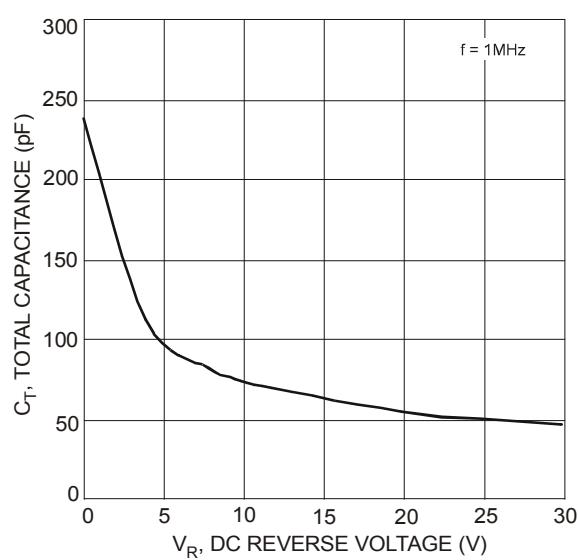
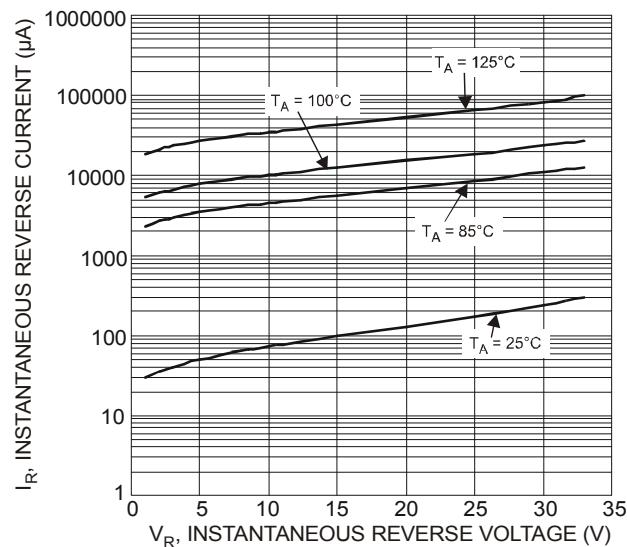
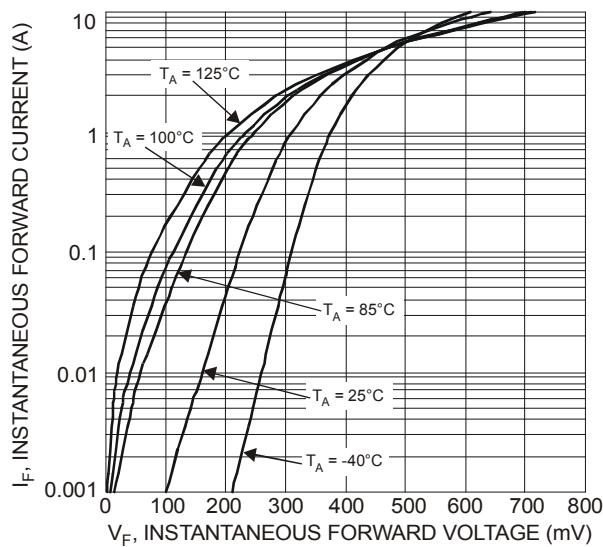
## Electrical Characteristics (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

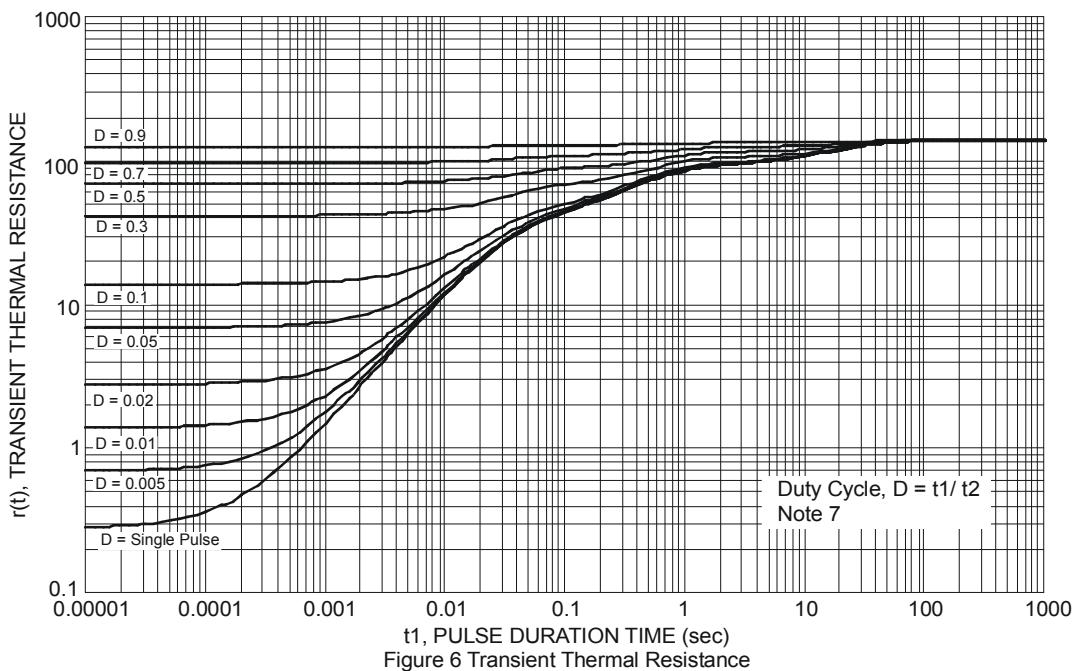
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)}$	30	—	—	V	$I_R = 1.0 \text{ mA}$
Forward Voltage Drop	$V_F$	—	0.31 0.37 0.32	— 0.42 —	V	$I_F = 1\text{A}, T_A = +25^\circ\text{C}$ $I_F = 2\text{A}, T_A = +25^\circ\text{C}$ $I_F = 2\text{A}, T_A = +100^\circ\text{C}$
Leakage Current (Note 6)	$I_R$	—	0.3 30	1.0 —	mA	$VR = 30\text{V}, T_A = +25^\circ\text{C}$ $VR = 30\text{V}, T_A = +100^\circ\text{C}$
Total Capacitance	$C_T$	—	75	—	pF	$VR = 10\text{V}, f = 1.0\text{MHz}$

Notes: 5. Device mounted on FR-4 substrate, 1" x 1", 2 oz, single-sided, PC boards with 0.1"\*\*0.15" copper pad.

6. Short duration pulse test used to minimize self-heating effect.

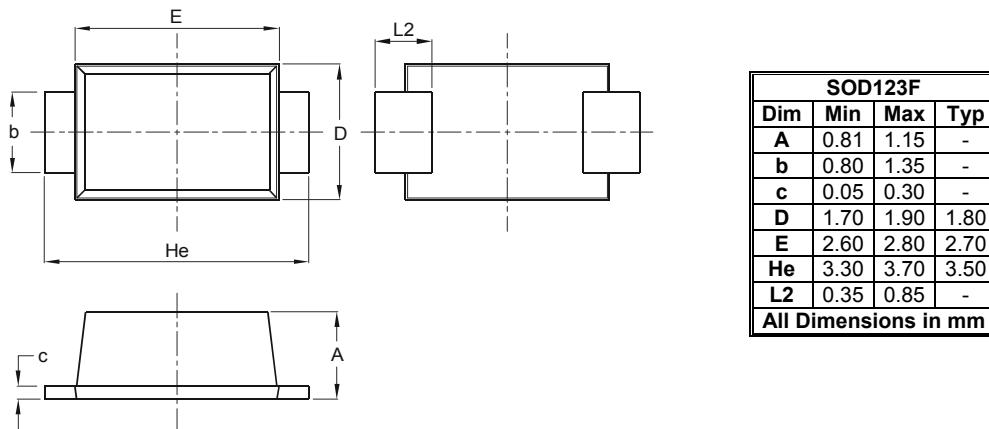
7. Device mounted on FR-4 substrate, 1" x 1", 2 oz, single-sided, PC boards with minimum recommended pad per  
<http://www.diodes.com/datasheets/ap02001>.





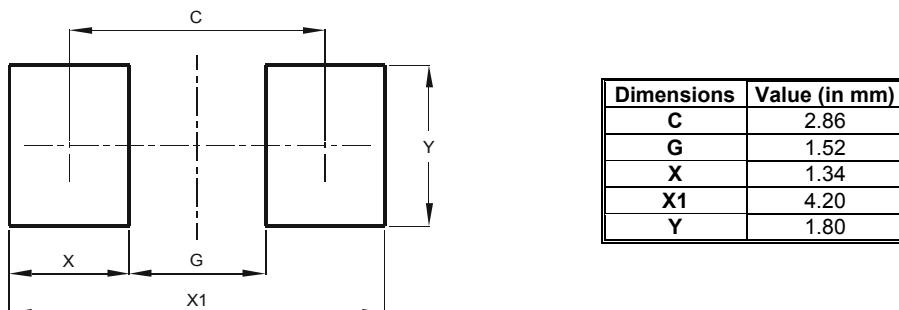
## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for latest version.



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