

2.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary

V _{RRM} (V)	I _O (A)	V _{F(MAX)} (V) @ +25°C	I _{R(MAX)} (mA) @ +25°C
30	2.0	0.42	1.0

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**

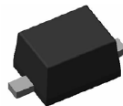
Description and Applications

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.

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



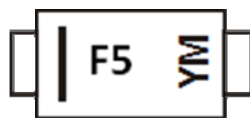
Top View

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 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}	30	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_{RM}		
RMS Reverse Voltage	$V_{R(RMS)}$	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	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	120	
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	—	V	$I_F = 1\text{A}, T_A = +25^\circ\text{C}$
			0.37	0.42		$I_F = 2\text{A}, T_A = +25^\circ\text{C}$
			0.32	—		$I_F = 2\text{A}, T_A = +100^\circ\text{C}$
Leakage Current (Note 6)	I_R	—	0.3	1.0	mA	$V_R = 30\text{V}, T_A = +25^\circ\text{C}$
			30	—		$V_R = 30\text{V}, T_A = +100^\circ\text{C}$
Total Capacitance	C_T	—	75	—	pF	$V_R = 10\text{V}, f = 1.0\text{MHz}$

- Notes:
- Device mounted on FR-4 substrate, 1" x 1", 2 oz, single-sided, PC boards with 0.1"*0.15" copper pad.
 - Short duration pulse test used to minimize self-heating effect.
 - 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>.

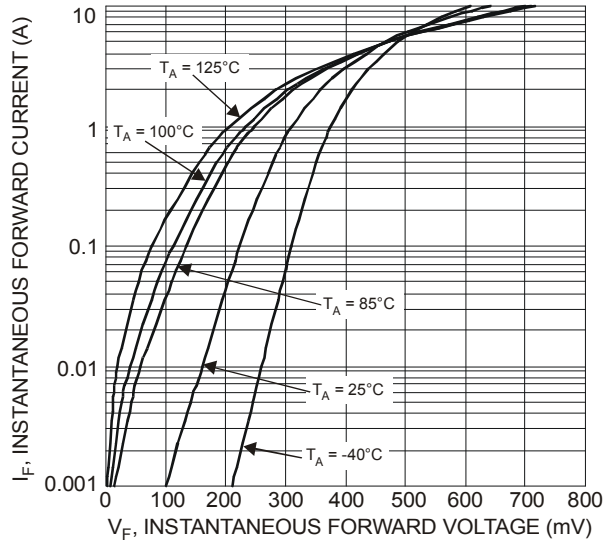


Figure 1 Typical Forward Characteristics

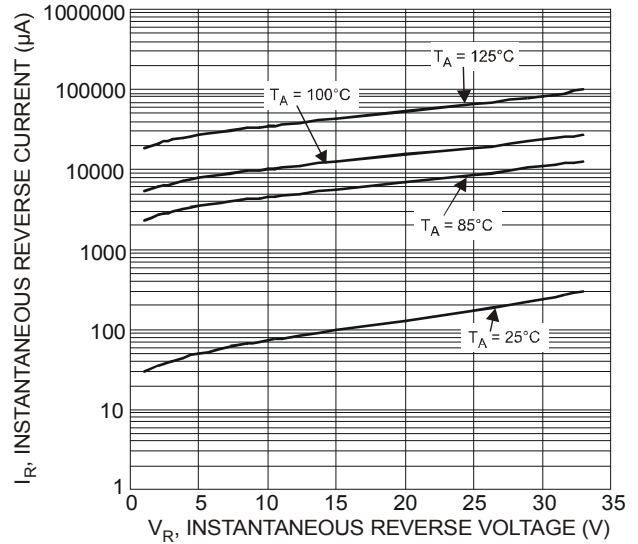


Figure 2 Typical Reverse Characteristics

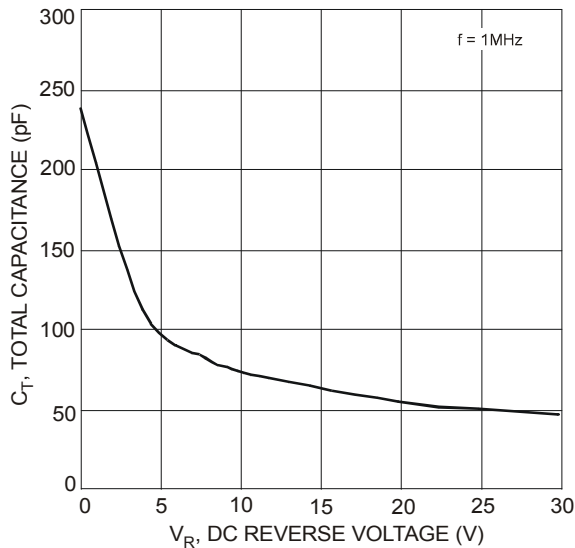


Figure 3 Total Capacitance vs. Reverse Voltage

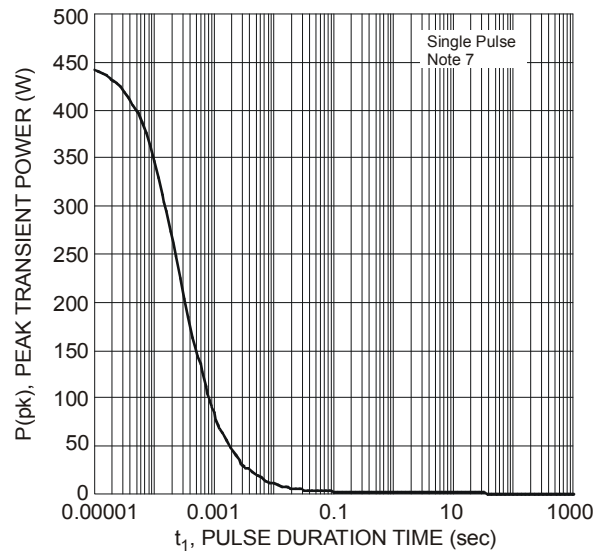


Figure 4 Single Pulse Maximum Power Dissipation

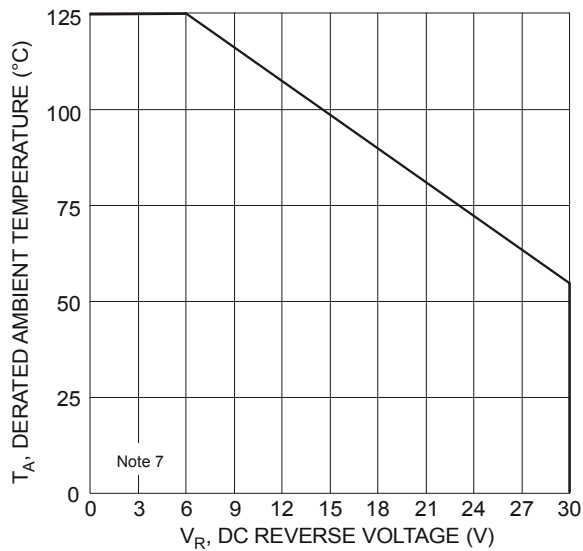
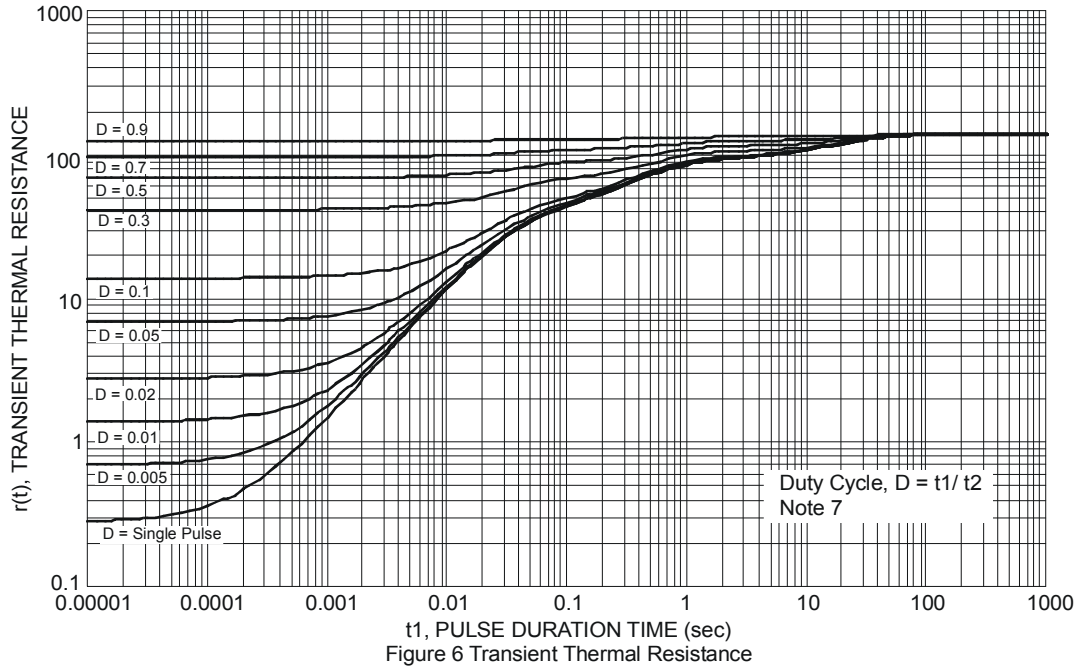
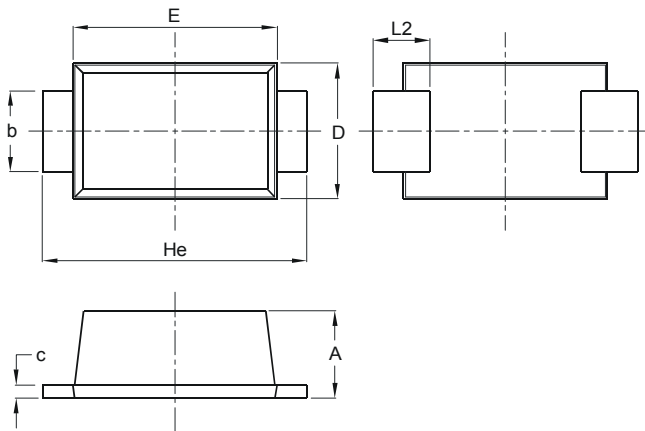


Figure 5 Operating Temperature Derating



Package Outline Dimensions

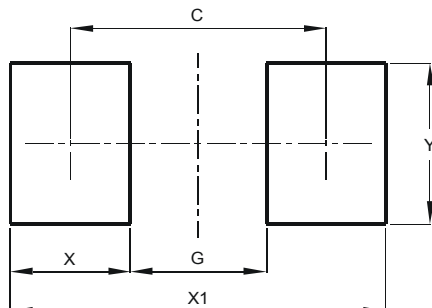
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOD123F			
Dim	Min	Max	Typ
A	0.81	1.15	-
b	0.80	1.35	-
c	0.05	0.30	-
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L2	0.35	0.85	-
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
C	2.86
G	1.52
X	1.34
X1	4.20
Y	1.80

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