0.5A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (V) @ +25°C	$I_{R(MAX)}$ (µA) @ +25°C
80	0.5	0.80	5

Features and Benefits

- Low Forward Voltage (V_F) Minimizes Conduction Losses and Improves Efficiency
- Guard Ring Die Construction for Transient Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Description and Applications

This MBR0580S1 is a single rectifier packaged in SOD123. 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: SOD123
- 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: 0.01 grams (Approximate)

SOD123

Top View

Ordering Information (Note 4)

Part Number	Case	Packaging
MBR0580S1-7	SOD123	3,000/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
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

M5X = Product Type Marking Code (ex: M58 = MBR0580S1)
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°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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	80	V
RMS Reverse Voltage	$V_{R(RMS)}$	56	V
Average Rectified Output Current	I_O	0.5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	14	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	354	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	200	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	80	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	70	°C/W
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)}$	80	—	—	V	I_R = 1.0mA
Forward Voltage Drop	V_F	— —	0.69 0.56	0.80 —	V	I_F = 0.5A, T_A = +25°C I_F = 0.5A, T_A = +125°C
Leakage Current (Note 7)	I_R	— —	0.5 280	5 —	µA	V_R = 80V, T_A = +25°C V_R = 80V, T_A = +125°C
Total Capacitance	C_T	—	15	—	pF	V_R = 5V, f = 1.0MHz

Notes: 5. Device mounted on FR-4 substrate, 2 oz. copper, minimum recommended pad layout per http://www.diodes.com/datasheets/ap02001.pdf.
6. Device mounted on FR-4 substrate, 2 oz. copper, 1in. square Cu pad.
7. Short duration pulse test used to minimize self-heating effect.

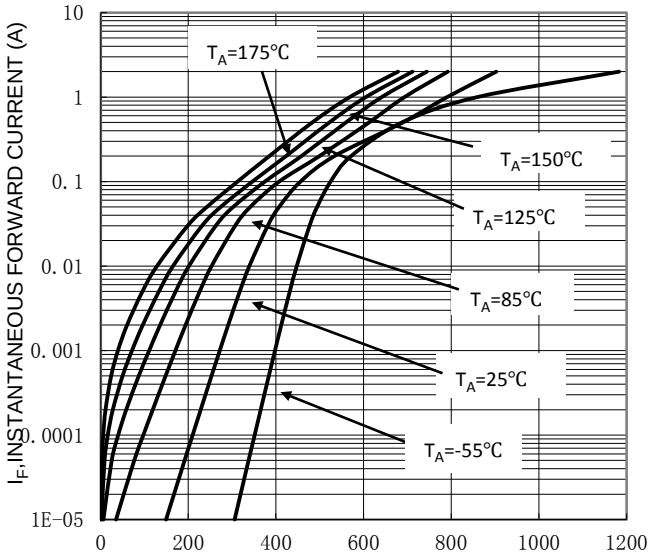


Fig.1 Typical Forward Characteristics

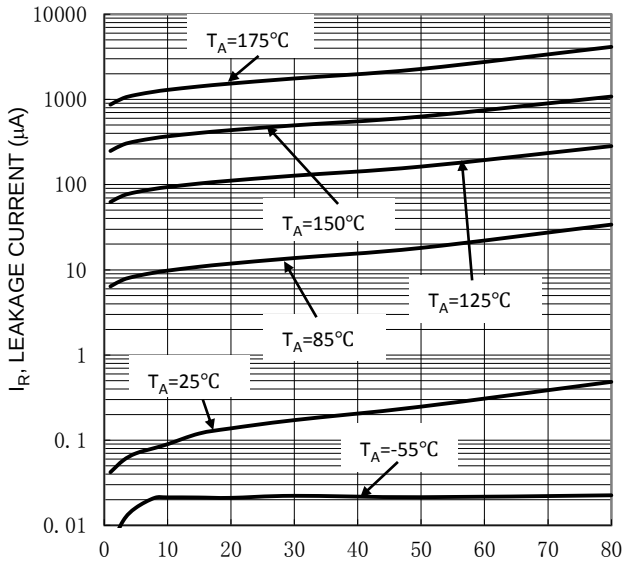


Fig.2 Typical Reverse Characteristics

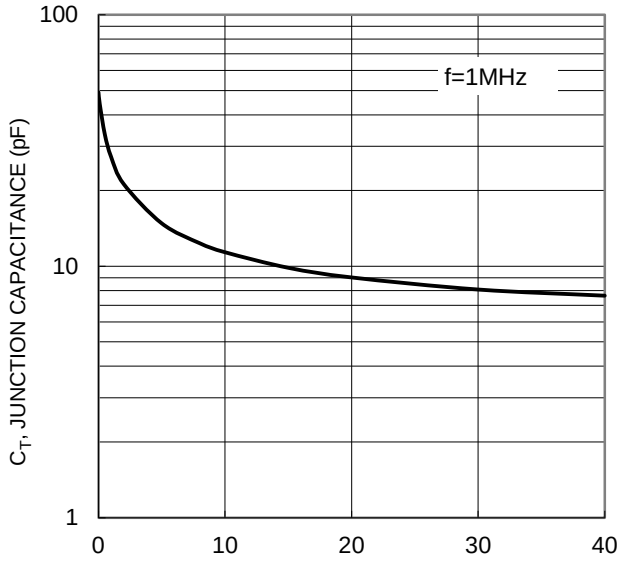


Fig.3 Typical Junction Capacitance

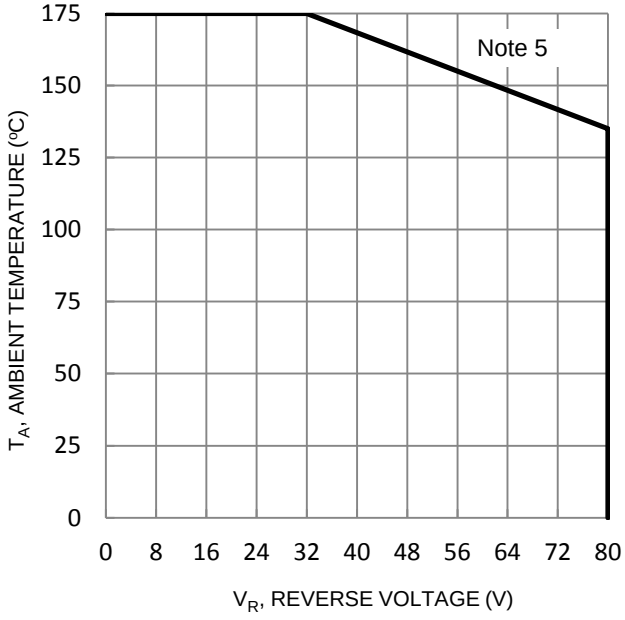


Fig.4 Operating Temperature Derating

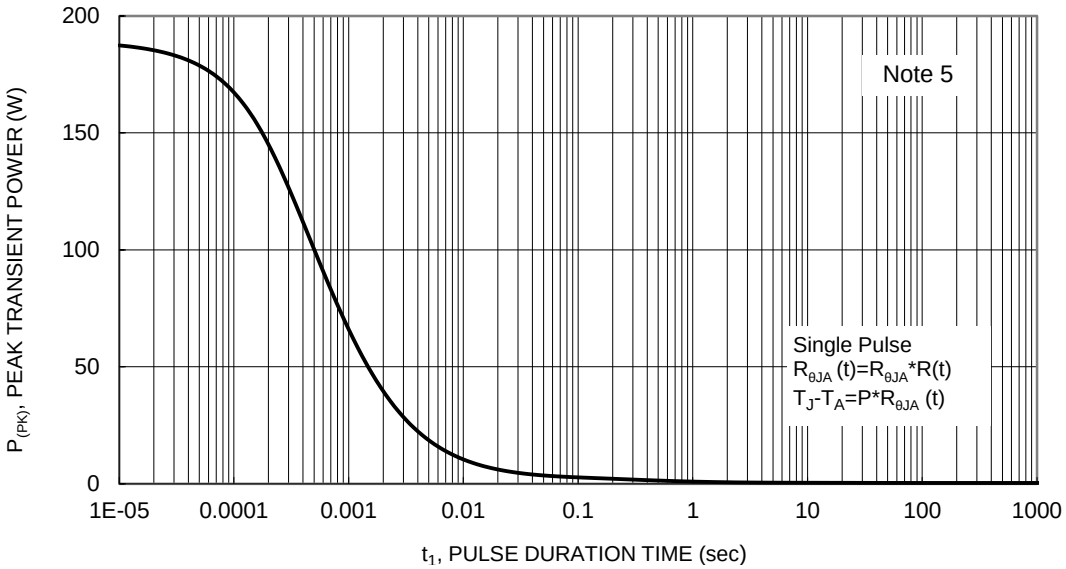


Fig.5 Single Pulse Maximum Power Dissipation

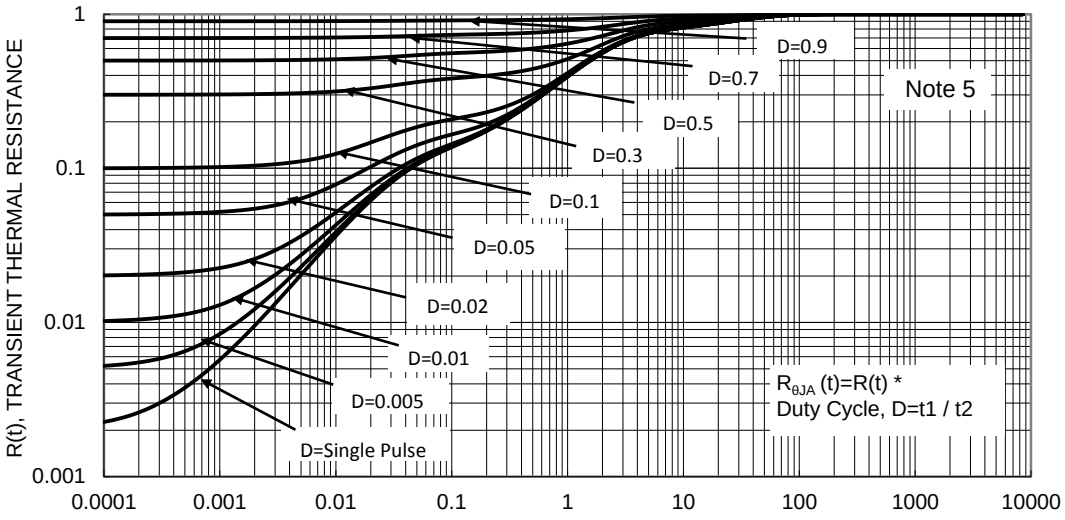
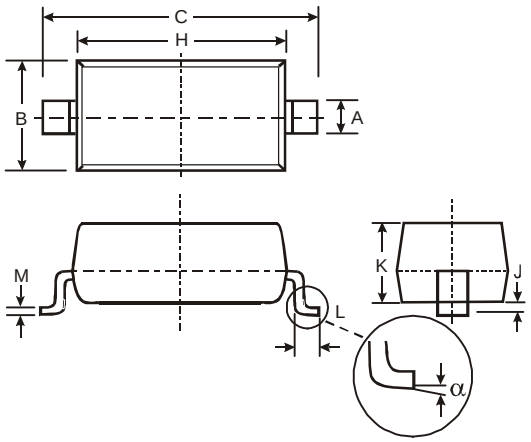


Fig. 6 Transient Thermal Resistance

Package Outline Dimensions

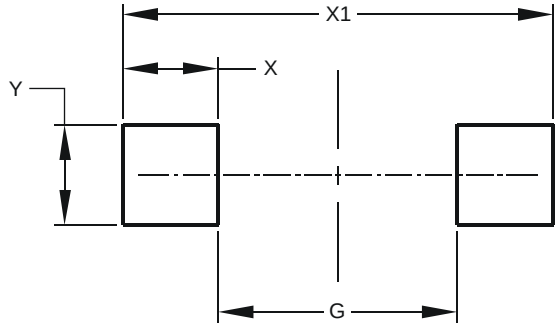
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOD123		
Dim	**Min**	**Max**
A	0.55 Typ	
B	1.40	1.70
C	3.55	3.85
H	2.55	2.85
J	0.00	0.10
K	1.00	1.35
L	0.25	0.40
M	0.10	0.15
α	0	8°
All Dimensions in mm		

Suggested Pad Layout

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



Dimensions	Value (in mm)
G	2.250
X	0.900
X1	4.050
Y	0.950

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