

Product Summary

V_{RRM} (V)	I_o (A)	$V_F(\text{Max})$ (V) @ +25°C	$I_R(\text{Max})$ (μA) @ +25°C
80	0.5	0.80	5

Description and Applications

This DIODES™ 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 protections, and “OR-ing” of multiple supply voltages and any other applications where performance and size are critical.

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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact_us@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Package: SOD123
- Package 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



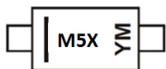
Top View

Ordering Information (Note 4)

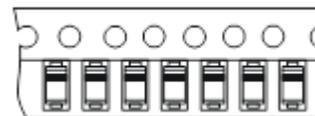
Part Number	Package	Packing	
		Qty.	Carrier
MBR0580S1-7	SOD123	3,000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



M5X = Product Type Marking Code
 YM & YM = Date Code Marking
 Y & Y = Year (ex: J = 2022)
 M = Month (ex: 9 = September)



Date Code Key

Year	2014	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	B	...	J	K	L	M	N	O	P	R	S	T

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 capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{R(RM)}	80	V
Working Peak Reverse Voltage	V _{R(WM)}		
DC Blocking Voltage	V _{RM}		
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 _{θJA}	354	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	200	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R _{θJC}	80	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R _{θJC}	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, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
6. Device mounted on FR-4 substrate, 2oz. copper, 1inch square Cu pad.
7. Short duration pulse test used to minimize self-heating effect.

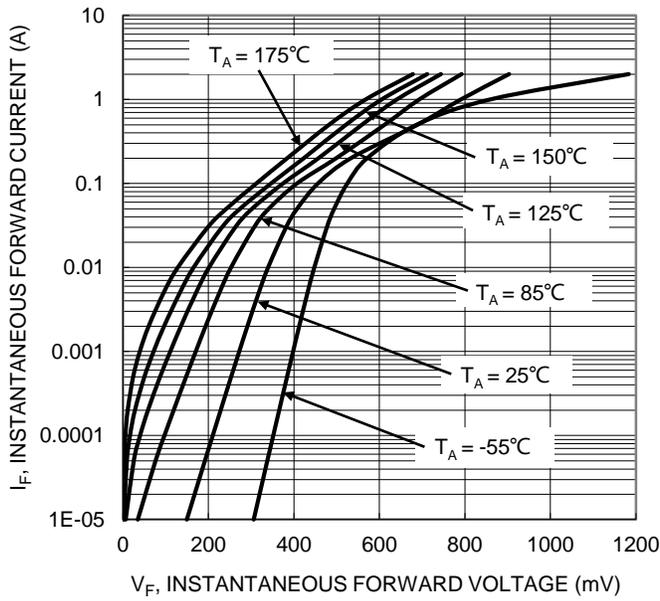


Figure 1. Typical Forward Characteristics

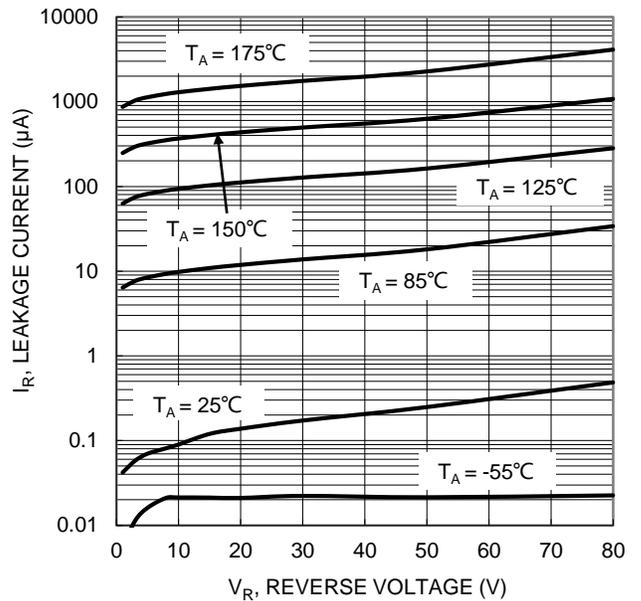


Figure 2. Typical Reverse Characteristics

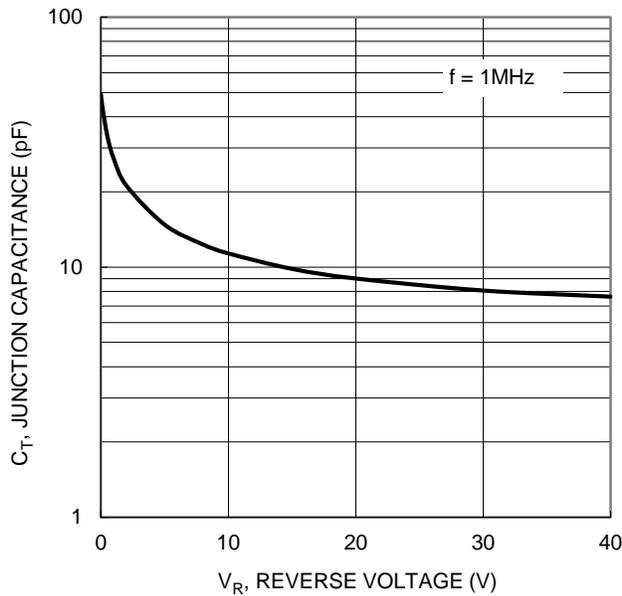


Figure 3. Typical Junction Capacitance

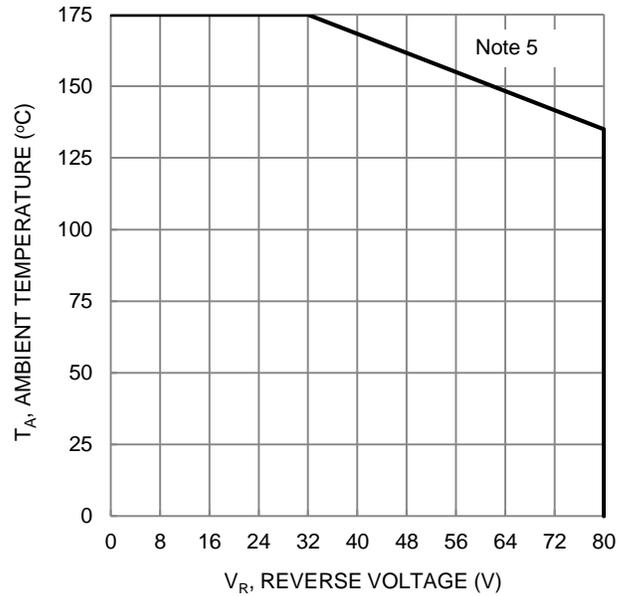


Figure 4. Operating Temperature Derating

Note: 5. Device mounted on FR-4 substrate, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.

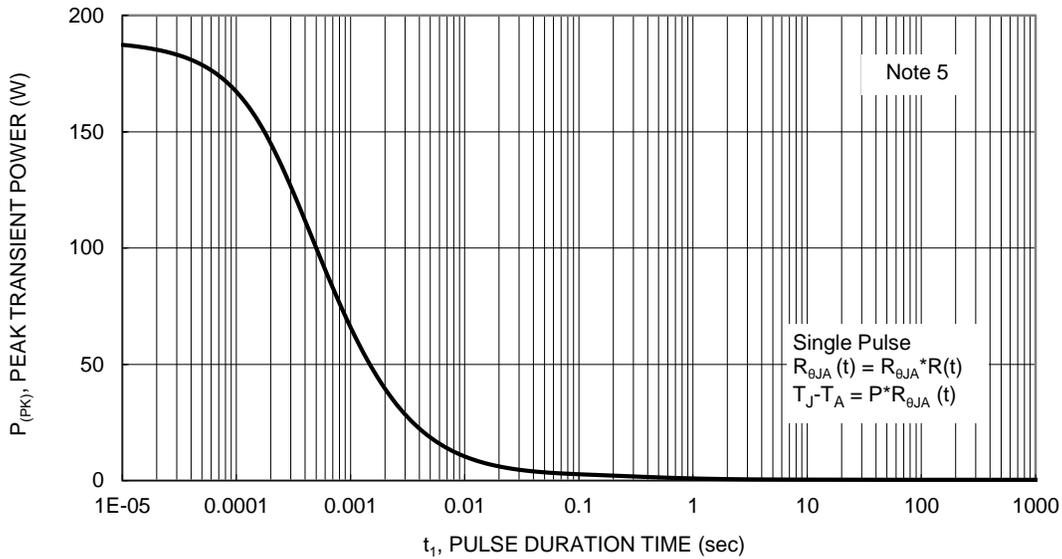


Figure 5. Single Pulse Maximum Power Dissipation

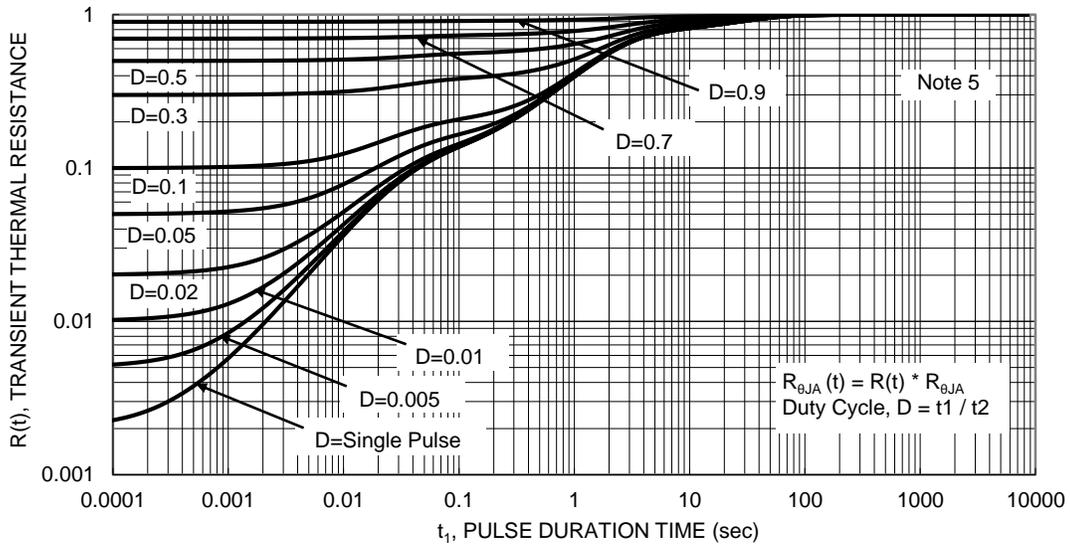


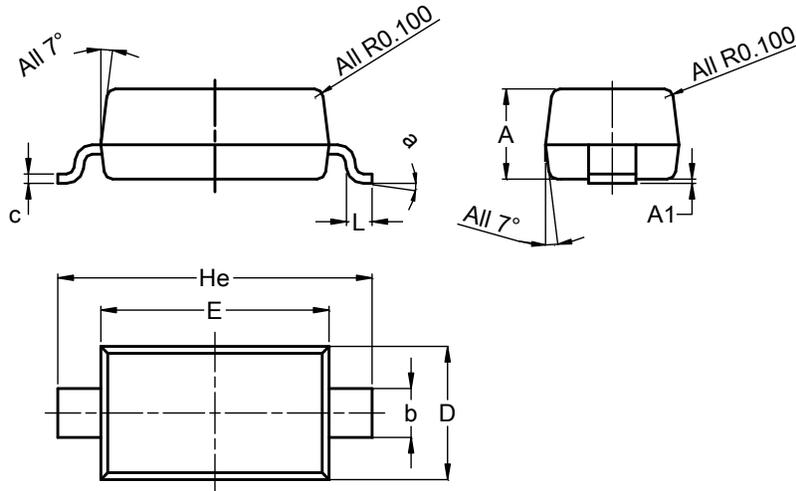
Figure 6. Transient Thermal Resistance

Note: 5. Device mounted on FR-4 substrate, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD123

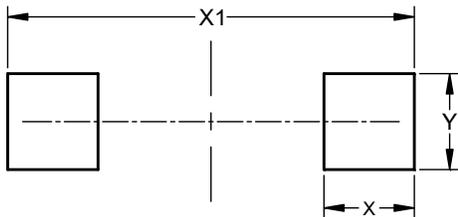


SOD123			
Dim	Min	Max	Typ
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD123



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

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