

**1A 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	1	0.80	5

**Description and Applications**

This MBR180S1 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.

**Features and Benefits**

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

**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 (B3)
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)

SOD123

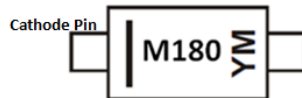


Top View

**Ordering Information** (Note 4)

Part Number	Case	Packaging
MBR180S1-7	SOD123	3000/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](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**


M180 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: D = 2016)  
 M = Month (ex: 9 = September)  
 Bar Denotes Cathode Pin

## 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<sub>A</sub> = +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 <sub>RRM</sub> V <sub>RWM</sub> V <sub>RM</sub>	80	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	56	V
Average Rectified Output Current	I <sub>O</sub>	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	24	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	275	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R <sub>θJC</sub>	95	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +175	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	V <sub>(BR)</sub>	80	—	—	V	I <sub>R</sub> = 1.0mA
Forward Voltage Drop	V <sub>F</sub>	—	0.74 0.59	0.80 —	V	I <sub>F</sub> = 1.0A, T <sub>A</sub> = +25°C I <sub>F</sub> = 1.0A, T <sub>A</sub> = +125°C
Leakage Current (Note 6)	I <sub>R</sub>	—	0.6 400	5 —	μA	V <sub>R</sub> = 80V, T <sub>A</sub> = +25°C V <sub>R</sub> = 80V, T <sub>A</sub> = +125°C
Total Capacitance	C <sub>T</sub>	—	20	—	pF	V <sub>R</sub> = 5V, f = 1.0MHz

Notes: 5. Device mounted on FR-4 substrate, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.  
6. Short duration pulse test used to minimize self-heating effect.

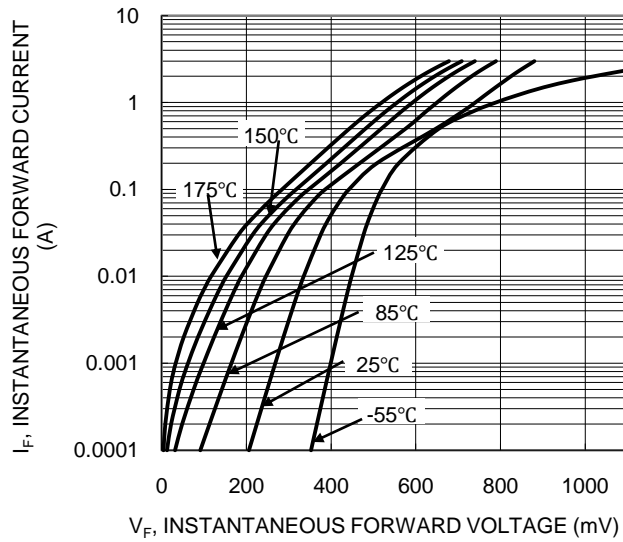


Figure 1. Typical Forward Characteristics

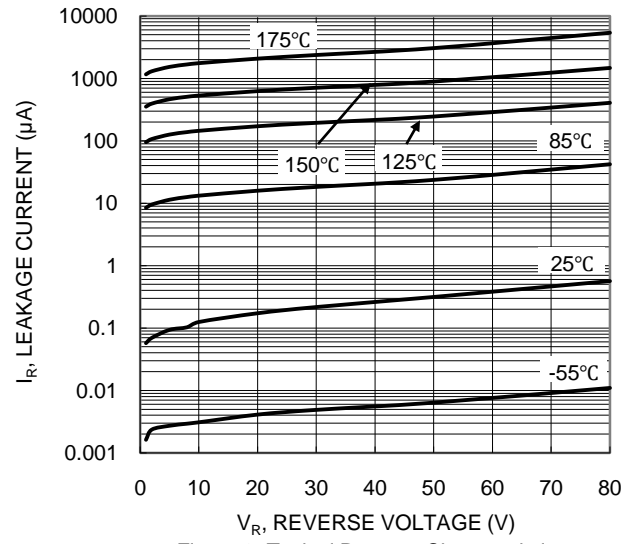


Figure 2. Typical Reverse Characteristics

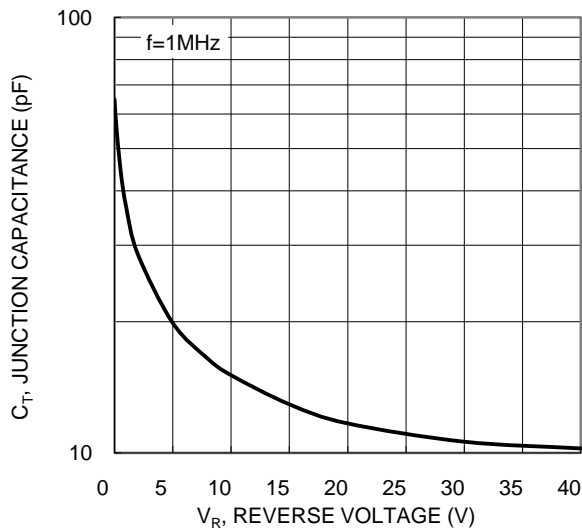
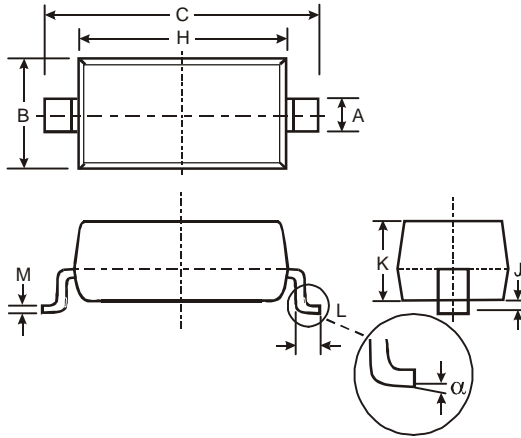


Figure 3. Typical Junction Capacitance

## Package Outline Dimensions

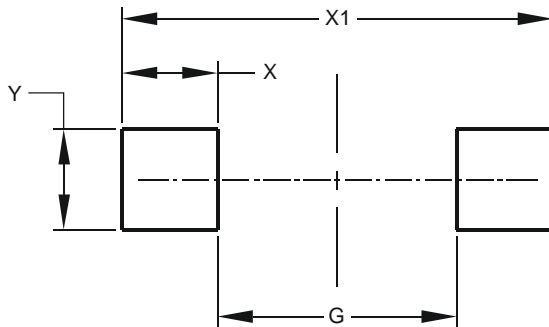
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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
$\alpha$	0	8°
All Dimensions in mm		

## Suggested Pad Layout

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



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

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