

## 1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

### Product Summary

V <sub>R</sub> (V)	I <sub>F</sub> (A)	V <sub>F</sub> Max (V) @ +25°C	I <sub>R</sub> Max (µA) @ +25°C
40	1.0	0.55	40

### Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Low Leakage Current
- Low Forward Voltage Drop
- **Totally Lead-Free Finish & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

### Applications

- DC-DC Converters
- Mobile Telecoms
- Blocking Diodes
- Reverse Polarity Protection

### 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: Finish – Matte Tin Finish Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 (3)
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)

SOD123



Top View

### Ordering Information (Note 5)

Part Number	Case	Packaging
B140HWQ-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](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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

### Marking Information

SOD123



LO = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

#### Date Code Key

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	S	T	U	V	W	X	Y	Z	A	B	C	D	E

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	V <sub>R(RM)</sub>	40	V
Working Peak Reverse Voltage	V <sub>R(WM)</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	28	V
Average Forward Current (See Figure 1)	I <sub>F(AV)</sub>	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	16	A
Repetitive Peak Reverse Current t <sub>p</sub> = 2μs Square Wave, f = 1KHz	I <sub>R(RM)</sub>	0.5	A
Non-Repetitive Peak Reverse Current t <sub>p</sub> = 100μs Square Wave	I <sub>RSM</sub>	1.0	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Power Dissipation (Note 6)	P <sub>D</sub>	350	mW
(Note 7)		410	
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	304	°C/W
(Note 7)		251	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +125	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V <sub>(BR)R</sub>	40	—	—	V	I <sub>R</sub> = 40μA
Forward Voltage	V <sub>F</sub>	—	0.52 0.48	0.55 0.51	V	I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C I <sub>F</sub> = 1A, T <sub>J</sub> = +100°C
Leakage Current (Note 8)	I <sub>R</sub>	—	—	10	μA	V <sub>R</sub> = 5V, T <sub>J</sub> = +25°C
				40	μA	V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C
				5	mA	V <sub>R</sub> = 40V, T <sub>A</sub> = +100°C

- Notes:
6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf).
  7. Part mounted on 1 inch sq. 2oz copper pad.
  8. Short duration pulse test used to minimize self-heating effect.
  9. Part mounting such that R<sub>θJA</sub> = 175°C/W.

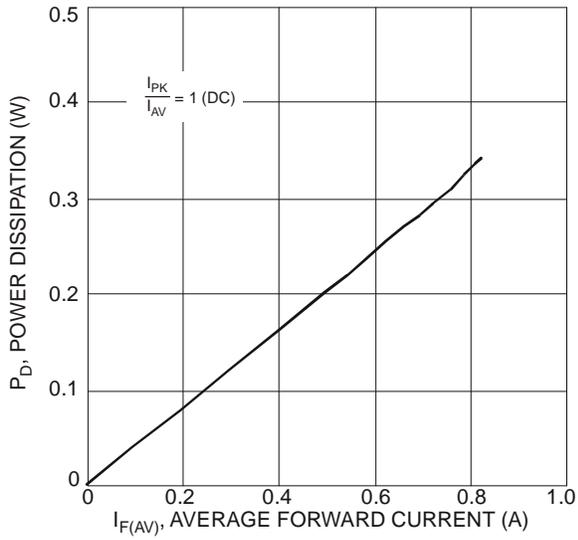


Fig. 1 Forward Power Dissipation

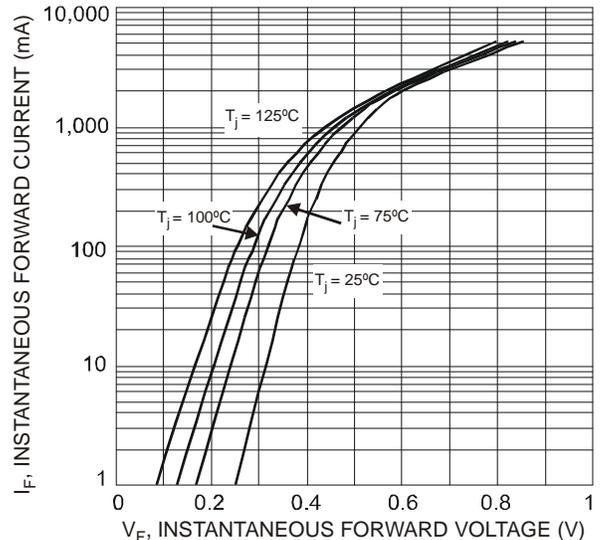


Fig. 2 Typical Forward Characteristics

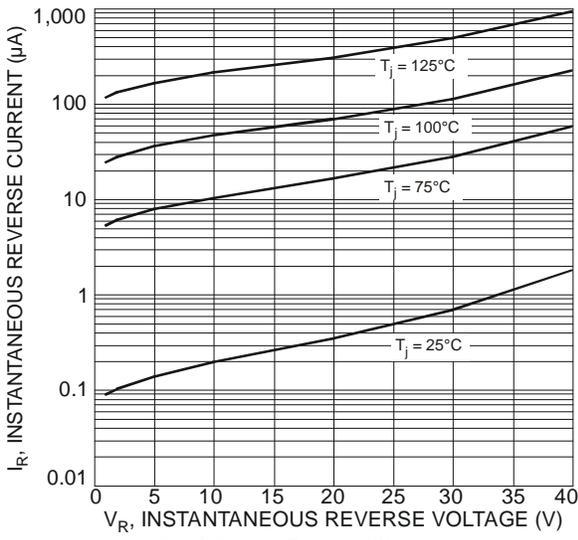


Fig. 3 Typical Reverse Characteristics

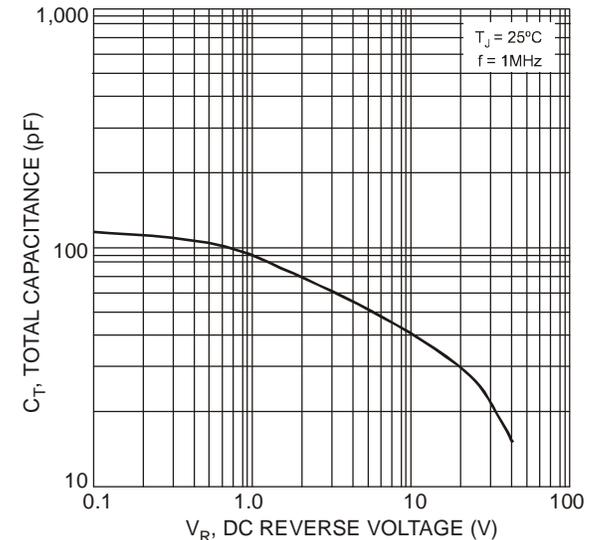


Fig. 4 Total Capacitance vs. Reverse Voltage

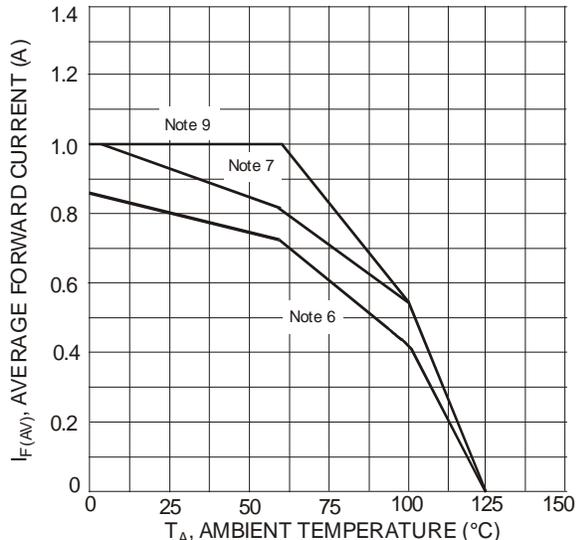


Fig. 5 Forward Current Derating Curve

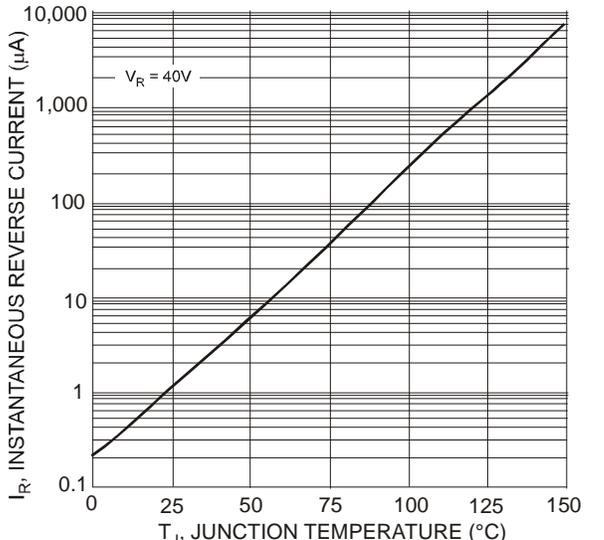
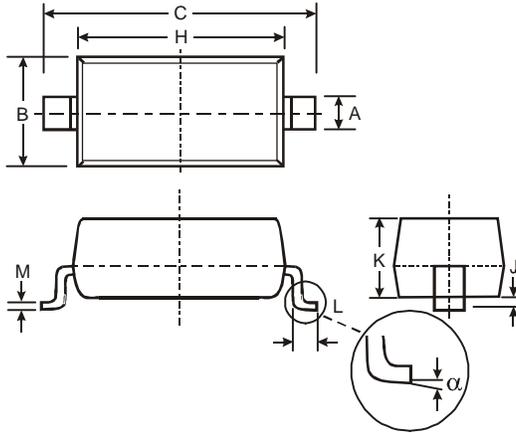


Fig. 6 Typical Reverse Current vs. Junction Temperature

**Package Outline Dimensions**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**SOD123**

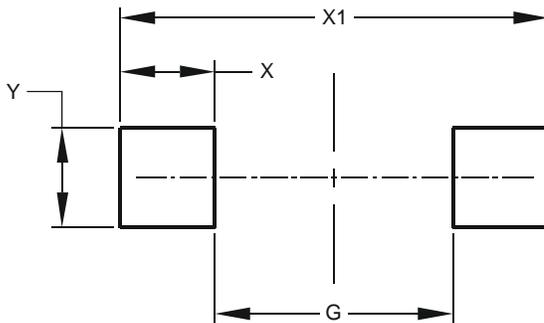


SOD123		
Dim	Min	Max
A	0.55 Typ	
B	1.40	1.70
C	3.55	3.85
H	2.55	2.85
J	0.00	0.10
K	1.00	1.35
L	0.25	0.40
M	0.10	0.15
α	0	8°
All Dimensions in mm		

**Suggested Pad Layout**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**SOD123**



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

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