

**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

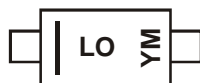
**Ordering Information** (Note 5)

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** (@ $T_A = +25^\circ\text{C}$ , 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	$V_{RRM}$	40	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	28	V
Average Forward Current (See Figure 1)	$I_{F(AV)}$	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	16	A
Repetitive Peak Reverse Current $t_p = 2\mu\text{s}$ Square Wave, $f = 1\text{KHz}$	$I_{RRM}$	0.5	A
Non-Repetitive Peak Reverse Current $t_p = 100\mu\text{s}$ Square Wave	$I_{RSM}$	1.0	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Power Dissipation (Note 6)	$P_D$	350	mW
(Note 7)		410	
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	304	$^\circ\text{C/W}$
(Note 7)		251	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +125	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	$V_{(BR)R}$	40	—	—	V	$I_R = 40\mu\text{A}$
Forward Voltage	$V_F$	—	0.52 0.48	0.55 0.51	V	$I_F = 1\text{A}, T_J = +25^\circ\text{C}$ $I_F = 1\text{A}, T_J = +100^\circ\text{C}$
Leakage Current (Note 8)	$I_R$	—	—	10	$\mu\text{A}$	$V_R = 5\text{V}, T_J = +25^\circ\text{C}$
		—	—	40	$\mu\text{A}$	$V_R = 40\text{V}, T_J = +25^\circ\text{C}$
		—	0.2	5	mA	$V_R = 40\text{V}, T_A = +100^\circ\text{C}$

- Notes:
- 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).
  - Part mounted on 1 inch sq. 2oz copper pad.
  - Short duration pulse test used to minimize self-heating effect.
  - Part mounting such that  $R_{\theta JA} = 175^\circ\text{C/W}$ .

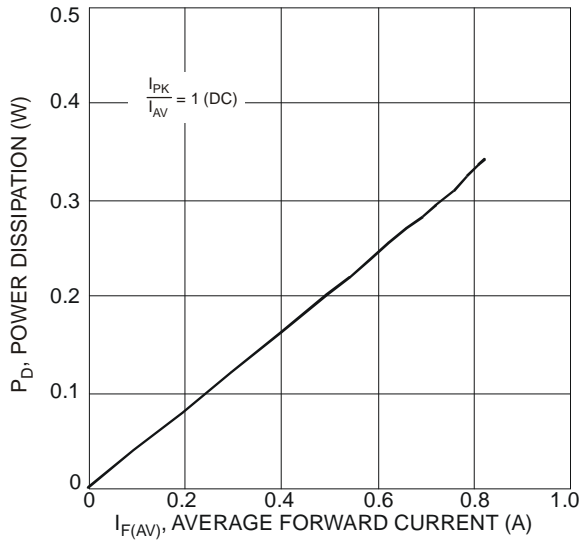


Fig. 1 Forward Power Dissipation

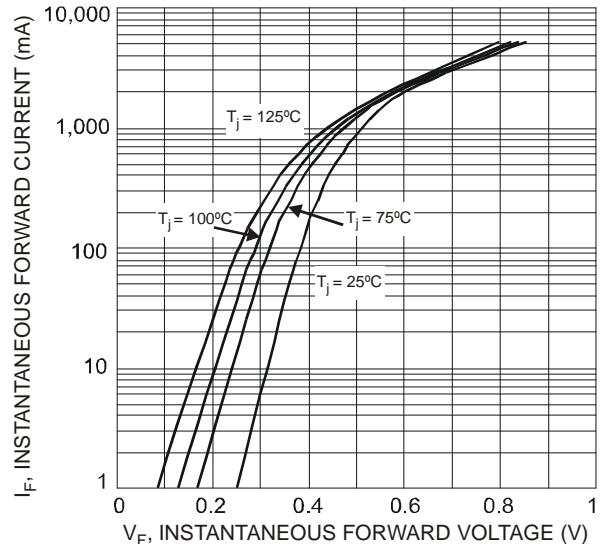


Fig. 2 Typical Forward Characteristics

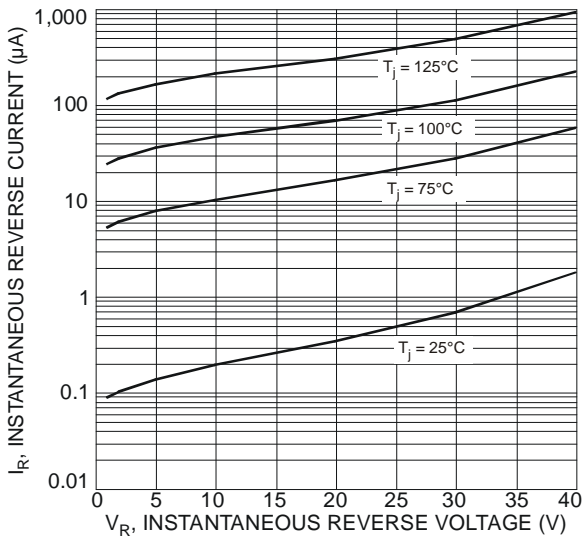


Fig. 3 Typical Reverse Characteristics

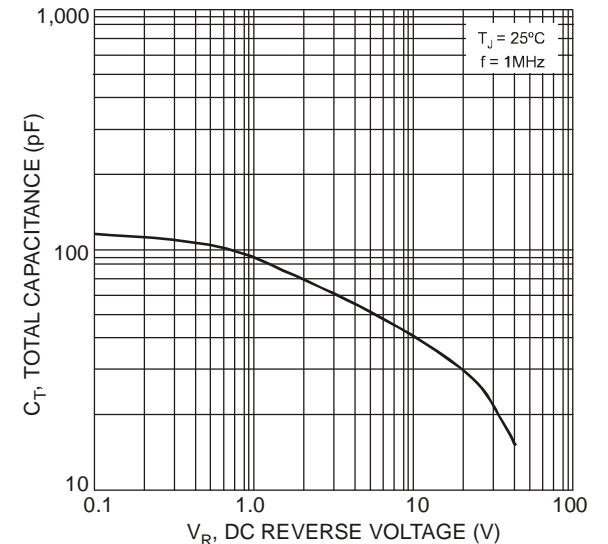


Fig. 4 Total Capacitance vs. Reverse Voltage

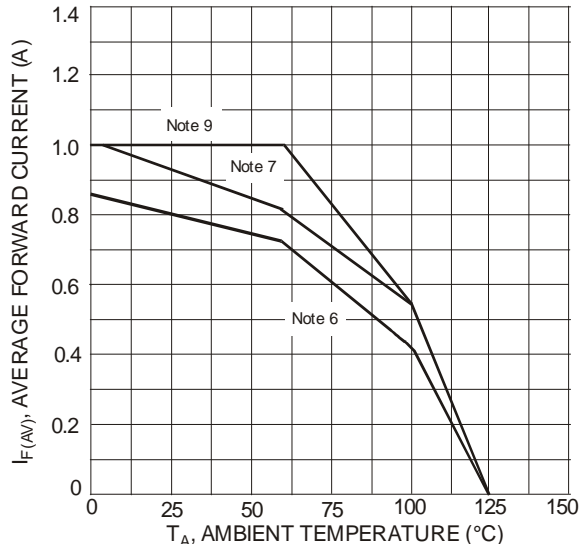


Fig. 5 Forward Current Derating Curve

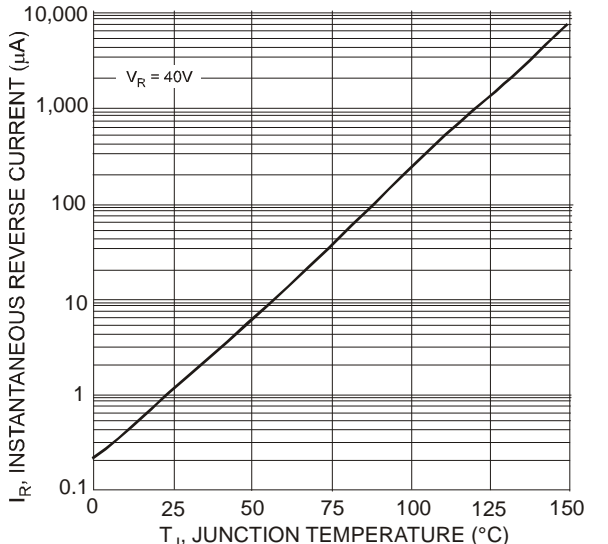
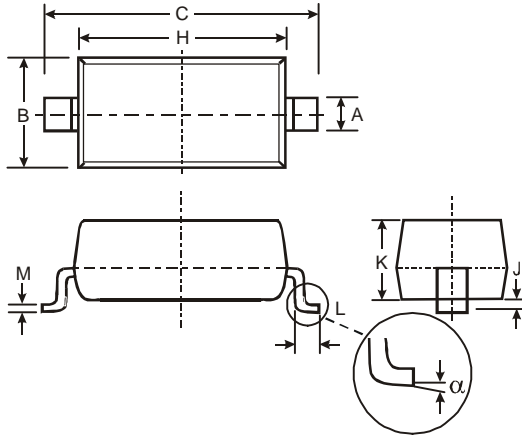


Fig. 6 Typical Reverse Current vs. Junction Temperature

**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**

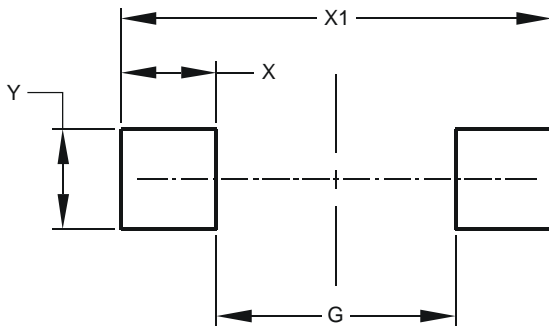


SOD123		
Dim	Min	Max
A	0.55 Typ	
B	1.40	1.70
C	3.55	3.85
H	2.55	2.85
J	0.00	0.10
K	1.00	1.35
L	0.25	0.40
M	0.10	0.15
α	0	8°
All Dimensions in mm		

**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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