

## 0.5A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

### Features

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

### Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Band
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Solderable per MIL-STD-202, Method 208
- Weight: 0.01 grams (approximate)

SOD123



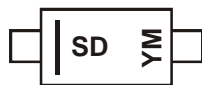
Top View

### Ordering Information (Note 5)

Part Number	Case	Packaging
B0520LW-7-F	SOD123	3000/Tape & Reel
B0520LWQ-7-F	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> 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. Product manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.
  5. For packaging details, go to our website at <http://www.diodes.com>.

### Marking Information



SD = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: N = 2002)  
 M = Month (ex: 9 = September)

#### Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	...	2012	2013	2014	2015	2016	2017	2018
Code	J	K	L	M	N	P	R	...	Z	A	B	C	D	E	F

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>RRM</sub>	20	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	14	V
Average Rectified Output Current @ T <sub>L</sub> = +90°C	I <sub>O</sub>	0.5	A
Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	5.5	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P <sub>D</sub>	410	mW
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	244	°C/W
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	Value	Unit	Test Conditions
Minimum Reverse Breakdown Voltage (Note 7)	V <sub>(BR)R</sub>	20	V	I <sub>R</sub> = 250μA
Maximum Forward Voltage Drop	V <sub>FM</sub>	0.300	V	I <sub>F</sub> = 0.1A, T <sub>J</sub> = +25°C
		0.385		I <sub>F</sub> = 0.5A, T <sub>J</sub> = +25°C
		0.220		I <sub>F</sub> = 0.1A, T <sub>J</sub> = +100°C
		0.330		I <sub>F</sub> = 0.5A, T <sub>J</sub> = +100°C
Maximum Leakage Current (Note 8)	I <sub>RM</sub>	75	μA	V <sub>R</sub> = 10V, T <sub>J</sub> = +25°C
		250		V <sub>R</sub> = 20V, T <sub>J</sub> = +25°C
	I <sub>RM</sub>	5.0	mA	V <sub>R</sub> = 10V, T <sub>J</sub> = +100°C
		8.0		V <sub>R</sub> = 20V, T <sub>J</sub> = +100°C
Typical Total Capacitance	C <sub>T</sub>	170	pF	V <sub>R</sub> = 0V DC, f = 1MHz

- Notes:
- Device mounted on FR-4 PC board, 2"x2", 2 oz. Copper, single sided, Cathode pad dimensions 0.75"x1.0", Anode pad dimensions 0.25"x1.0".
  - Pulse Test: Pulse width = 300μs, Duty Cycle ≤ 2%.
  - No purposefully added lead. Halogen and Antimony Free.

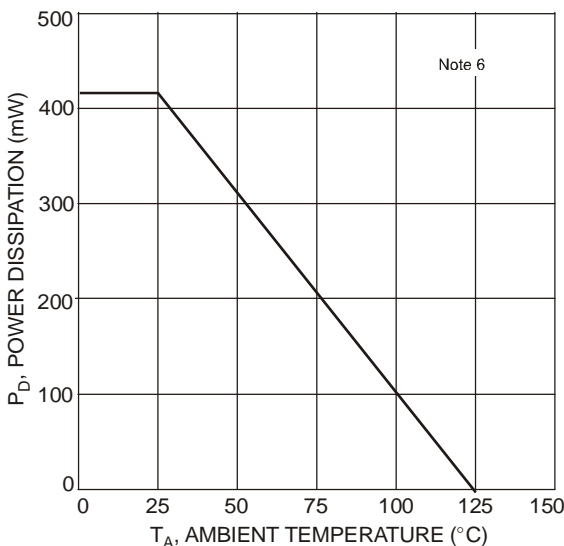


Fig. 1 Forward Power Dissipation

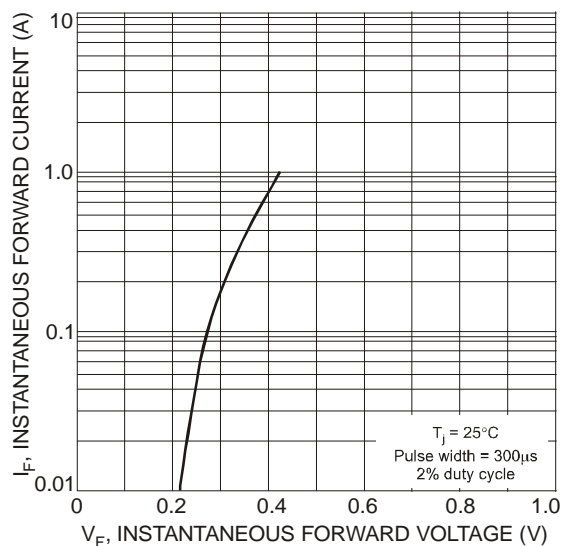


Fig. 2 Typical Forward Characteristics

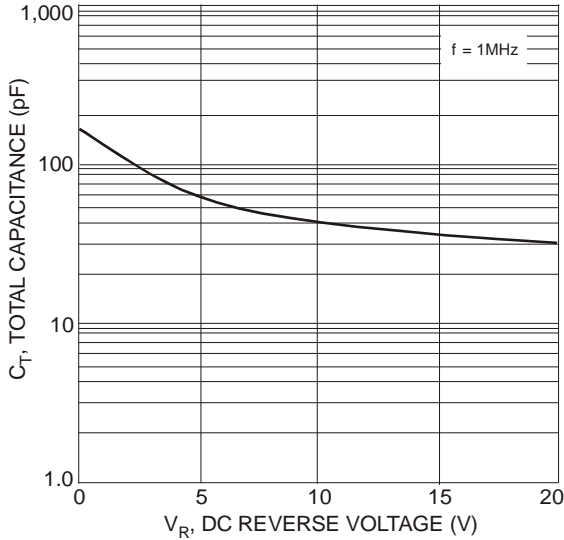


Fig. 3 Total Capacitance vs. Reverse Voltage

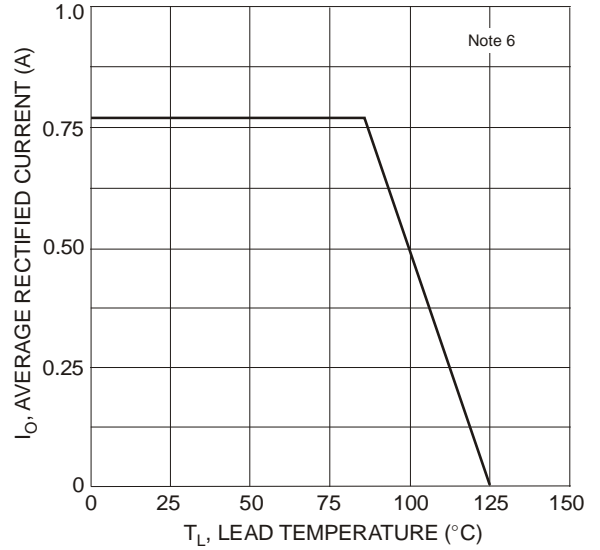
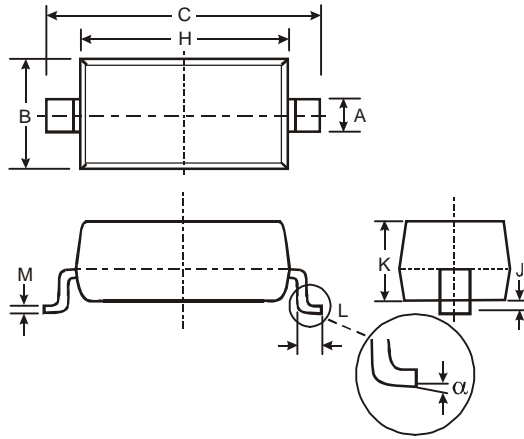


Fig. 4 Forward Current Derating Curve

## Package Outline Dimensions

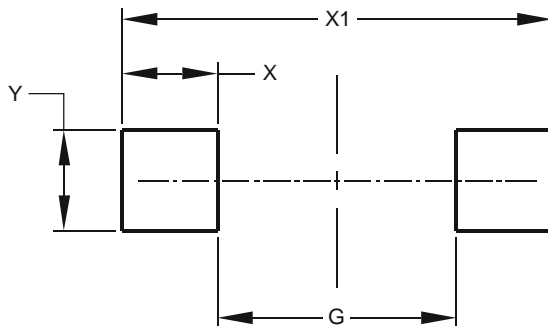
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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 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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