



**THE DATASHEET OF  
B0520LWQ-7-F**



## 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 (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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**  
<https://www.diodes.com/quality/product-definitions/>

### Mechanical Data

- Package: SOD123
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Band
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.01 grams (Approximate)

SOD123



Top View

### Ordering Information (Note 4)

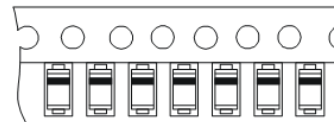
Part Number	Package	Packing	
		Qty.	Carrier
B0520LW-7-F	SOD123	3000	Tape & Reel
B0520LWQ-7-F	SOD123	3000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 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



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



#### Date Code Key

Year	2002	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	O	...	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** (@  $T_A = +25^\circ\text{C}$ , 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	$V_{RRM}$	20	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	14	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	$I_{FSM}$	5.5	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	410	mW
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	244	$^\circ\text{C/W}$
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	Value	Unit	Test Conditions
Minimum Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	20	V	$I_R = 250\mu\text{A}$
Maximum Forward Voltage Drop	$V_{FM}$	0.300	V	$I_F = 0.1\text{A}, T_J = +25^\circ\text{C}$
		0.385		$I_F = 0.5\text{A}, T_J = +25^\circ\text{C}$
		0.220		$I_F = 0.1\text{A}, T_J = +100^\circ\text{C}$
		0.330		$I_F = 0.5\text{A}, T_J = +100^\circ\text{C}$
Maximum Leakage Current (Note 6)	$I_{RM}$	75	$\mu\text{A}$	$V_R = 10\text{V}, T_J = +25^\circ\text{C}$
		250		$V_R = 20\text{V}, T_J = +25^\circ\text{C}$
	$I_{RM}$	5.0	mA	$V_R = 10\text{V}, T_J = +100^\circ\text{C}$
	8.0	$V_R = 20\text{V}, T_J = +100^\circ\text{C}$		
Typical Total Capacitance	$C_T$	170	pF	$V_R = 0\text{V DC}, f = 1\text{MHz}$

Notes: 5. Device mounted on FR-4 PC board, 2" x 2", 2 oz. Copper, single sided, Cathode pad dimensions 0.75" x 1.0", Anode pad dimensions 0.25" x 1.0".  
6. Pulse Test: Pulse width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

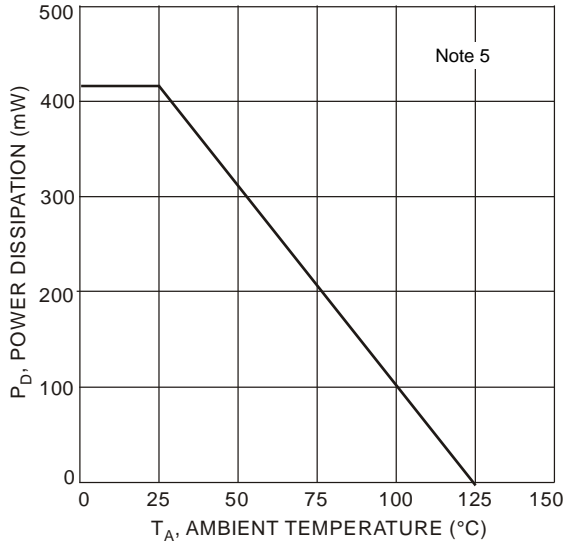


Fig. 1 Forward Power Dissipation

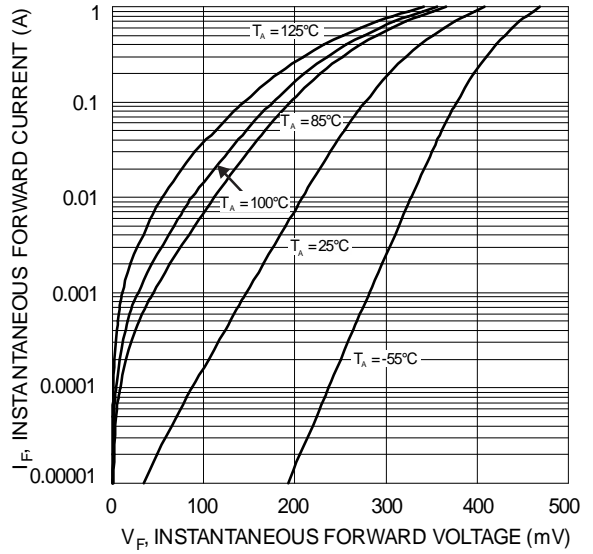


Fig. 2 Typical Forward Characteristics

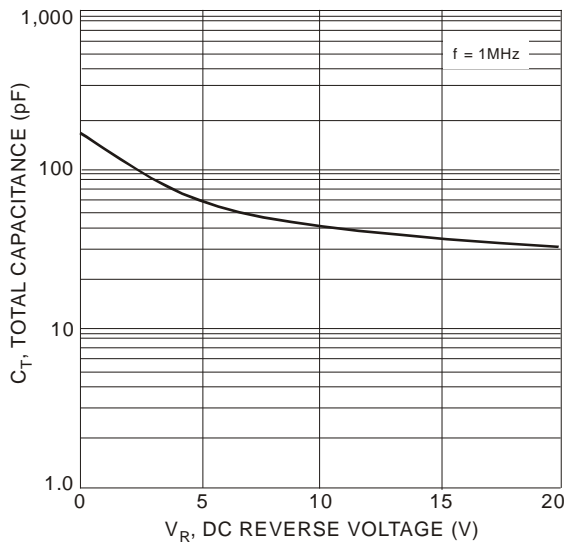


Fig. 3 Total Capacitance vs. Reverse Voltage

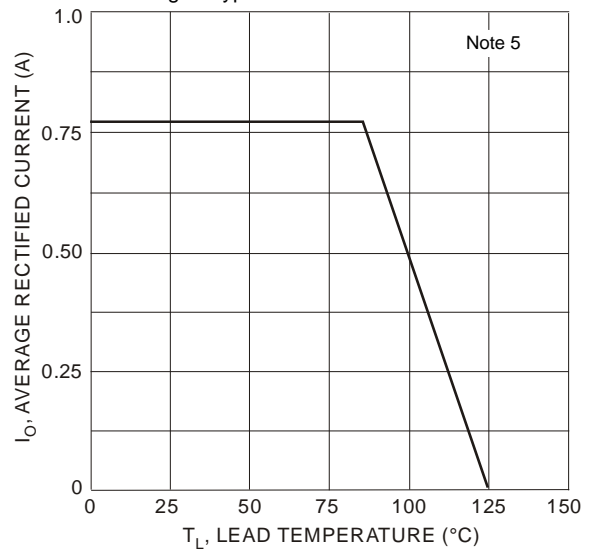
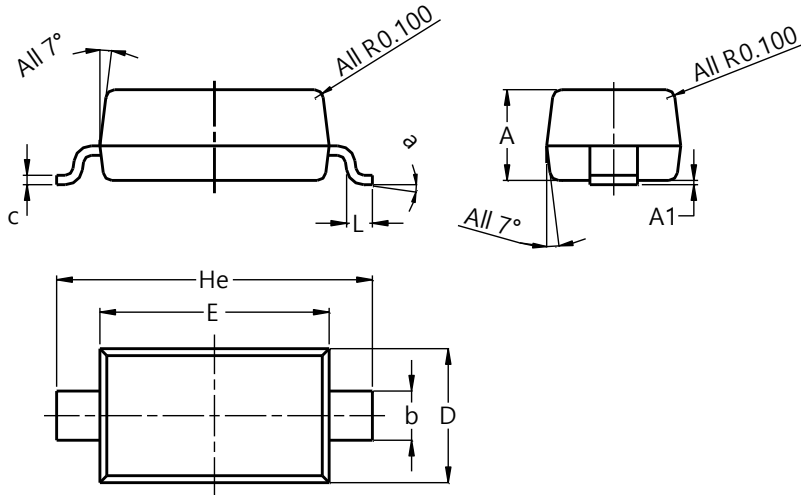


Fig. 4 Forward Current Derating Curve

**Package Outline Dimensions**

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

**SOD123**

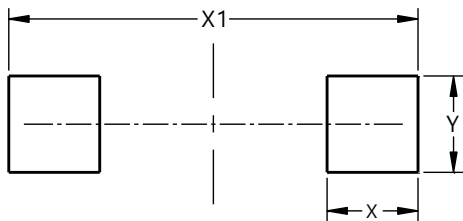


SOD123			
Dim	Min	Max	Typ
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

**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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