

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)**
- The B0520LWQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

<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

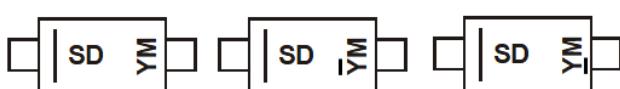
Ordering Information (Note 4)

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

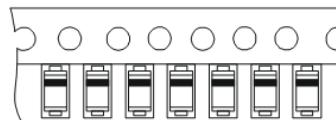
Notes:

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 & YM = Date Code Marking
 Y or Y or Y = Year (ex: M = 2025)
 M = Month (ex: 9 = September)



Date Code Key

Year	2002	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	O	-	M	N	P	R	S	T	U	V	W	X
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}		
Working Peak Reverse Voltage	V_{RWM}	20	V
DC Blocking Voltage	V_R		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	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	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +125	°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 0.385 0.220 0.330	V	$I_F = 0.1\text{A}, T_J = +25^\circ\text{C}$ $I_F = 0.5\text{A}, T_J = +25^\circ\text{C}$ $I_F = 0.1\text{A}, T_J = +100^\circ\text{C}$ $I_F = 0.5\text{A}, T_J = +100^\circ\text{C}$
Maximum Leakage Current (Note 6)	I_{RM}	75 250	μA	$V_R = 10\text{V}, T_J = +25^\circ\text{C}$ $V_R = 20\text{V}, T_J = +25^\circ\text{C}$
	I_{RM}	5.0 8.0	mA	$V_R = 10\text{V}, T_J = +100^\circ\text{C}$ $V_R = 20\text{V}, T_J = +100^\circ\text{C}$
Typical Total Capacitance	C_T	170	pF	$V_R = 0 \text{ DC}, f = 1\text{MHz}$

Notes: 5. Device mounted on FR-4 PC board, 2" x 2", 2oz. 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 μs , Duty Cycle $\leq 2\%$.

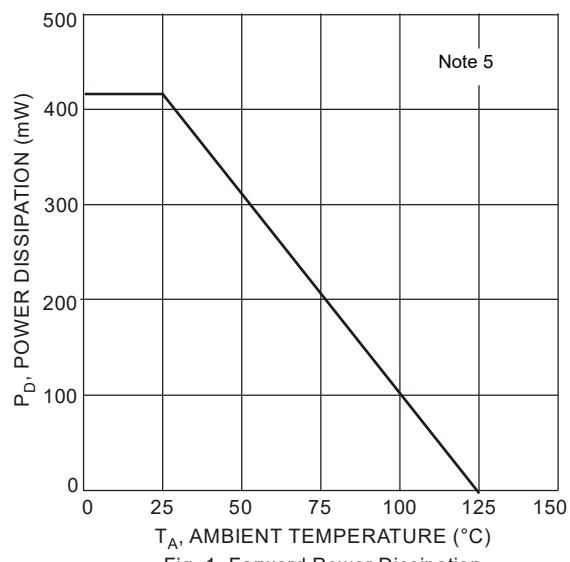


Fig. 1 Forward Power Dissipation

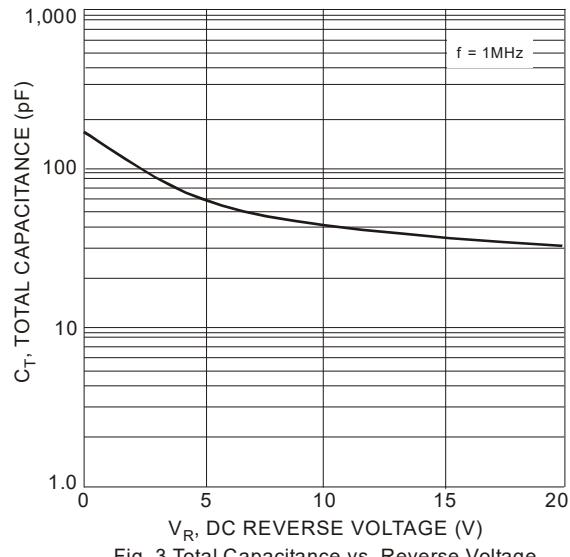


Fig. 3 Total Capacitance vs. Reverse Voltage

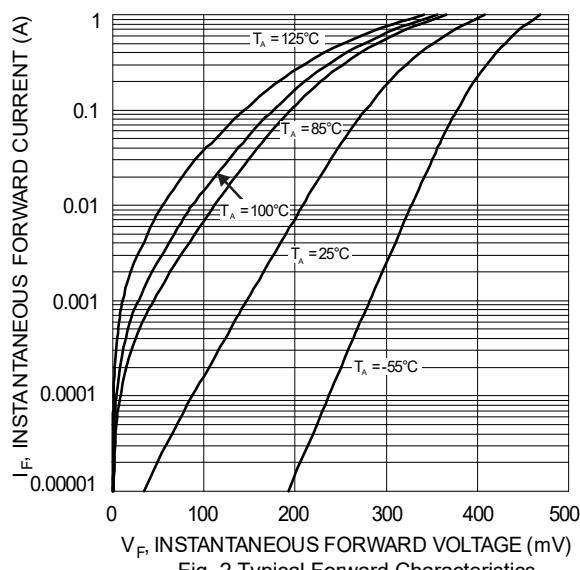


Fig. 2 Typical Forward Characteristics

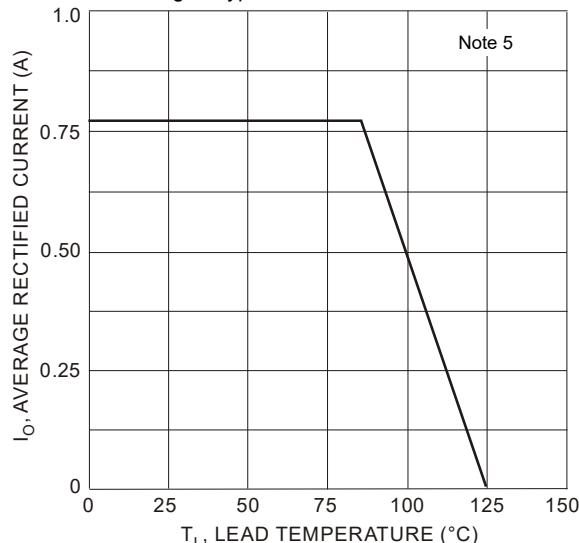
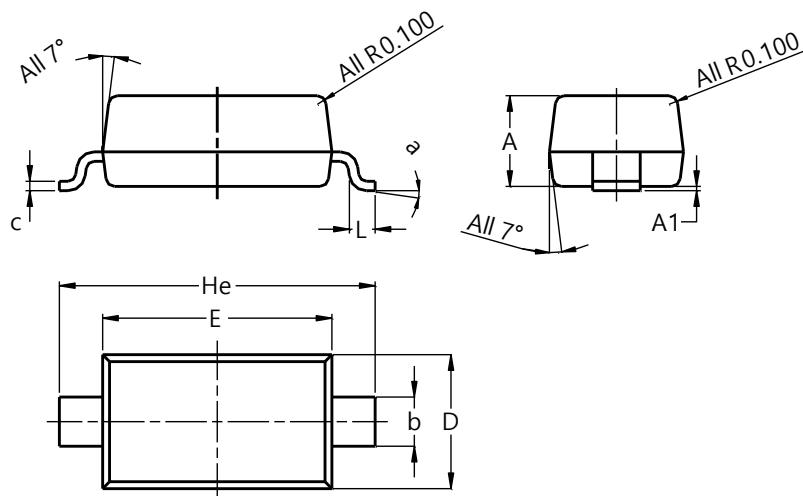


Fig. 4 Forward Current Derating Curve

Package Outline Dimensions

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

SOD123



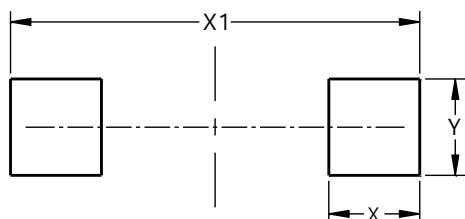
SOD123			
Dim	Min	Max	Typ
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0°	8°	--

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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