


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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOD-123
- Case Material: Molded Plastic, "Green" Molding Compound (Note 6). UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe) Solderable per MIL-STD-202, Method 208 
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)



Top View

Ordering Information (Note 4)

Part Number	Case	Packaging
B0540W-7-F	SOD-123	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 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 <http://www.diodes.com/packages.html>.

Marking Information



SF = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: D = 2016)
 M = Month (ex: 9 = September)

Date Code Key

Year	2013	2014	2015	2016	2017	2018	2019	2020
Code	A	B	C	D	E	F	G	H

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 Rectified Output Current (See Figure 4)	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	Typ	Max	Unit
Typical Thermal Resistance Junction to Ambient Air (Note 5) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	385	—	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient Air (Note 6) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	325	—	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150		$^\circ\text{C}$

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

Characteristic	Symbol	Value	Unit	Test Conditions
Minimum Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	40	V	$I_R = 20\mu\text{A}$
Maximum Forward Voltage Drop	V_{FM}	0.510	V	$I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$
		0.620		$I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$
		0.460		$I_F = 0.5\text{A}, T_J = 100^\circ\text{C}$
		0.610		$I_F = 1.0\text{A}, T_J = 100^\circ\text{C}$
Maximum Leakage Current (Note 7)	I_{RM}	10	μA	$V_R = 20\text{V}, T_J = 25^\circ\text{C}$
		20		$V_R = 40\text{V}, T_J = 25^\circ\text{C}$
		5.0	mA	$V_R = 20\text{V}, T_J = 100^\circ\text{C}$
		13		$V_R = 40\text{V}, T_J = 100^\circ\text{C}$
Total Capacitance	C_T	170	pF	$f = 1\text{MHz}, V_R = 0\text{V DC}$

Notes: 5. FR-4 PCB, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
6. Polyimide PCB, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
7. Short duration pulse test used to minimize self-heating effect.

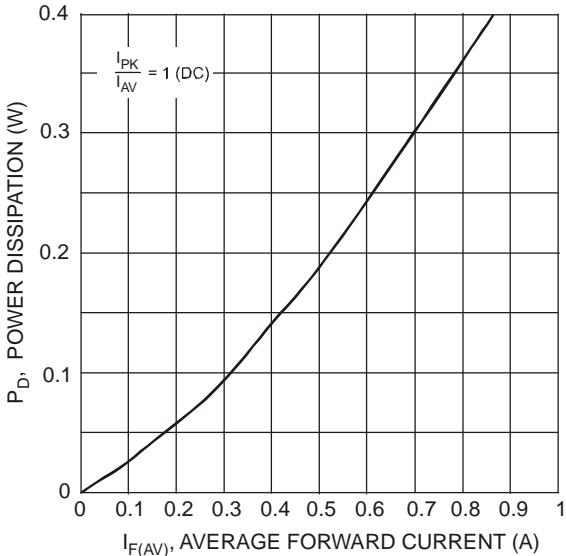


Fig. 1 Forward Power Dissipation

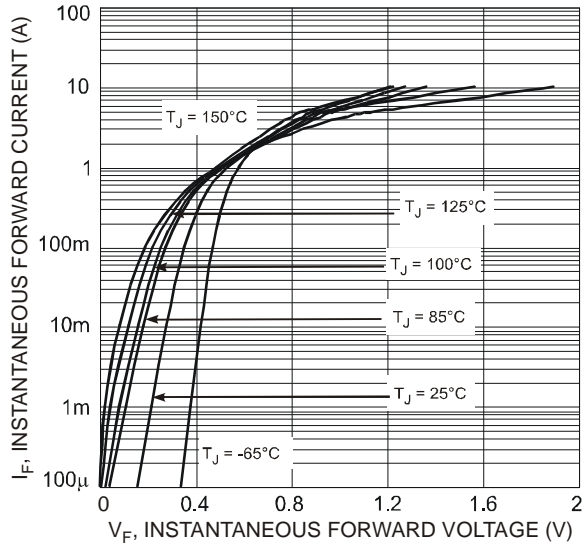


Fig. 2 Typical Forward Characteristics

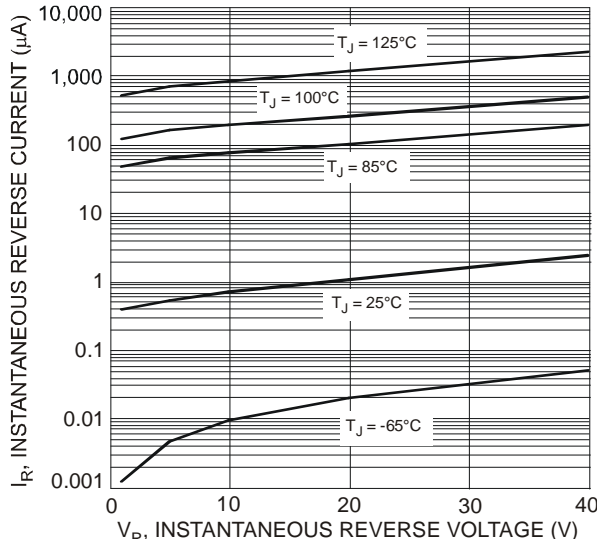


Fig. 3 Typical Reverse Characteristics

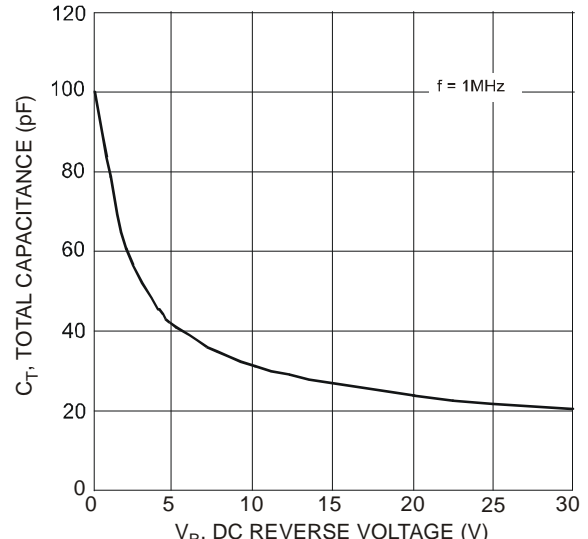


Fig. 4 Total Capacitance vs. Reverse Voltage

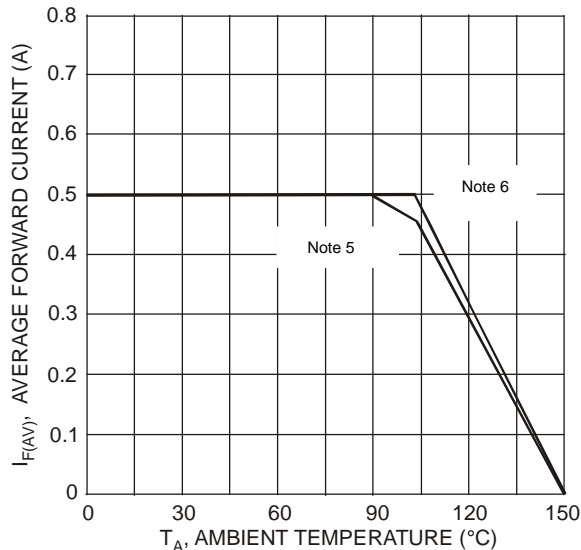
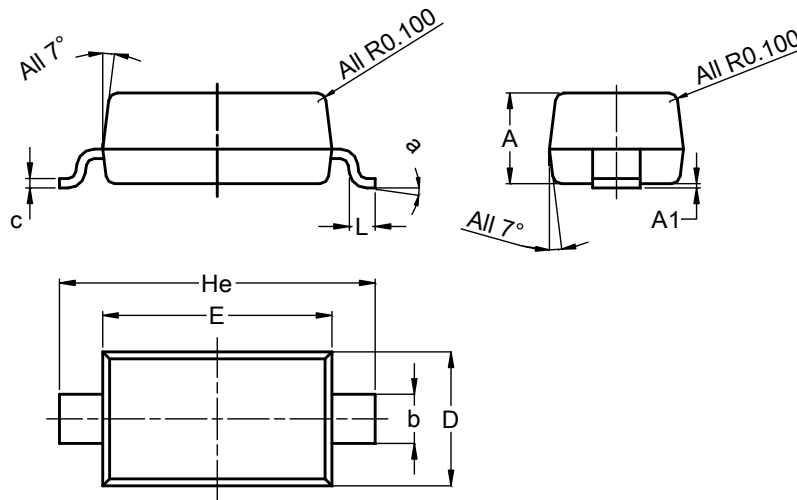


Fig. 5 Forward Current Derating Curve

Package Outline Dimensions

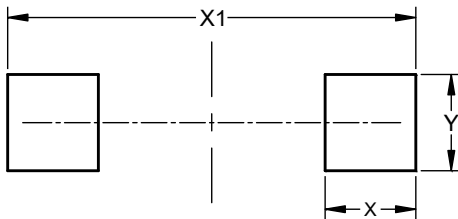
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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.



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

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