

0.5A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER
Features

- Low Forward Voltage Drop
- Guard Ring Construction for Transient Protection
- High Conductance
- **Lead Free by Design/RoHS Compliant (Note 1)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOD-123
- Case Material: Molded Plastic. 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
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.01 grams (approximate)



Top View

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
Thermal Resistance Junction to Ambient Air (Note 2) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	385	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 3) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	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 4)	$V_{(BR)R}$	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 4)	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:
1. No purposefully added lead.
 2. FR-4 PCB, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
 3. Polyimide PCB, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
 4. Short duration pulse test used to minimize self-heating effect.

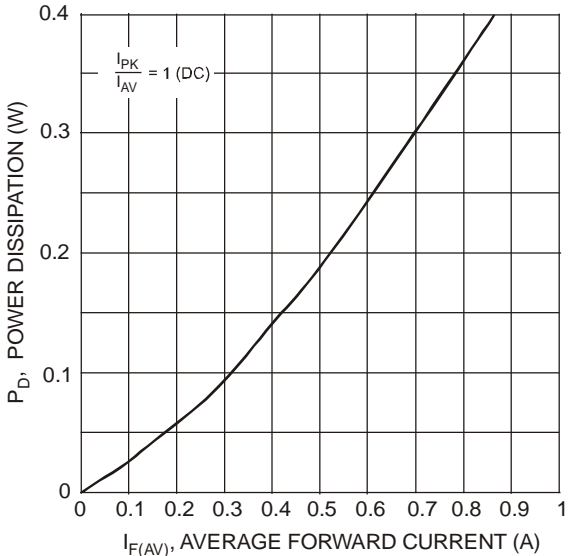


Fig. 1 Forward Power Dissipation

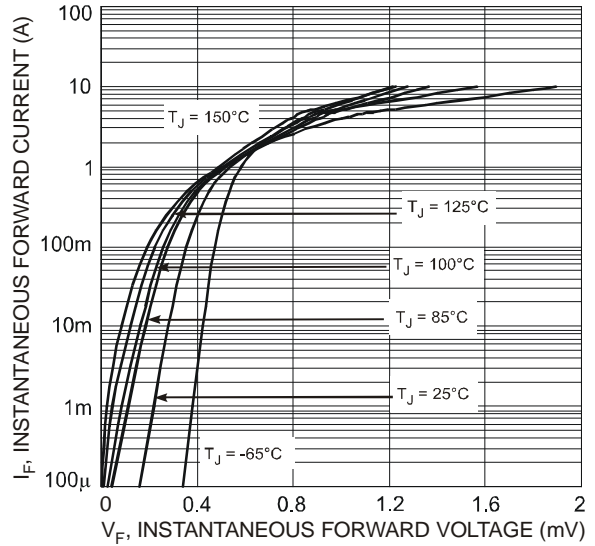


Fig. 2 Typical Forward Characteristics

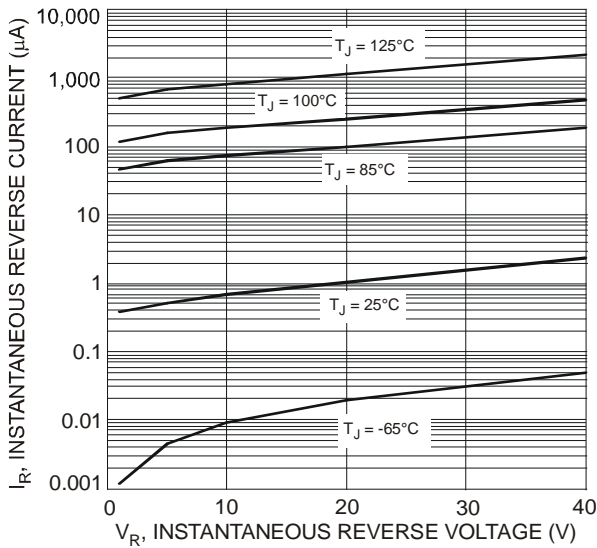


Fig. 3 Typical Reverse Characteristics

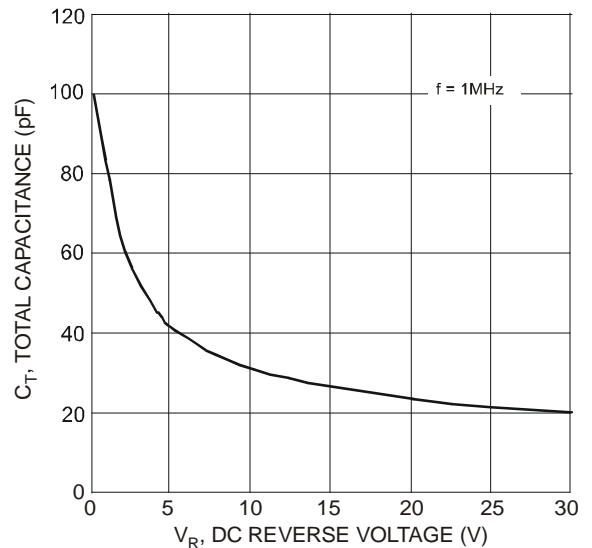


Fig. 4 Total Capacitance vs. Reverse Voltage

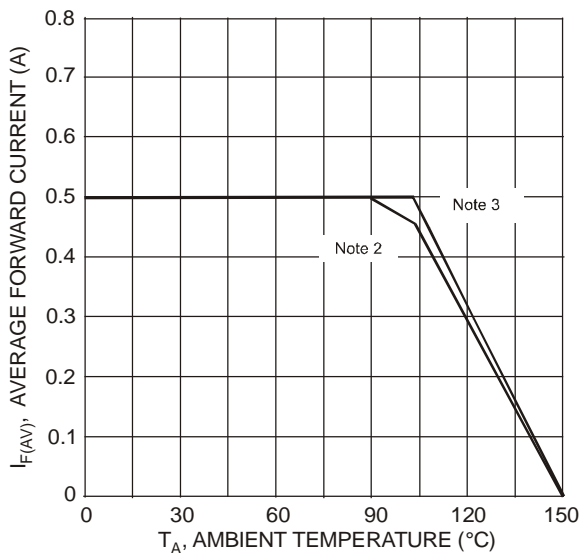


Fig. 5 Forward Current Derating Curve

Ordering Information (Note 5)

Part Number	Case	Packaging
B0540W-7-F	SOD-123	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



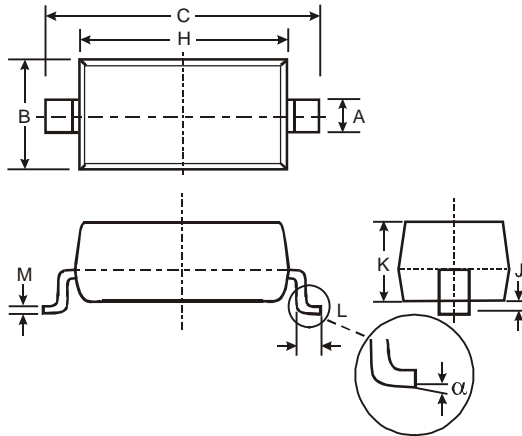
SF = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: N = 2002)
 M = Month (ex: 9 = September)

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z

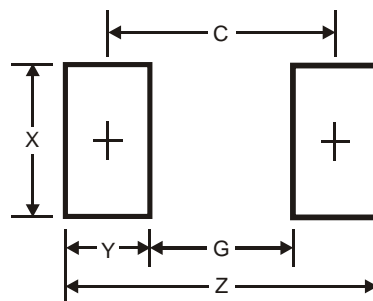
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



SOD-123		
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



Dimensions	Value (in mm)
Z	4.9
G	2.5
X	0.7
Y	1.2
C	3.7

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