

**0.5A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER**
**Features**

- Low Forward Voltage Drop
- Guard Ring Construction for Transient Protection
- High Conductance
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Device (Note 5)**
- **Qualified to AEC-Q101 Standards for High Reliability**

25-05508



Top View

**Mechanical Data**

- Case: SOD-123
- Case Material: Molded Plastic, "Green" Molding Compound (Note 5). 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)

**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	$\mu\text{A}$	$V_R = 20\text{V}, T_J = 25^\circ\text{C}$
		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. Halogen and Antimony Free.
  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.
  5. Product manufactured with Data 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  $\text{Sb}_2\text{O}_3$  Fire Retardants.

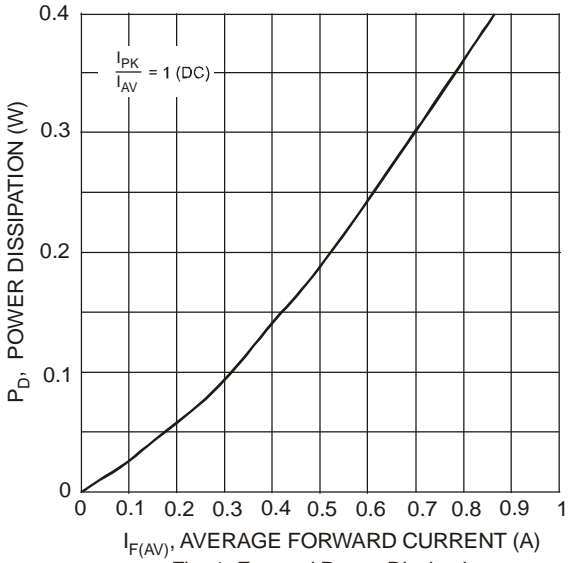


Fig. 1 Forward Power Dissipation

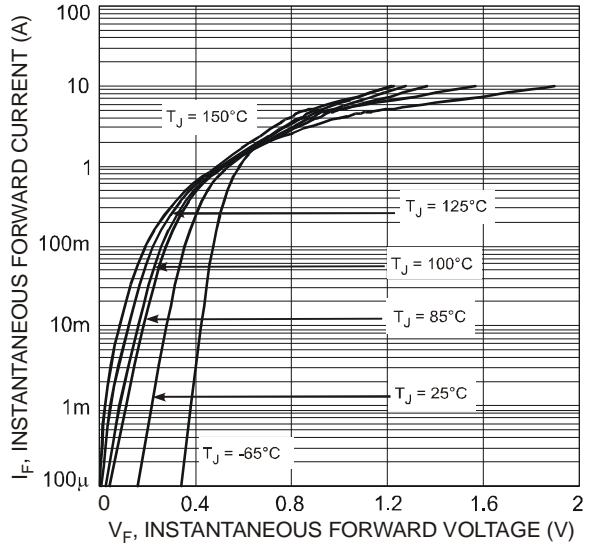


Fig. 2 Typical Forward Characteristics

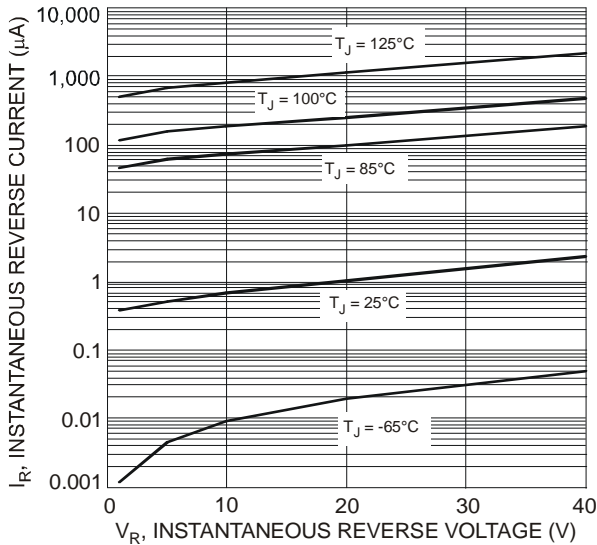


Fig. 3 Typical Reverse Characteristics

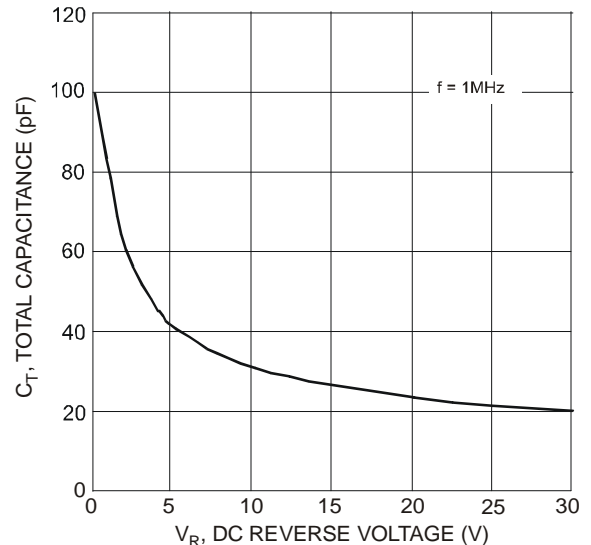


Fig. 4 Total Capacitance vs. Reverse Voltage

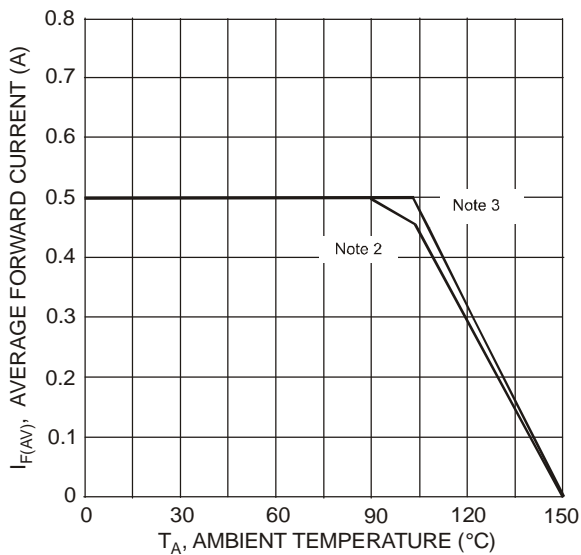


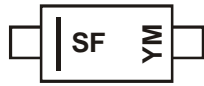
Fig. 5 Forward Current Derating Curve

### Ordering Information (Note 6)

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

Notes: 6. 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)

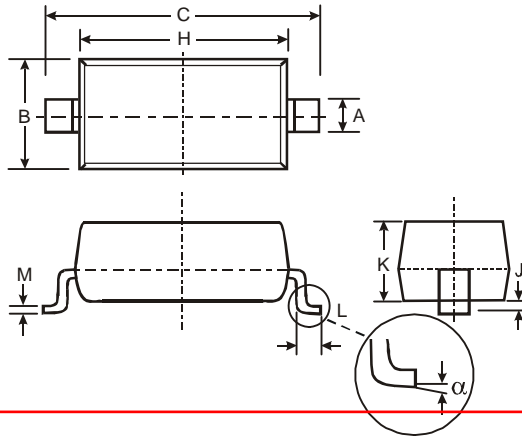
Date Code Key

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

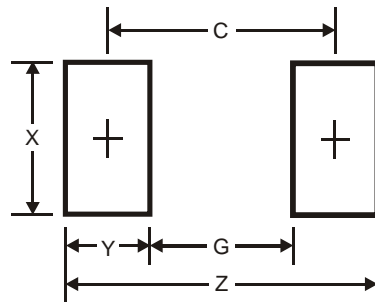
<b>Month</b>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Code</b>	1	2	3	4	5	6	7	8	9	O	N	D

### 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
$\alpha$	0	8°
<b>All Dimensions in mm</b>		

### Suggested Pad Layout



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

#### IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

#### LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.