

## 500mA, 20V - 40V Schottky Barrier Diode

### FEATURES

- Low power loss, high current capability, low  $V_F$
- Surface mount device type
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application

### MECHANICAL DATA

- Case: SOD-123
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 10.0mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	500	mA
$V_{RRM}$	20 - 40	V
$I_{FSM}$	5.5	A
$T_{JMAX}$	125	°C
Package	SOD-123	
Configuration	Single Die	


**SOD-123**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	B0520LW	B0530W	B0540W	UNIT
Marking code on the device		SD	SE	SF	
Power Dissipation	$P_D$	410			mW
Repetitive peak reverse voltage	$V_{RRM}$	20	30	40	V
Reverse voltage, total rms value	$V_{R(RMS)}$	14	21	28	V
Forward current	$I_F$	500			mA
Surge peak forward current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	5.5			A
Junction temperature	$T_J$	- 55 to +125			°C
Storage temperature	$T_{STG}$	- 55 to +125			°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-ambient thermal resistance	$R_{\theta JA}$	244	$^{\circ}C/W$

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}C$ unless otherwise noted)					
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>VALUE</b>	<b>UNIT</b>
Reverse Breakdown Voltage (Minimum Value)	B0520LW	$I_R = 250\mu A$	$V_{BR}$	20	V
	B0530W	$I_R = 130\mu A$		30	V
	B0540W	$I_R = 20\mu A$		40	V
Forward voltage <sup>(1)</sup> (Maximum Value)	B0520LW	$I_F = 100mA$	$V_F$	0.300	V
	B0530W			0.375	V
	B0540W			-	V
	B0520LW	$I_F = 500mA$		0.385	V
	B0530W			0.430	V
	B0540W			0.510	V
	B0520LW	$I_F = 1000mA$		-	V
	B0530W			-	V
	B0540W			0.620	V
Reverse current @ rated $V_R$ <sup>(2)</sup> (Maximum Value)	B0520LW	$V_R = 10V$	$I_R$	75	$\mu A$
	B0530W			-	$\mu A$
	B0540W			-	$\mu A$
	B0520LW	$V_R = 15V$		-	$\mu A$
	B0530W			20	$\mu A$
	B0540W			-	$\mu A$
	B0520LW	$V_R = 20V$		250	$\mu A$
	B0530W			-	$\mu A$
	B0540W			10	$\mu A$
	B0520LW	$V_R = 30V$		-	$\mu A$
	B0530W			130	$\mu A$
	B0540W			-	$\mu A$
	B0520LW	$V_R = 40V$		-	$\mu A$
	B0530W			-	$\mu A$
	B0540W			20	$\mu A$
Junction capacitance		1MHz, $V_R = 0V$	$C_J$	170	pF

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
B05x RHG	SOD-123	3,000 / 7" Tape & Reel

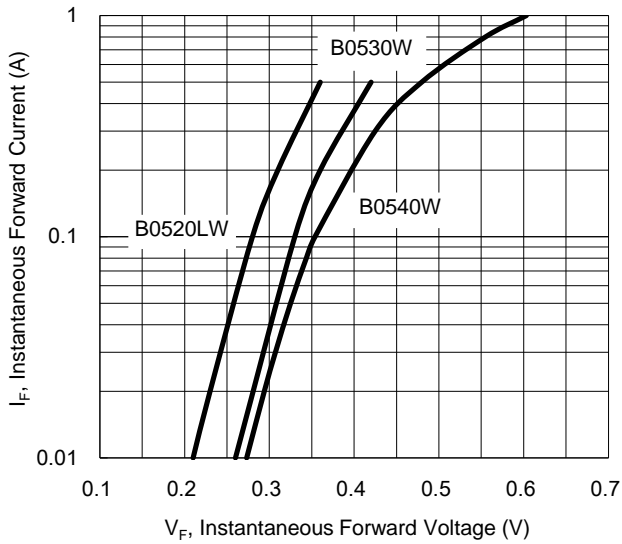
**Notes:**

- "x" defines voltage from 20V(B0520LW) to 40V(B0540W)

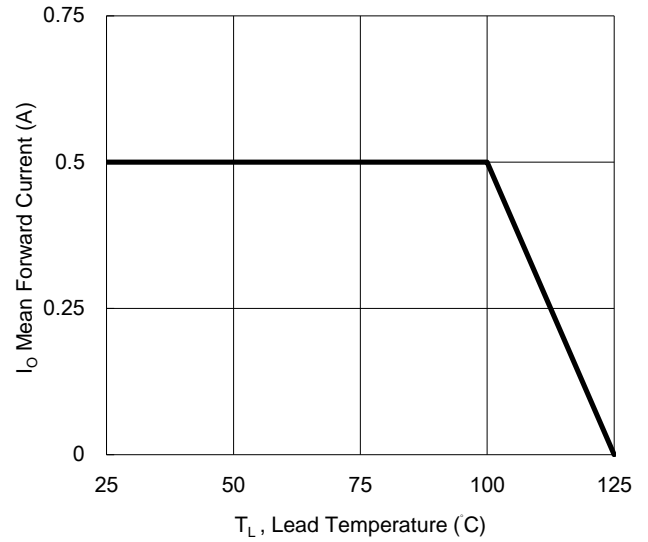
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

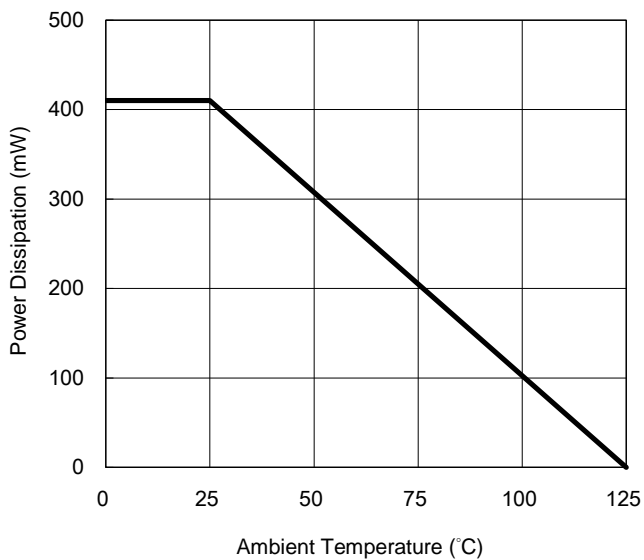
**Fig.1 Forward Characteristics**



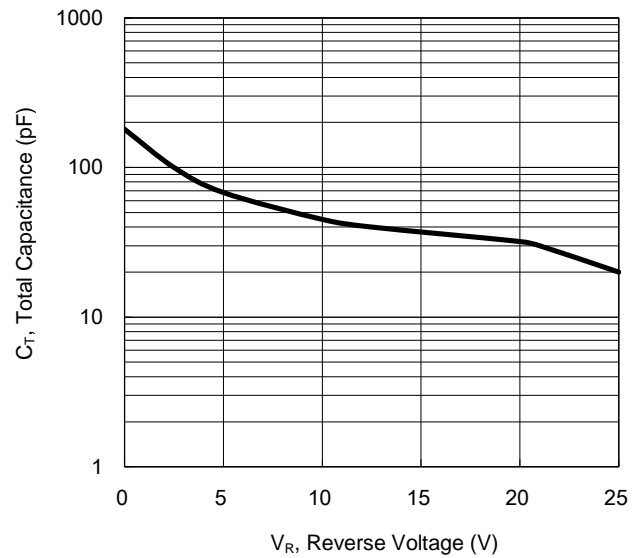
**Fig.2 Forward Current Derating Curve**



**Fig.3 Power Derating Curve**

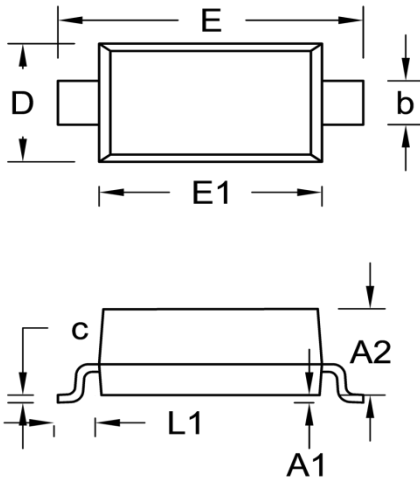


**Fig.4 Typical Capacitance vs. Reverse Voltage**



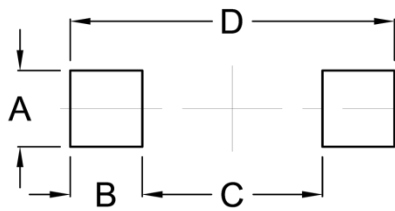
**PACKAGE OUTLINE DIMENSIONS**

SOD-123



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A1	-	0.10	-	0.004
A2	0.95	1.30	0.037	0.051
b	0.45	0.70	0.018	0.028
c	0.05	0.15	0.002	0.006
D	1.40	1.70	0.055	0.067
E	3.55	3.85	0.140	0.152
E1	2.55	2.85	0.100	0.112
L1	0.50 (REF)		0.020 (REF)	

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	0.95	0.037
B	0.90	0.035
C	2.25	0.089
D	4.05	0.159

**Notes:**

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

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