



## Features

- RoHS compliant\*
- Leadless chip form
- High current capability
- Low forward voltage
- Halogen free\*\*

## Applications

- Switch Mode Power Supplies (SMPS)
- Portable equipment batteries
- High frequency rectification
- DC/DC converters
- Telecommunications

# CD123D-B1xR Schottky Barrier Chip Diode Series

## General Information

Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers small-signal Schottky Barrier Diodes for switching and rectification applications, in a compact chip package compatible with SOD-123 size format. The Schottky Barrier Diodes offer a forward current of 1 A with a choice of repetitive peak reverse voltage of 20 V and 40 V.



## Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	CD123D-			Unit
		B120R	B140R	B140LR	
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	20	40	40	V
Maximum Average Forward Rectified Current ( $T_A = 55^\circ\text{C}$ )	$I_{F(AV)}$	1			A
Peak Forward Surge Current 8.3 ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method)	$I_{FSM}$	20			A
Operating Temperature Range	$T_J$	-55 to +125			$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150			$^\circ\text{C}$

## Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Instantaneous Forward Voltage	$V_F$	$I_F = 0.1\text{ A}$		0.32		V
		$I_F = 0.5\text{ A}$		0.40		
		$I_F = 1.0\text{ A}$		0.46	0.50	
		$I_F = 0.1\text{ A}$		0.24		
		$I_F = 0.5\text{ A}$		0.31		
		$I_F = 1.0\text{ A}$		0.37	0.38	
Repetitive Peak Reverse Current	$I_R$	$V_R = V_{RRM}$		0.015	0.2	mA
		CD123D-B120R CD123D-B140R				
		CD123D-B140LR		0.30	1.0	
Junction Capacitance	$C_J$	$V_R = 4\text{ V}$ , $f = 1.0\text{ MHz}$		110		pF
		CD123D-B120R CD123D-B140R				
		CD123D-B140LR		115		
Thermal Resistance	$R_{\theta JA}$	Junction to Ambient (1)		190		$^\circ\text{C/W}$
	$R_{\theta JL}$	Junction to Case (2)		60		

NOTES: (1) Pulse test width  $P_W = 300\text{ us}$ , 1 % duty cycle.

(2) Mounted on P.C. board with  $2.73 \times 1.6\text{ mm}$  and  $0.86 \times 1.6\text{ mm}$  copper pad areas.

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\* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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Users should verify actual device performance in their specific applications.

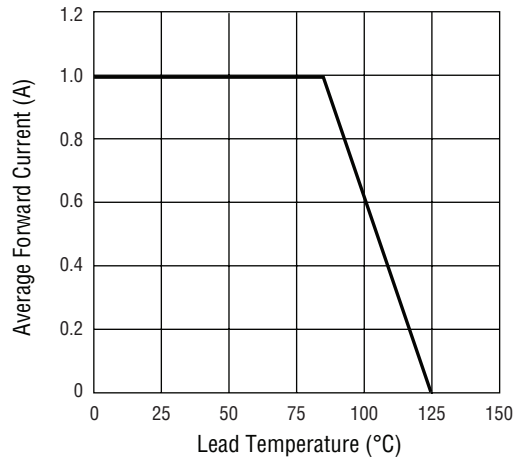
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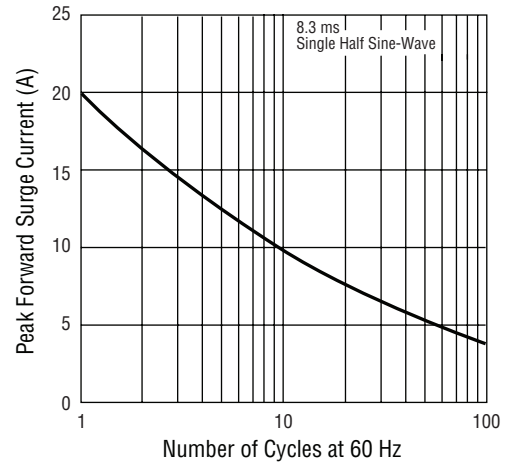
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## Performance Graphs - Model CD123D-B120R & CD123D-B140R

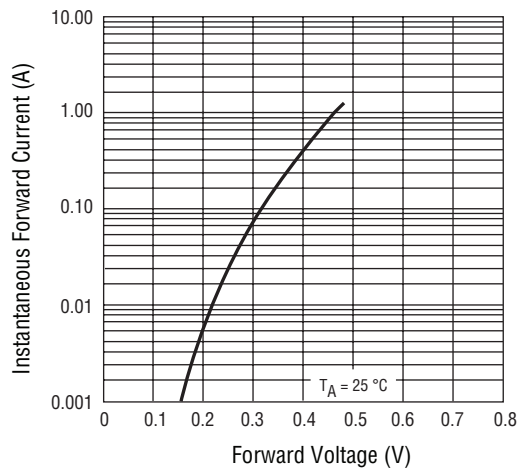
### Forward Current Derating Curve



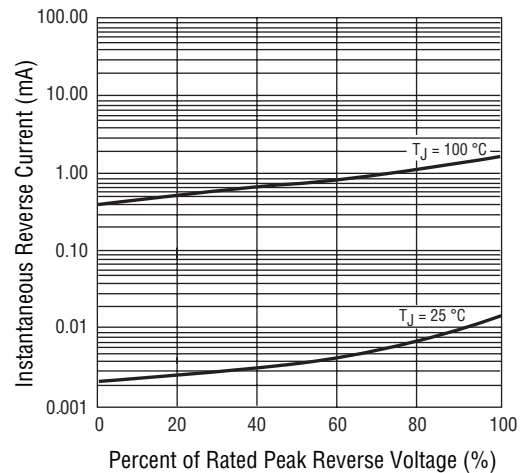
### Maximum Non-Repetitive Peak Forward Surge Current



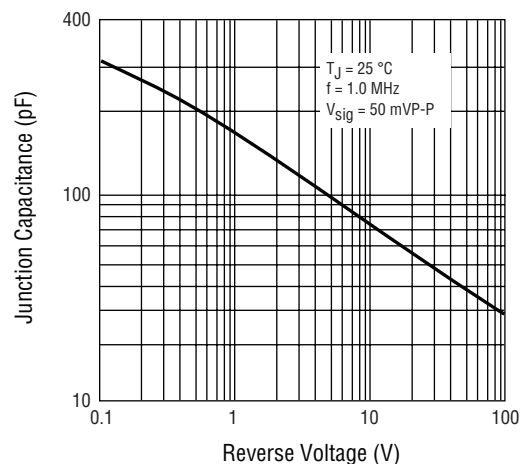
### Typical Forward Characteristics



### Typical Reverse Characteristics



### Typical Junction Capacitance



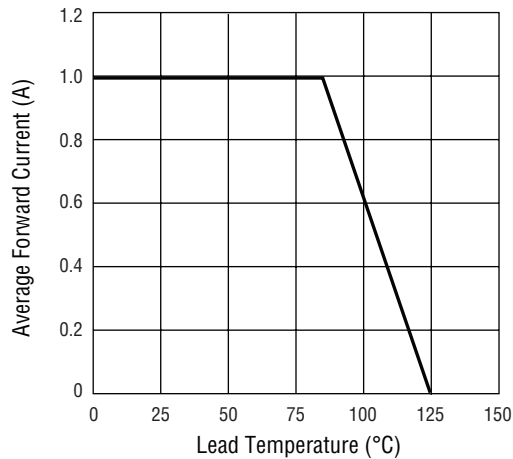
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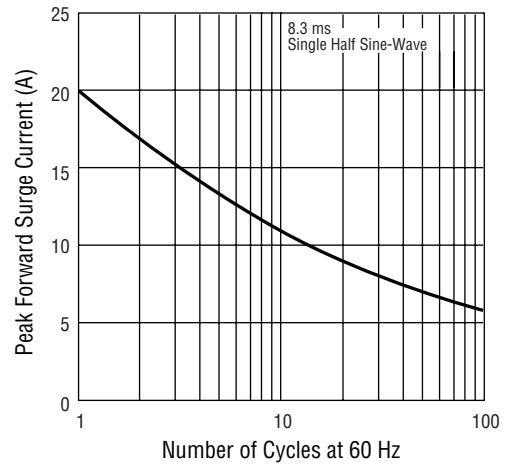
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## Performance Graphs - Model CD123D-B140LR

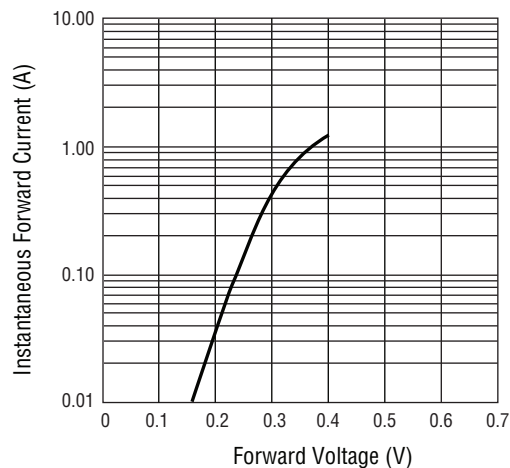
### Forward Current Derating Curve



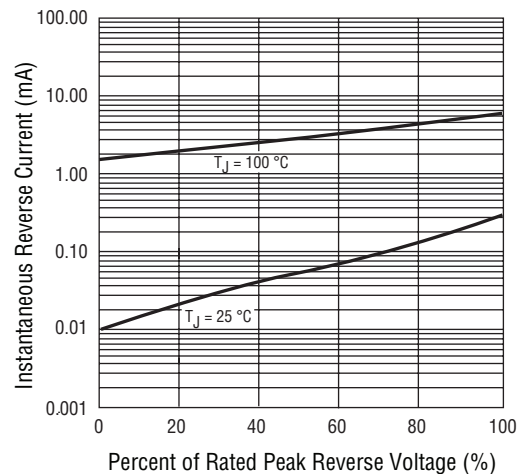
### Maximum Non-Repetitive Peak Forward Surge Current



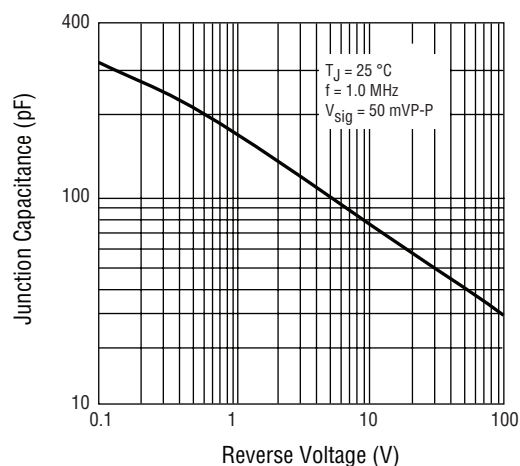
### Typical Forward Characteristics



### Typical Reverse Characteristics



### Typical Junction Capacitance

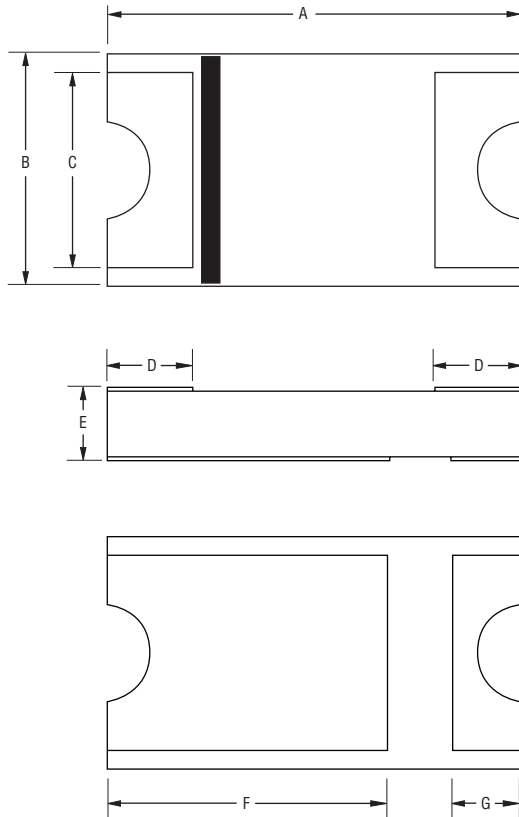


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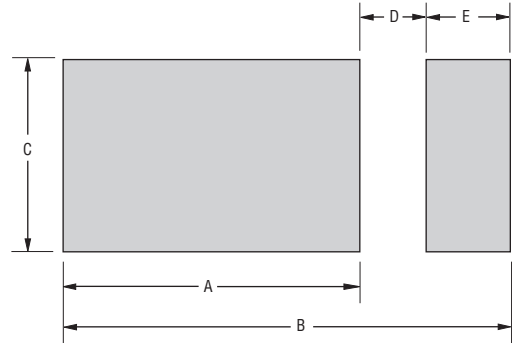
## Product Dimensions



Dimension	CD123D-B1xR
A	$\frac{3.40 \pm 0.2}{(0.0748 \pm 0.0079)}$
B	$\frac{1.9 \pm 0.2}{(0.0748 \pm 0.0079)}$
C	$\frac{1.6}{(0.0630)}$ TYP.
D	$\frac{0.7 \pm 0.2}{(0.0276 \pm 0.0079)}$
E	$\frac{0.96 +0.2/-0.1}{(0.0378 +0.0079/-0.0039)}$
F	$\frac{2.3 \pm 0.2}{(0.0906 \pm 0.0079)}$
G	$\frac{0.43 \pm 0.2}{(0.0169 \pm 0.0079)}$

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Recommended Pad Layout

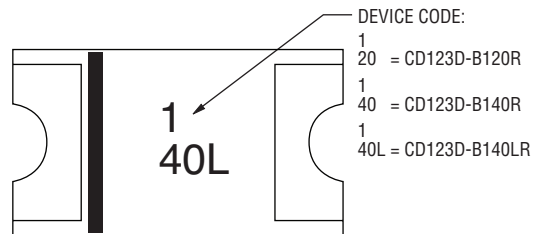


Dimension	CD123D-B1xR
A	$\frac{2.73}{(0.107)}$ MIN.
B	$\frac{4.26}{(0.168)}$ REF.
C	$\frac{1.60}{(0.063)}$ MIN.
D	$\frac{0.67}{(0.026)}$ MAX.
E	$\frac{0.86}{(0.034)}$ MIN.

## Environmental Specifications

Moisture Sensitivity Level.....1  
ESD Classification (HBM).....3B

## Typical Part Marking



## How to Order

Common Code \_\_\_\_\_  
CD = Chip Diode  
Package \_\_\_\_\_  
123D = SOD-123 Size  
Model \_\_\_\_\_  
B = Schottky Barrier Diode  
Average Forward Current \_\_\_\_\_  
1 = 1 A  
Reverse Voltage \_\_\_\_\_  
40 = 40 V  
Forward Voltage \_\_\_\_\_  
(Blank) = Standard  
L = Low

**CD 123D - B 1 40 L R**

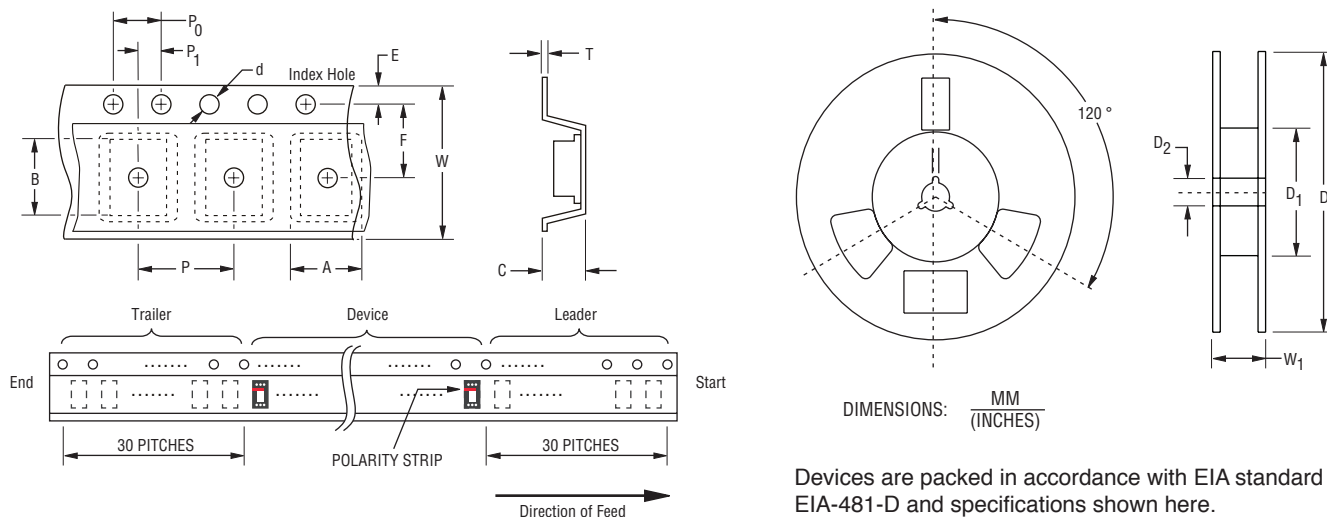
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# CD123D-B1xR Schottky Barrier Chip Diode Series

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## Packaging Information

The product will be dispensed in tape and reel format (see diagram below).



Item	Symbol	CD123D-B1xR
Carrier Width	A	$2.20 \pm 0.10$ $(0.087 \pm 0.004)$
Carrier Length	B	$3.65 \pm 0.10$ $(0.144 \pm 0.004)$
Carrier Depth	C	$1.75 \pm 0.10$ $(0.069 \pm 0.004)$
Sprocket Hole	d	$1.50 \pm 0.10$ $(0.059 \pm 0.004)$
Reel Outside Diameter	D	$178 \pm 2.0$ $(7.008 \pm 0.079)$
Reel Inner Diameter	D <sub>1</sub>	$50$ $(1.969)$ MIN.
Feed Hole Diameter	D <sub>2</sub>	$13.0 \pm 0.5$ $(0.512 \pm 0.020)$
Sprocket Hole Position	E	$1.75 \pm 0.10$ $(0.069 \pm 0.004)$
Punch Hole Position	F	$5.50 \pm 0.05$ $(0.217 \pm 0.002)$
Punch Hole Pitch	P	$4.00 \pm 0.10$ $(0.157 \pm 0.004)$
Sprocket Hole Pitch	P <sub>0</sub>	$4.00 \pm 0.10$ $(0.157 \pm 0.004)$
Embossment Center	P <sub>1</sub>	$2.00 \pm 0.10$ $(0.079 \pm 0.004)$
Overall Tape Thickness	T	$0.40$ $(0.016)$ MAX.
Tape Width	W	$12.00 \pm 0.30$ $(0.472 \pm 0.012)$
Reel Width	W <sub>1</sub>	$18.7$ $(0.736)$ MAX.
Quantity per Reel	--	3000

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