

## 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<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CD123D-			Unit
		B120R	B140R	B140LR	
Maximum Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	20	40	40	V
Maximum Average Forward Rectified Current (T <sub>A</sub> = 55 °C)	I <sub>F(AV)</sub>	1			A
Peak Forward Surge Current 8.3 ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method)	I <sub>FSM</sub>	20			A
Operating Temperature Range	T <sub>J</sub>	-55 to +125			°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150			°C

## Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Instantaneous Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 0.1A		0.32		V
		I <sub>F</sub> = 0.5 A	CD123D-B120R CD123D-B140R	0.40		
		I <sub>F</sub> = 1.0 A		0.46	0.50	
		I <sub>F</sub> = 0.1A	CD123D-B140LR	0.24		
		I <sub>F</sub> = 0.5 A		0.31		
		I <sub>F</sub> = 1.0 A		0.37	0.38	
Repetitive Peak Reverse Current	I <sub>R</sub>	V <sub>R</sub> = V <sub>RRM</sub>		0.015	0.2	mA
			CD123D-B120R CD123D-B140R			
			CD123D-B140LR	0.30	1.0	
Junction Capacitance	C <sub>J</sub>	V <sub>R</sub> = 4 V, f = 1.0 MHz		110		pF
			CD123D-B120R CD123D-B140R			
			CD123D-B140LR	115		
Thermal Resistance	R <sub>θJA</sub>	Junction to Ambient (1)		190		°C/W
	R <sub>θJL</sub>	Junction to Case (2)		60		

NOTES: (1) Pulse test width P<sub>W</sub> = 300 us, 1 % duty cycle.

(2) Mounted on P.C. board with 2.73 x 1.6 mm and 0.86 x 1.6 mm copper pad areas.

## **BOURNS**<sup>®</sup>

**Asia-Pacific:** Tel: +886-2 2562-4117 • Email: asiacus@bourns.com

**EMEA:** Tel: +36 88 520 390 • Email: eurocus@bourns.com

**The Americas:** Tel: +1-951 781-5500 • Email: americus@bourns.com

[www.bourns.com](http://www.bourns.com)

\* 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.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

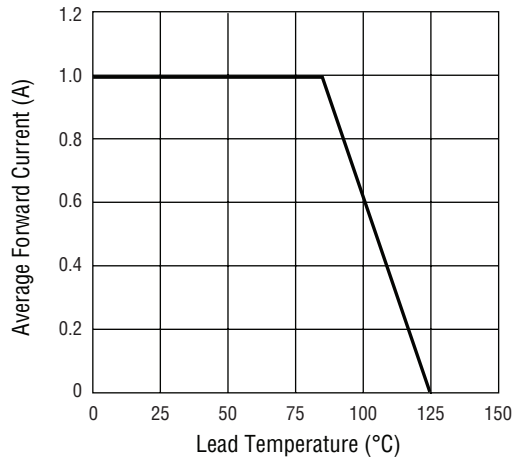
The products described herein and this document are subject to specific legal disclaimers set forth on the last page of this document.

# CD123D-B1xR Schottky Barrier Chip Diode Series

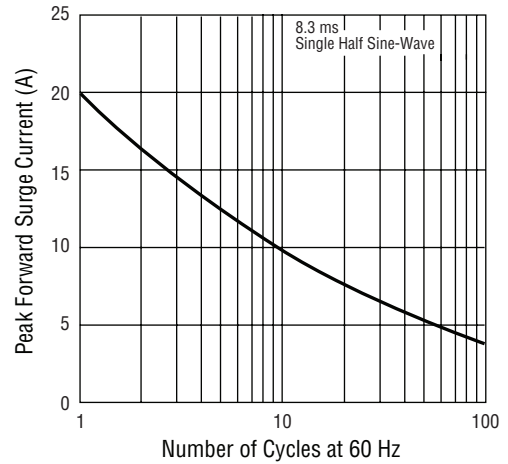
**BOURNS®**

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

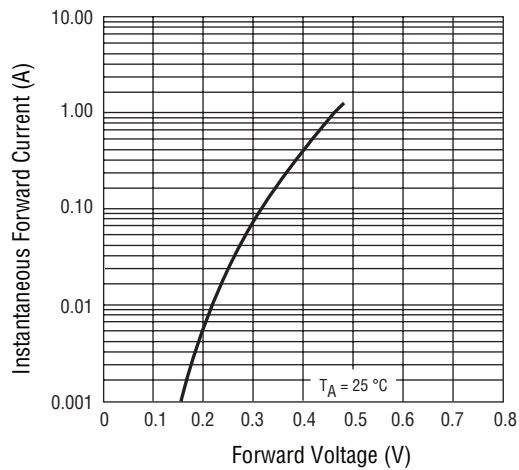
### Forward Current Derating Curve



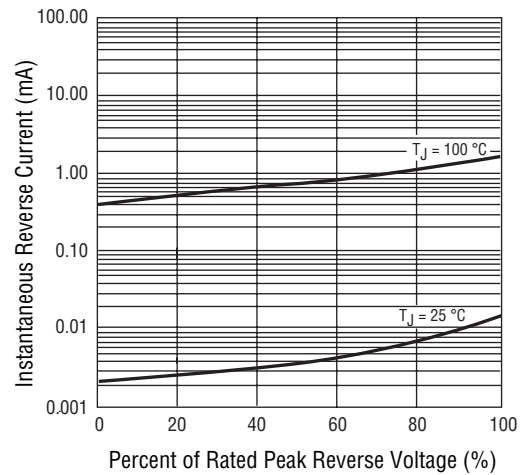
### Maximum Non-Repetitive Peak Forward Surge Current



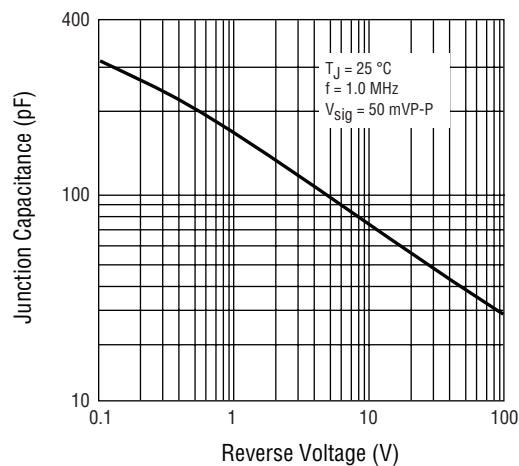
### Typical Forward Characteristics



### Typical Reverse Characteristics



### Typical Junction Capacitance



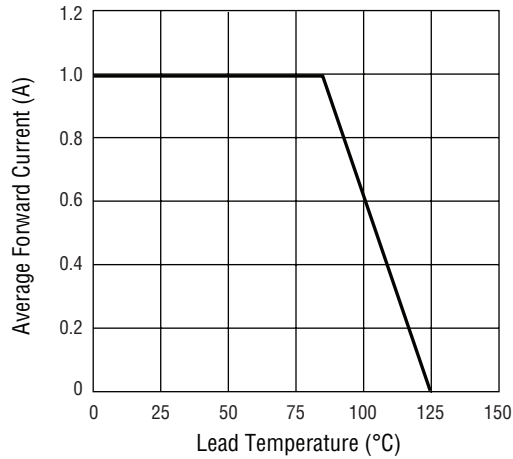
Specifications are subject to change without notice. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers set forth on the last page of this document.

# CD123D-B1xR Schottky Barrier Chip Diode Series

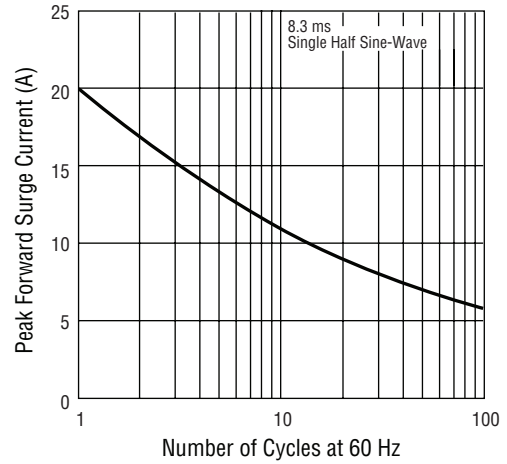
**BOURNS®**

## Performance Graphs - Model CD123D-B140LR

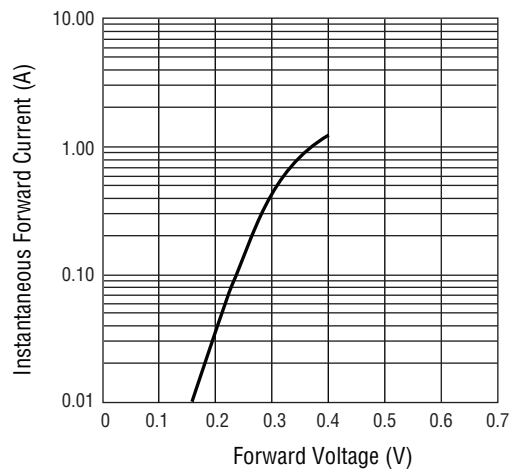
### Forward Current Derating Curve



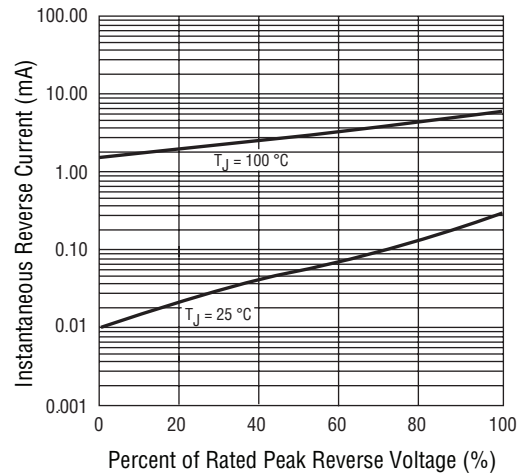
### Maximum Non-Repetitive Peak Forward Surge Current



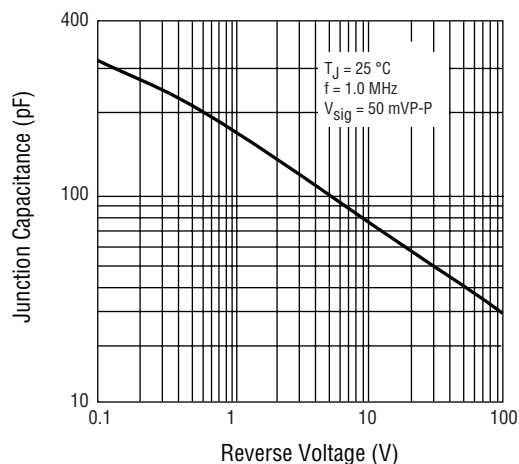
### Typical Forward Characteristics



### Typical Reverse Characteristics



### Typical Junction Capacitance

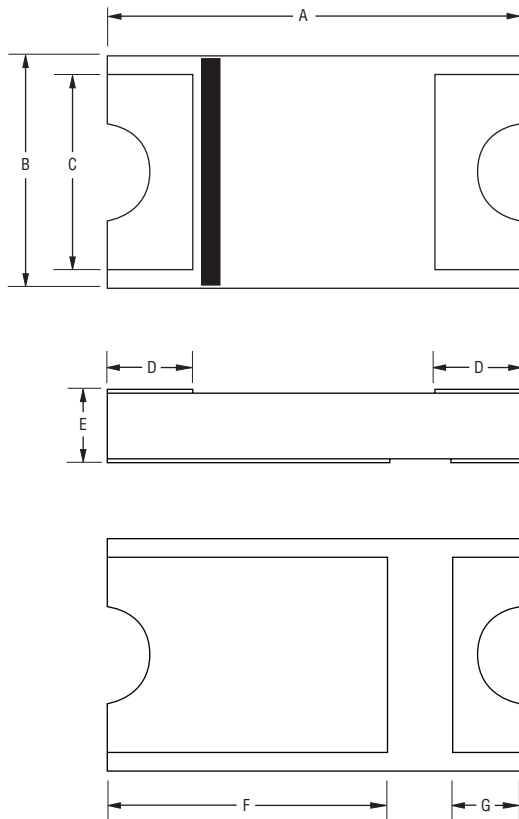


Specifications are subject to change without notice. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers set forth on the last page of this document.

# CD123D-B1xR Schottky Barrier Chip Diode Series



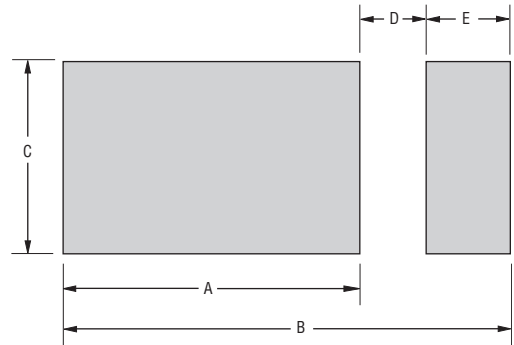
## Product Dimensions



Dimension	CD123D-B1xR
A	$\frac{3.40 \pm 0.2}{(0.0748 - 0.0079)}$
B	$\frac{1.9 \pm 0.2}{(0.0748 - 0.0079)}$
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

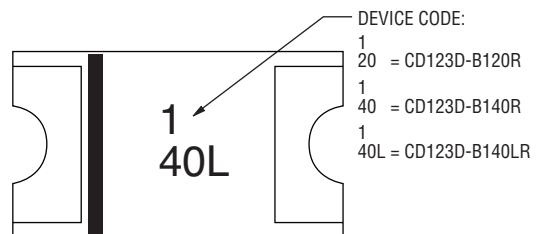


Dimension	CD123D-B1xR
A	$\frac{2.73}{(0.107)}$ MIN.
B	$\frac{4.26}{(0.168)}$ REF.
C	$\frac{1.60}{(0.063)}$ MIN.
D	$\frac{0.67}{(0.026)}$ MAX.
E	$\frac{0.86}{(0.034)}$ MIN.

## Environmental Specifications

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

## Typical Part Marking



## How to Order

Common Code CD 123D - B 1 40 L R  
 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 L (Blank) = Standard  
 L = Low

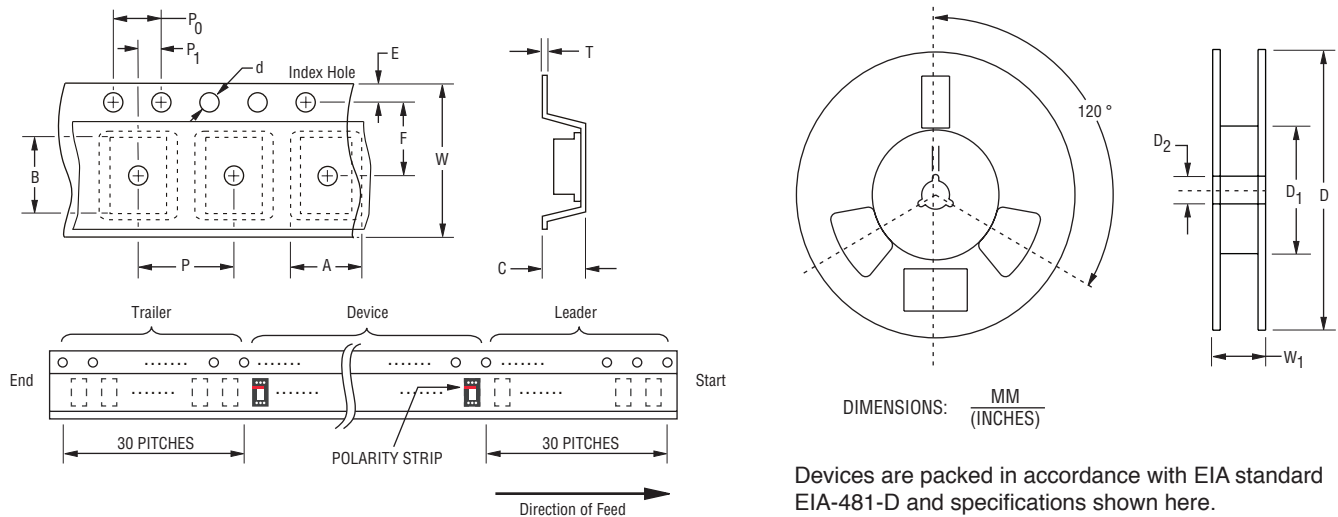
Specifications are subject to change without notice.  
Users should verify actual device performance in their specific applications.  
The products described herein and this document are subject to specific legal disclaimers set forth on the last page of this document.

# CD123D-B1xR Schottky Barrier Chip Diode Series

**BOURNS®**

## Packaging Information

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



Devices are packed in accordance with EIA standard EIA-481-D and specifications shown here.

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

## Legal Disclaimer Notice

This legal disclaimer applies to purchasers and users of Bourns® products manufactured by or on behalf of Bourns, Inc. and its affiliates (collectively, "Bourns").

Unless otherwise expressly indicated in writing, Bourns® products and data sheets relating thereto are subject to change without notice. Users should check for and obtain the latest relevant information before placing orders and should verify that such information is current and complete.

The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions and statements regarding the suitability of products for certain types of applications are based on Bourns' knowledge of typical requirements in generic applications. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to a combination of the Bourns® product with other components in the user's application or due to the environment of the user application itself. Such characteristics and parameters also can and do vary in different applications and actual performance may vary over time. Users should always verify actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments about how much additional test margin to design in to compensate for differences between laboratory and real world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., ISO/TS 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet requirements of such industry standard or such particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their applications.

Bourns® products are not recommended, authorized or intended for use in nuclear, lifesaving, life-critical or life-sustaining applications, nor in any other applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any Bourns® products in such unauthorized applications is at the user's sole risk. Life-critical applications include devices identified by the U.S. Food and Drug Administration as Class III devices and generally equivalent classifications outside of the United States.

Bourns® standard products that are designed and tested for use in automotive applications will be described on the applicable data sheets as compliant with the applicable AEC-Q standard. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard products in an automotive application is not recommended, authorized or intended and will be at the user's sole risk.

Bourns® standard products are not tested to comply with United States Federal Aviation Administration standards generally or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aircraft or space applications. Bourns® standard products that are designed and tested for use in aircraft or space applications will be described on the applicable data sheets as compliant with the RTCA DO-160 standard. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard product in an aircraft or space application is not recommended, authorized or intended and will be at the user's sole risk.

The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the provisions above applicable to Bourns® standard products shall also apply to such Bourns® custom products.

Users shall not sell, transfer, export or re-export any Bourns® products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or missiles, nor shall they use Bourns® products or technology in any facility which engages in activities relating to such devices. The foregoing restrictions apply to all uses and applications that violate national or international prohibitions, including embargos or international regulations. Further, Bourns® products, technology or technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes, and Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party that is ineligible to receive U.S. commodities, software, or technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability arising out of the application or use of any Bourns® standard product, (ii) any and all liability, including, without limitation, special, punitive, consequential or incidental damages, and (iii) any and all implied warranties, including implied warranties of fitness for particular purpose, non-infringement and merchantability.

*For your convenience, copies of this Legal Disclaimer Notice with German, Spanish, Japanese, Traditional Chinese and Simplified Chinese translations are available at:*

*Web Page: <http://www.bourns.com/legal/privacy-policy>*

*PDF: <http://www.bourns.com/docs/Legal/disclaimer.pdf>*