

## Features

- Lead free
- RoHS compliant\*
- Surface Mount SMB package
- Standoff Voltage: 5.0 to 170 volts
- Power Dissipation: 600 watts



Model CD214B is currently available, although not recommended for new designs. [Model SMBJ](#) is preferred.

## CD214B Transient Voltage Suppressor Diode Series

### General Information

The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package DO-214AA (SMB) size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 5 V up to 170 V and Breakdown Voltage up to 200 V. Typical fast response times are less than 1.0 ns for unidirectional devices and less than 5.0 ns for bidirectional devices from 0 V to Minimum Breakdown Voltage.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle with standard pick and place equipment and the flat configuration minimizes roll away.

### Additional Information

Click these links for more information:



[PRODUCT  
SELECTOR](#)



[TECHNICAL  
LIBRARY](#)



[INVENTORY](#)



[SAMPLES](#)



[CONTACT](#)

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T <sub>P</sub> = 1 ms) (Note 1,2)	P <sub>PK</sub>	600	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I <sub>FSM</sub>	100	Amps
Steady State Power Dissipation @ T <sub>L</sub> = 75 °C	P <sub>M(AV)</sub>	5.0	Watts
Maximum Instantaneous Forward Voltage @ I <sub>PP</sub> = 50 A (For Unidirectional Units Only)	V <sub>F</sub>	(Note 5)	Volts
Operating Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T<sub>A</sub> = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).
4. Single Phase, Half Wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20 %.
5. V<sub>F</sub> = 3.5 V on CD214B-T5.0A through CD214B-T90A and V<sub>F</sub> = 5.0 V on CD214B-T100A through CD214B-T170A.

**BOURNS®**

#### Asia-Pacific:

Tel: +886-2 2562-4117  
Email: [asiacus@bourns.com](mailto:asiacus@bourns.com)

#### EMEA:

Tel: +36 88 885 877  
Email: [eurocus@bourns.com](mailto:eurocus@bourns.com)

#### The Americas:

Tel: +1-951 781-5500  
Email: [americus@bourns.com](mailto:americus@bourns.com)

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



**WARNING**  
**Cancer and Reproductive Harm -**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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

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 as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

### How to Order

**CD 214B - T 5.0 CA LF**

Common Code \_\_\_\_\_  
Chip Diode

Package \_\_\_\_\_  
214A = SMA/DO-214AC  
214B = SMB/DO-214AA  
214C = SMC/DO-214AB

Model \_\_\_\_\_  
T = Transient Voltage Suppressor Series

Working Peak Reverse Voltage \_\_\_\_\_  
5.0 = 5.0 V<sub>RWM</sub> (Volts)  
170 = 170 V<sub>RWM</sub> (Volts)

Suffix \_\_\_\_\_  
A = 5 % Tolerance Device  
CA = 5 % Tolerance Bidirectional Device

Terminations \_\_\_\_\_  
LF = 100 % Sn (lead free)

## Compliance

- IEC 61000-4-2 ESD (Min. Level 4)
- IEC 61000-4-4 EFT
- IEC 61000-4-5 Surge

## CD214B Transient Voltage Suppressor Diode Series

**BOURNS®**

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

Unidirectional Device		Bidirectional Device		Breakdown Voltage $V_{BR}$ (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{RWM}$	Maximum Reverse Voltage @ $I_{RSM}$	Maximum Reverse Surge Current
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ $I_T$ (mA)	$V_{RWM}$ (Volts)	$I_R$ ( $\mu\text{A}$ )	$V_{RSM}$ (Volts)	$I_{RSM}$ (Amps)
CD214B-T5.0A	KE	CD214B-T5.0CA	AE	6.40	7.25	10	5.0	800	9.2	65.2
CD214B-T6.0A	KG	CD214B-T6.0CA	AG	6.67	7.67	10	6.0	800	10.3	58.3
CD214B-T6.5A	KK	CD214B-T6.5CA	AK	7.22	8.30	10	6.5	500	11.2	53.6
CD214B-T7.0A	KM	CD214B-T7.0CA	AM	7.78	8.95	10	7.0	200	12.0	50.0
CD214B-T7.5A	KP	CD214B-T7.5CA	AP	8.33	9.58	1.0	7.5	100	12.9	46.5
CD214B-T8.0A	KR	CD214B-T8.0CA	AR	8.89	10.2	1.0	8.0	50	13.6	44.1
CD214B-T8.5A	KT	CD214B-T8.5CA	AT	9.44	10.8	1.0	8.5	20	14.4	41.7
CD214B-T9.0A	KV	CD214B-T9.0CA	AV	10.0	11.5	1.0	9.0	10	15.4	39.0
CD214B-T10A	KX	CD214B-T10CA	AX	11.1	12.8	1.0	10	5.0	17.0	35.3
CD214B-T11A	KZ	CD214B-T11CA	AZ	12.2	14.4	1.0	11	5.0	18.2	33.0
CD214B-T12A	LE	CD214B-T12CA	BE	13.3	15.3	1.0	12	5.0	19.9	30.2
CD214B-T13A	LG	CD214B-T13CA	BG	14.4	16.5	1.0	13	5.0	21.5	27.9
CD214B-T14A	LK	CD214B-T14CA	BK	15.6	17.9	1.0	14	5.0	23.2	25.8
CD214B-T15A	LM	CD214B-T15CA	BM	16.7	19.2	1.0	15	5.0	24.4	24.0
CD214B-T16A	LP	CD214B-T16CA	BP	17.8	20.5	1.0	16	5.0	26.0	23.1
CD214B-T17A	LR	CD214B-T17CA	BR	18.9	21.7	1.0	17	5.0	27.6	21.7
CD214B-T18A	LT	CD214B-T18CA	BT	20.0	23.3	1.0	18	5.0	29.2	20.5
CD214B-T20A	LV	CD214B-T20CA	BV	22.2	25.5	1.0	20	5.0	32.4	18.5
CD214B-T22A	LX	CD214B-T22CA	BX	24.4	28.0	1.0	22	5.0	35.5	16.9
CD214B-T24A	LZ	CD214B-T24CA	BZ	26.7	30.7	1.0	24	5.0	38.9	15.4
CD214B-T26A	ME	CD214B-T26CA	CE	28.9	32.2	1.0	26	5.0	42.1	14.2
CD214B-T28A	MG	CD214B-T28CA	CG	31.1	35.8	1.0	28	5.0	45.4	13.2
CD214B-T30A	MK	CD214B-T30CA	CK	33.3	38.3	1.0	30	5.0	48.4	12.4
CD214B-T33A	MM	CD214B-T33CA	CM	36.7	42.2	1.0	33	5.0	53.3	11.3
CD214B-T36A	MP	CD214B-T36CA	CP	40	46.0	1.0	36	5.0	58.1	10.3
CD214B-T40A	MR	CD214B-T40CA	CR	44.4	51.1	1.0	40	5.0	64.5	9.3
CD214B-T43A	MT	CD214B-T43CA	CT	47.8	54.9	1.0	43	5.0	69.4	8.6
CD214B-T45A	MV	CD214B-T45CA	CV	50	57.5	1.0	45	5.0	72.7	8.3
CD214B-T48A	MX	CD214B-T48CA	CX	53.3	61.3	1.0	48	5.0	77.4	7.7
CD214B-T51A	MZ	CD214B-T51CA	CZ	56.7	65.2	1.0	51	5.0	82.4	7.3
CD214B-T54A	NE	CD214B-T54CA	DE	60	69	1.0	54	5.0	87.1	6.9
CD214B-T58A	NG	CD214B-T58CA	DG	64.4	74.6	1.0	58	5.0	93.6	6.4
CD214B-T60A	NK	CD214B-T60CA	DK	66.7	76.7	1.0	60	5.0	96.8	6.2
CD214B-T64A	NM	CD214B-T64CA	DM	71.1	81.8	1.0	64	5.0	103	5.8
CD214B-T70A	NP	CD214B-T70CA	DP	77.8	89.5	1.0	70	5.0	113	5.3
CD214B-T75A	NR	CD214B-T75CA	DR	83.3	95.8	1.0	75	5.0	121	4.9
CD214B-T78A	NT	CD214B-T78CA	DT	86.7	99.7	1.0	78	5.0	126	4.7
CD214B-T85A	NV	CD214B-T85CA	DV	94.4	109	1.0	85	5.0	137	4.4
CD214B-T90A	NX	CD214B-T90CA	DX	100	116	1.0	90	5.0	146	4.1
CD214B-T100A	NZ	CD214B-T100CA	DZ	111	128	1.0	100	5.0	162	3.7
CD214B-T110A	PE	CD214B-T110CA	EE	122	140	1.0	110	5.0	177	3.4
CD214B-T120A	PG	CD214B-T120CA	EG	133	153	1.0	120	5.0	193	3.1
CD214B-T130A	PK	CD214B-T130CA	EK	144	165	1.0	130	5.0	209	2.9
CD214B-T150A	PM	CD214B-T150CA	EM	167	192	1.0	150	5.0	243	2.5
CD214B-T160A	PP	CD214B-T160CA	EP	178	205	1.0	160	5.0	259	2.3
CD214B-T170A	PR	CD214B-T170CA	ER	189	218	1.0	170	5.0	275	2.2

- Notes: 1. Suffix 'A' denotes a 5 % tolerance device.  
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.  
3. For bidirectional devices with a  $V_R$  of 10 volts or less, the  $I_R$  limit is double.  
4. For unidirectional devices with a  $V_F$  max. of 3.5 V at an  $I_F$  of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

Specifications are subject to change without notice.

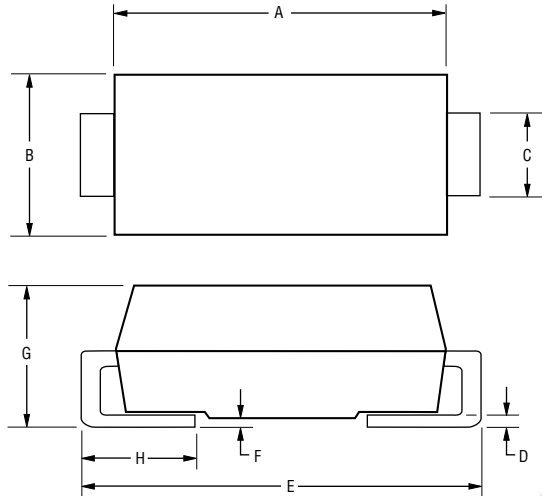
Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

# CD214B Transient Voltage Suppressor Diode Series

**BOURNS®**

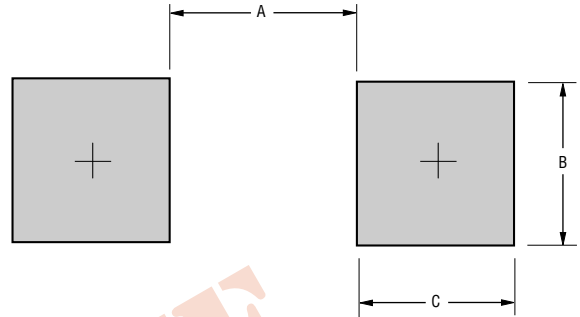
## Product Dimensions



Dimension	SMA (DO-214AA)
A	4.06 - 4.57 (0.160 - 0.180)
B	3.30 - 3.94 (0.130 - 0.155)
C	1.96 - 2.21 (0.077 - 0.087)
D	0.15 - 0.31 (0.006 - 0.012)
E	5.21 - 5.59 (0.205 - 0.220)
F	0.05 - 0.20 (0.002 - 0.008)
G	2.01 - 2.62 (0.080 - 0.103)
H	0.76 - 1.52 (0.030 - 0.060)

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

## Recommended Footprint



Dimension	SMA (DO-214AA)
A (Max.)	2.69 (0.106)
B (Min.)	2.10 (0.083)
C (Min.)	1.27 (0.050)

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

## Physical Specifications

Case ..... Molded plastic per UL Class 94V-0  
Polarity.....Cathode band indicates unidirectional device  
No cathode band indicates bidirectional device  
Weight .....0.003 ounces / 0.093 grams

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

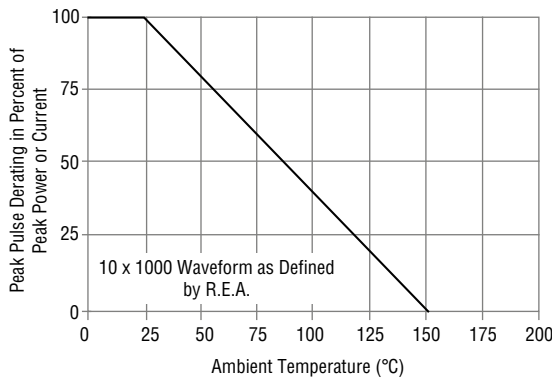
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

# CD214B Transient Voltage Suppressor Diode Series

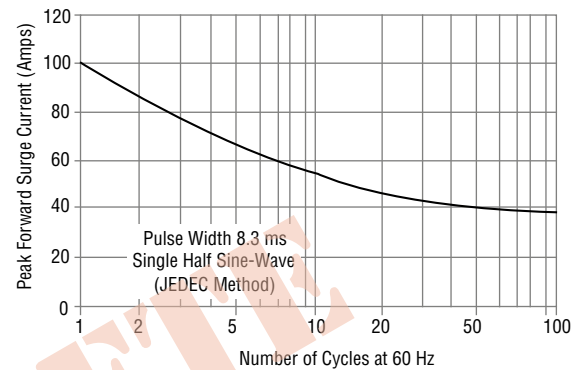
**BOURNS®**

## Rating & Characteristic Curves

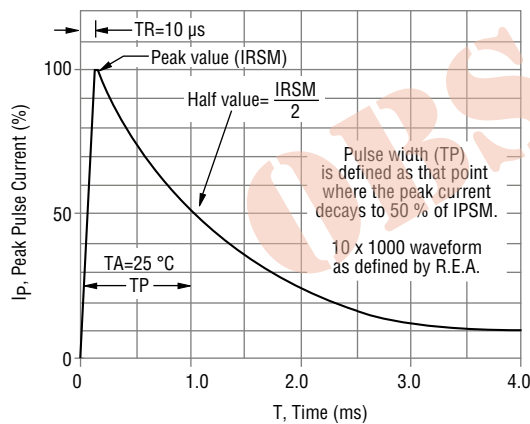
### Pulse Derating Curve



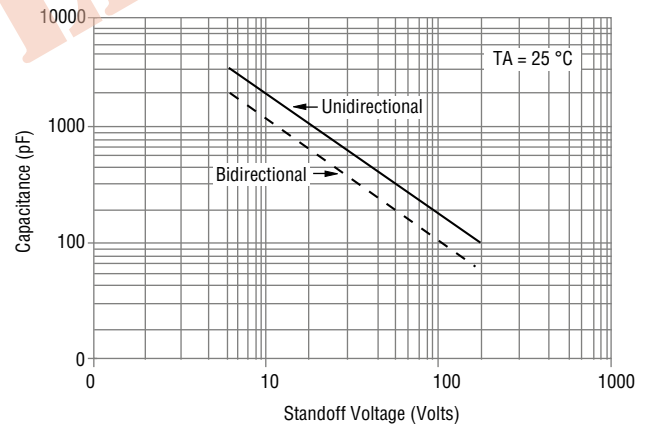
### Maximum Non-Repetitive Surge Current



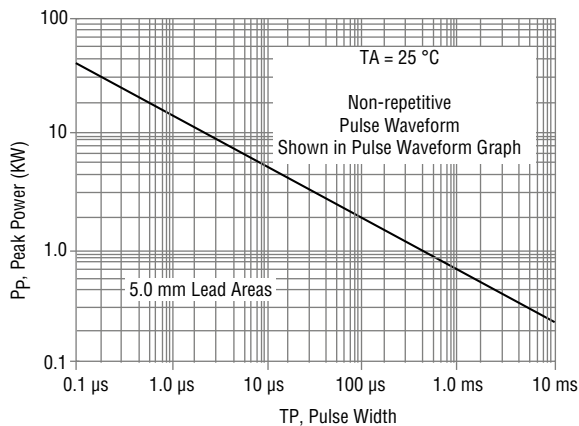
### Pulse Waveform



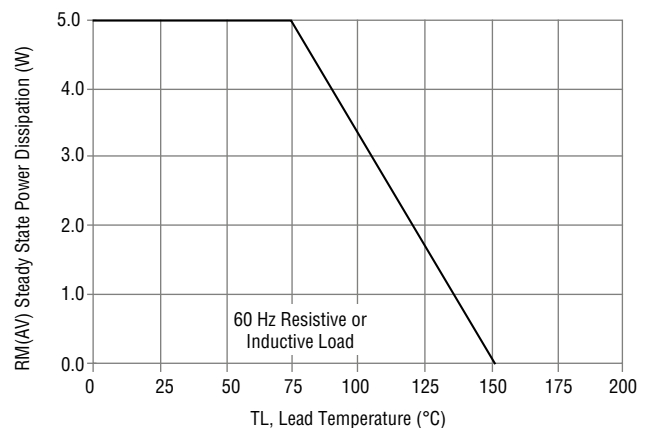
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

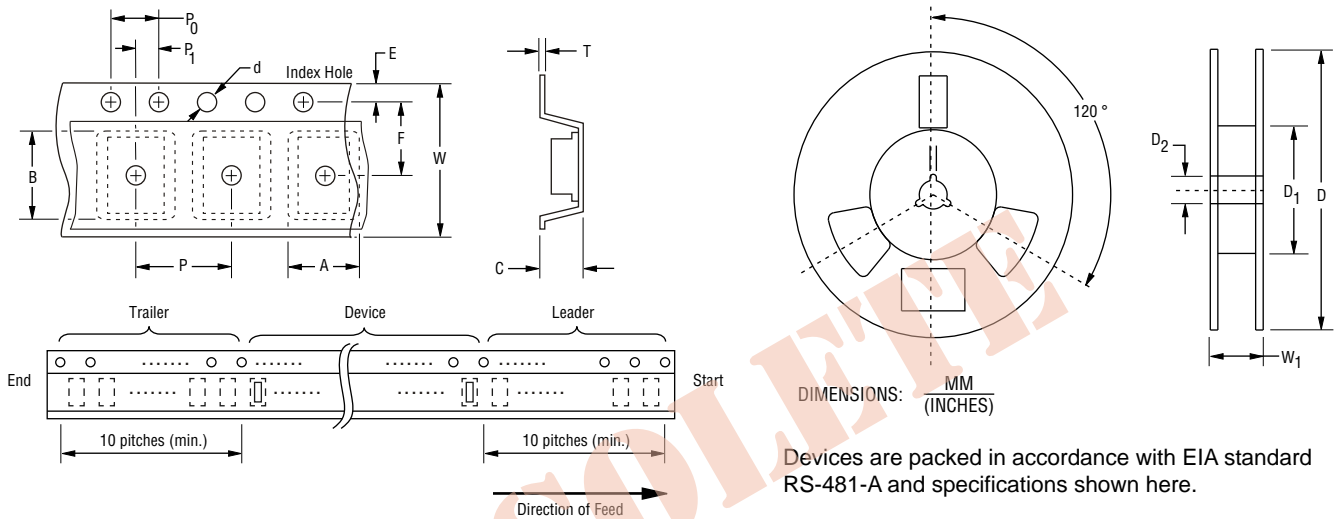
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

# CD214B Transient Voltage Suppressor 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 RS-481-A and specifications shown here.

Item	Symbol	SMA (DO-214AA)
Carrier Width	A	$4.94 \pm 0.10$ (0.194 ± 0.004)
Carrier Length	B	$5.57 \pm 0.10$ (0.210 ± 0.004)
Carrier Depth	C	$2.36 \pm 0.10$ (0.093 ± 0.004)
Sprocket Hole	d	$1.55 \pm 0.05$ (0.061 ± 0.002)
Reel Outside Diameter	D	$330$ (12.992)
Reel Inner Diameter	D <sub>1</sub>	$50.0$ (1.969) MIN.
Feed Hole Diameter	D <sub>2</sub>	$13.0 \pm 0.20$ (0.512 ± 0.008)
Sprocket Hole Position	E	$1.75 \pm 0.10$ (0.069 ± 0.004)
Punch Hole Position	F	$5.50 \pm 0.05$ (0.217 ± 0.002)
Punch Hole Pitch	P	$4.00 \pm 0.10$ (0.157 ± 0.004)
Sprocket Hole Pitch	P <sub>0</sub>	$4.00 \pm 0.10$ (0.157 ± 0.004)
Embossment Center	P <sub>1</sub>	$2.00 \pm 0.05$ (0.079 ± 0.002)
Overall Tape Thickness	T	$0.30 \pm 0.10$ (0.012 ± 0.004)
Tape Width	W	$12.00 \pm 0.20$ (0.472 ± 0.008)
Reel Width	W <sub>1</sub>	$18.4$ (0.724) MAX.
Quantity per Reel	--	3,000

REV. 11/25

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 as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

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 and verify that such information is current and complete before placing orders for Bourns® products.

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 (i) the combination of the Bourns® product with other components in the user's application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Users should always verify the actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments regarding the amount of additional test margin to design into their device or application 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 the requirements of such industry standard or particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or 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 might not be safe and thus 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 expressly identifies those Bourns® standard products that are suitable for use in automotive applications on such products' data sheets in the section entitled "Applications." 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 might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk. If Bourns expressly identifies a sub-category of automotive application in the data sheet for its standard products (such as infotainment or lighting), such identification means that Bourns has reviewed its standard product and has determined that if such Bourns® standard product is considered for potential use in automotive applications, it should only be used in such sub-category of automotive applications. Any reference to Bourns® standard product in the data sheet as compliant with the AEC-Q standard or "automotive grade" does not by itself mean that Bourns has approved such product for use in an automotive application.

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 expressly identifies Bourns® standard products that are suitable for use in aircraft or space applications on such products' data sheets in the section entitled "Applications." 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 might not be safe and thus is not recommended, authorized or intended and is 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 above provisions 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 and Bourns technology and technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes. Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party not eligible to receive U.S. commodities, software, and technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability for special, punitive, consequential, incidental or indirect damages or lost revenues or lost profits, and (ii) 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 bilingual versions are available at:*

*Web Page:* <http://www.bourns.com/legal/disclaimers-terms-and-policies>

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