

## Features

- RoHS compliant\*
- Surface Mount SMC package
- Standoff Voltage: 5.0 to 170 volts
- Power Dissipation: 3000 watts



Model CD214L is currently available, although not recommended for new designs. [Model SMLJ](#) is preferred.

# CD214L 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-214AB (SMC) 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 their flat configuration minimizes roll away.

### Additional Information

Click these links for more information:



### 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) <sup>(Note 1,2)</sup>	P <sub>PK</sub>	3000	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) <sup>(Note 3)</sup>	I <sub>FSM</sub>	300	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> = 100 A (For Unidirectional Units Only)	V <sub>F</sub>	<sup>(Note 5)</sup>	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 CD214L-T5.0ALF through CD214L-T90ALF and V<sub>F</sub> = 5.0 V on CD214L-T100ALF through CD214L-T170ALF.



#### 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 214L - T 5.0 CA LF**

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

Package \_\_\_\_\_  
214L = 3 kW 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 (RoHS Compliant)

## Compliance

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

## CD214L Transient Voltage Suppressor Diode Series

**BOURNS®**

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

Unidirectional Device		Bidirectional Device		Breakdown Voltage V <sub>BR</sub> (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Reverse Voltage @ I <sub>RSM</sub>	Maximum Reverse Surge Current
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I <sub>T</sub> (mA)	V <sub>RWM</sub> (Volts)	I <sub>R</sub> (μA)	V <sub>RSM</sub> (Volts)	I <sub>RSM</sub> (Amps)
CD214L-T5.0ALF	HDE	CD214L-T5.0CALF	IDE	6.40	7.82	10	5	1000	9.2	326.00
CD214L-T6.0ALF	HDX	CD214L-T6.0CALF	IDG	6.67	8.15	10	6	1000	10.3	291.30
CD214L-T6.5ALF	HDK	CD214L-T6.5CALF	IDK	7.22	7.98	10	6.5	500	11.2	267.90
CD214L-T7.0ALF	HDM	CD214L-T7.0CALF	IDM	7.78	8.60	10	7	200	12	250.00
CD214L-T7.5ALF	HDP	CD214L-T7.5CALF	IDP	8.33	9.21	1	7.5	100	12.9	232.60
CD214L-T8.0ALF	HDR	CD214L-T8.0CALF	IDR	8.89	9.83	1	8	50	13.6	220.60
CD214L-T8.5ALF	HDT	CD214L-T8.5CALF	IDT	9.44	10.43	1	8.5	25	14.4	208.40
CD214L-T9.0ALF	HDV	CD214L-T9.0CALF	IDV	10.00	11.05	1	9	10	15.4	194.80
CD214L-T10ALF	HDX	CD214L-T10CALF	IDX	11.10	12.27	1	10	5	17	176.40
CD214L-T11ALF	HDZ	CD214L-T11CALF	IDZ	12.20	13.50	1	11	5	18.2	164.80
CD214L-T12ALF	HEE	CD214L-T12CALF	IEE	13.30	14.70	1	12	5	19.9	150.60
CD214L-T13ALF	HEG	CD214L-T13CALF	IEG	14.40	15.90	1	13	5	21.5	139.40
CD214L-T14ALF	HEK	CD214L-T14CALF	IEK	15.60	17.20	1	14	5	23.2	129.40
CD214L-T15ALF	HEM	CD214L-T15CALF	IEM	16.70	18.50	1	15	5	24.4	123.00
CD214L-T16ALF	HEP	CD214L-T16CALF	IEP	17.80	19.70	1	16	5	26	115.40
CD214L-T17ALF	HER	CD214L-T17CALF	IER	18.90	20.90	1	17	5	27.6	106.60
CD214L-T18ALF	HET	CD214L-T18CALF	IET	20.00	22.10	1	18	5	29.2	102.80
CD214L-T20ALF	HEV	CD214L-T20CALF	IEV	22.20	24.50	1	20	5	32.4	92.60
CD214L-T22ALF	HEX	CD214L-T22CALF	IEX	24.40	27.00	1	22	5	35.5	84.40
CD214L-T24ALF	HEZ	CD214L-T24CALF	IEZ	26.70	29.50	1	24	5	38.9	77.20
CD214L-T26ALF	HFE	CD214L-T26CALF	IFE	28.90	31.90	1	26	5	42.1	71.20
CD214L-T28ALF	HFG	CD214L-T28CALF	IFG	31.10	34.40	1	28	5	45.4	66.00
CD214L-T30ALF	HFK	CD214L-T30CALF	IFK	33.30	36.80	1	30	5	48.4	62.00
CD214L-T33ALF	HFM	CD214L-T33CALF	IFM	36.70	40.60	1	33	5	53.3	56.20
CD214L-T36ALF	HFP	CD214L-T36CALF	IFP	40.00	44.20	1	36	5	58.1	51.60
CD214L-T40ALF	HFR	CD214L-T40CALF	IFR	44.40	49.10	1	40	5	64.5	46.40
CD214L-T43ALF	HFT	CD214L-T43CALF	IFT	47.80	52.80	1	43	5	69.4	43.20
CD214L-T45ALF	HFV	CD214L-T45CALF	IFV	50.00	55.30	1	45	5	72.7	41.20
CD214L-T48ALF	HFX	CD214L-T48CALF	IFX	53.30	58.90	1	48	5	77.4	38.80
CD214L-T51ALF	HFZ	CD214L-T51CALF	IFZ	56.70	62.70	1	51	5	82.4	36.40
CD214L-T54ALF	HGE	CD214L-T54CALF	IGE	60.00	66.30	1	54	5	87.1	34.40
CD214L-T58ALF	HGG	CD214L-T58CALF	IGG	64.40	71.20	1	58	5	93.6	32.00
CD214L-T60ALF	HGK	CD214L-T60CALF	IGK	66.70	73.70	1	60	5	96.8	31.00
CD214L-T64ALF	HGM	CD214L-T64CALF	IGM	71.10	78.60	1	64	5	103	29.20
CD214L-T70ALF	HGP	CD214L-T70CALF	IGP	77.80	86.00	1	70	5	113	26.60
CD214L-T75ALF	HGR	CD214L-T75CALF	IGR	83.30	92.10	1	75	5	121	24.80
CD214L-T78ALF	HGT	CD214L-T78CALF	IGT	86.70	95.80	1	78	5	126	22.80
CD214L-T85ALF	HGV	CD214L-T85CALF	IGV	94.40	104.30	1	85	5	137	20.80
CD214L-T90ALF	HGX	CD214L-T90CALF	IGX	100.00	110.50	1	90	5	146	20.60
CD214L-T100ALF	HGZ	CD214L-T100CALF	IGZ	111.00	122.70	1	100	5	162	18.60
CD214L-T110ALF	HHE	CD214L-T110CALF	IHE	122.00	134.80	1	110	5	177	16.80
CD214L-T120ALF	HHG	CD214L-T120CALF	IHG	133.00	147.00	1	120	5	193	15.60
CD214L-T130ALF	HHH	CD214L-T130CALF	IHH	144.00	159.20	1	130	5	209	14.40
CD214L-T150ALF	HHM	CD214L-T150CALF	IHM	167.00	184.60	1	150	5	243	12.40
CD214L-T160ALF	HHP	CD214L-T160CALF	IHP	178.00	196.70	1	160	5	259	11.60
CD214L-T170ALF	HHR	CD214L-T170CALF	IHR	189.00	208.90	1	170	5	275	11.00

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<sub>R</sub> of 10 volts or less, the I<sub>R</sub> limit is double.

4. For unidirectional devices with a V<sub>F</sub> max. of 3.5 V at an I<sub>F</sub> of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

Specifications are subject to change without notice.

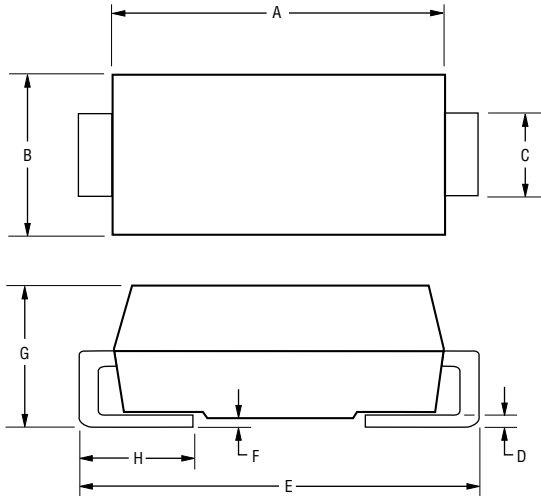
Users should verify actual device performance in their specific applications.

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).

# CD214L Transient Voltage Suppressor Diode Series

**BOURNS®**

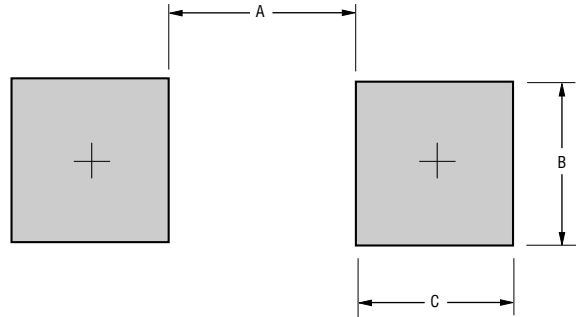
## Product Dimensions



Dimension	SMA (DO-214AB)
A	6.60 - 7.11 (0.260 - 0.280)
B	5.59 - 6.22 (0.220 - 0.245)
C	2.92 - 3.18 (0.115 - 0.125)
D	0.15 - 0.31 (0.006 - 0.012)
E	7.75 - 8.13 (0.305 - 0.320)
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-214AB)
A (Max.)	4.69 (0.185)
B (Min.)	3.07 (0.121)
C (Min.)	1.52 (0.060)

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 .....0.007 ounces / 0.21 grams

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

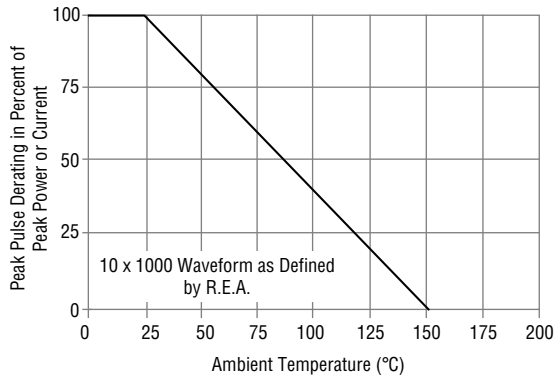
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

# CD214L Transient Voltage Suppressor Diode Series

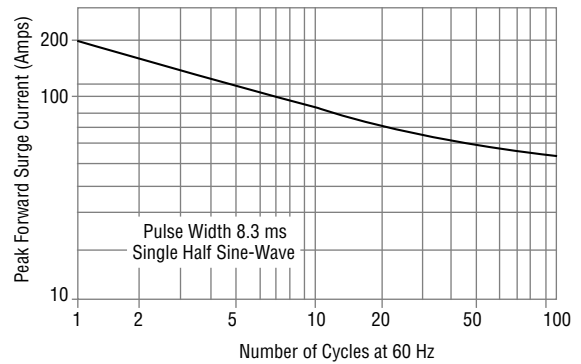


## Rating & Characteristic Curves

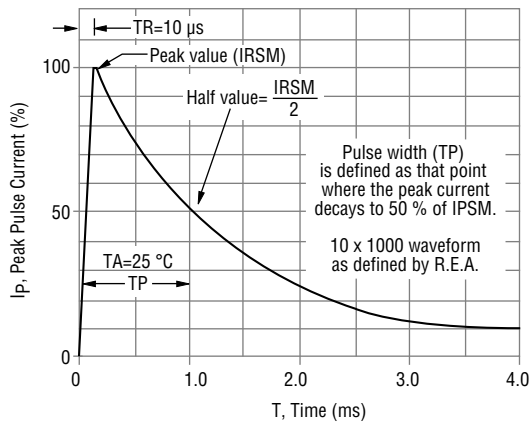
### Pulse Derating Curve



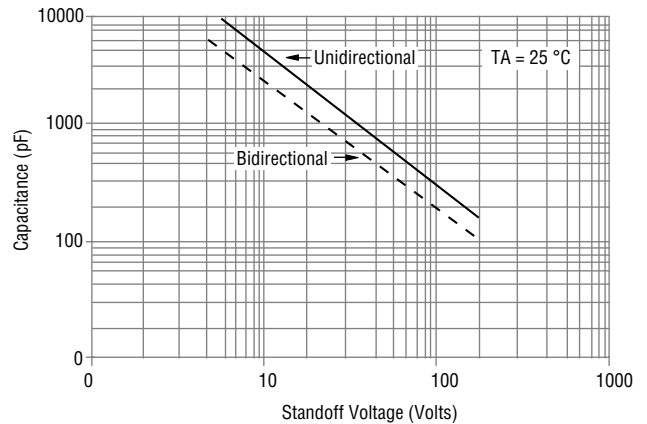
### Maximum Non-Repetitive Surge Current



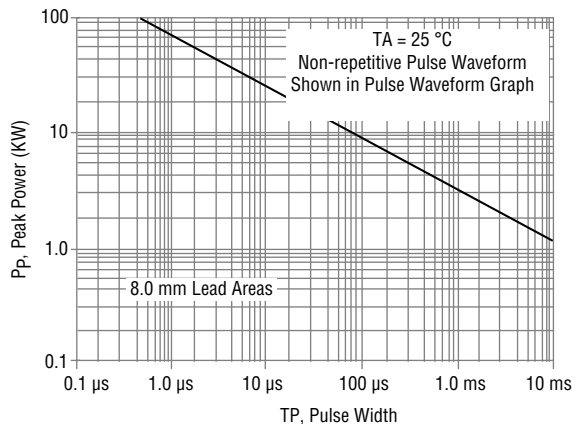
### Pulse Waveform



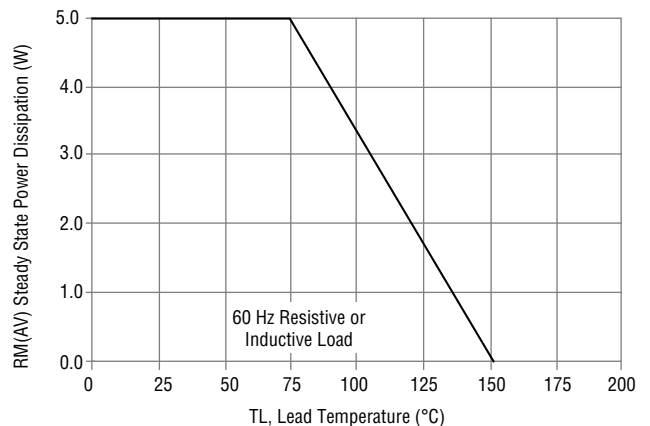
### Typical Junction Capacitance



### 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.

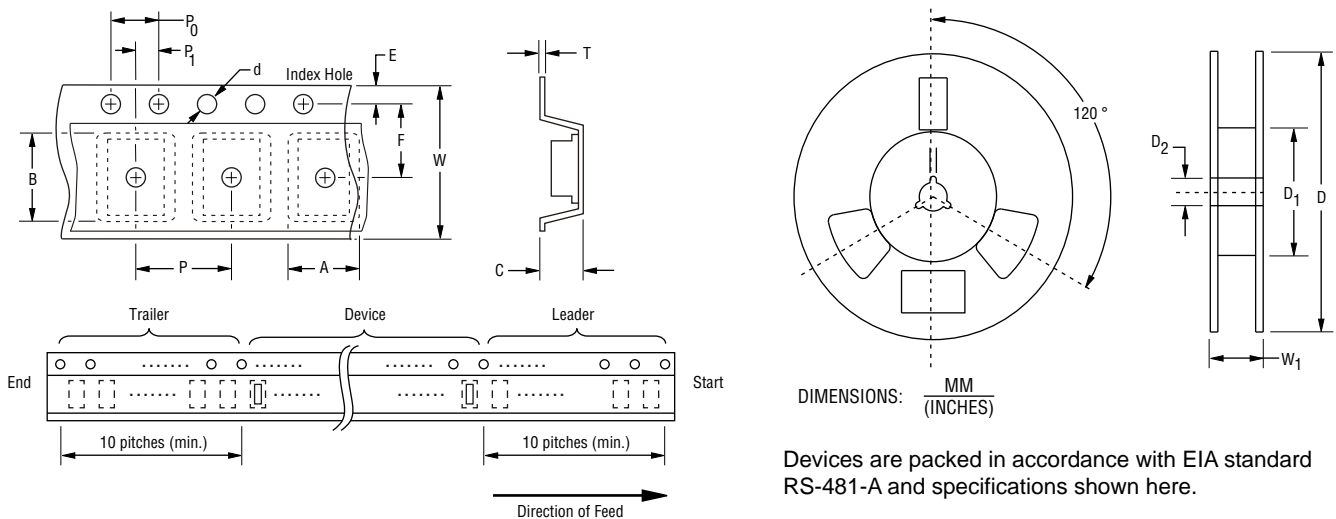
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

# CD214L Transient Voltage Suppressor Diode Series

**BOURNS®**

## Packaging Information

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



Item	Symbol	SMA (DO-214AB)
Carrier Width	A	$7.22 \pm 0.10$ (0.284 ± 0.004)
Carrier Length	B	$8.11 \pm 0.10$ (0.319 ± 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	$7.50 \pm 0.10$ (0.295 ± 0.004)
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>	$2.00 \pm 0.10$ (0.079 ± 0.004)
Overall Tape Thickness	T	$0.30 \pm 0.10$ (0.012 ± 0.004)
Tape Width	W	$16.00 \pm 0.20$ (0.630 ± 0.008)
Reel Width	W <sub>1</sub>	$22.4$ (0.882) MAX.
Quantity per Reel	--	3,000

REV. 09/19

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>