Absolute Maximum Ratings, T_A = 25 °C (Unless Otherwise Noted)

Rating		Symbol	Value	Unit
Repetitive peak off-state voltage	‘4070J3BJ	V_{DRM}	±58	V
	‘4080J3BJ		±65	
	‘4095J3BJ		±75	
	‘4115J3BJ		±90	
	‘4125J3BJ		±100	
	‘4145J3BJ		±120	
	‘4165J3BJ		±135	
	‘4180J3BJ		±145	
	‘4200J3BJ		±155	
	‘4219J3BJ		±180	
	‘4250J3BJ		±190	
	‘4290J3BJ		±220	
	‘4350J3BJ		±275	
	‘4395J3BJ		±320	
Non-repetitive peak impulse current (see Notes 1 and 2)		I_{PPSM}		A
2/10 µs (GR-1089-CORE, 2/10 µs voltage wave shape)			±1000	
8/20 µs (IEC 61000-4-5, combination wave generator, 1.2/50 µsvoltage wave shape)			±800	
10/160 µs (TIA-968-A, 10/160 µs voltage wave shape)			±400	
4/250 µs (ITU-T K.20/21, 10/700 µs voltage waveshape, simultaneous)			±370	
5/310 µs (ITU-T K.20/21, 10/700 µs voltage wave shape, single)			±350	
5/320 µs (TIA-968-A, 9/720 µs voltage waveshape, single)			±350	
10/560 µs (TIA-968-A, 10/560 µs voltage wave shape)			±250	
10/1000 µs (GR-1089-CORE, 10/1000 µs voltage wave shape)			±200	
Non-repetitive peak on-state current (see Notes 1 and 2)				
20 ms, 50 Hz (full sine wave)		I_{TSM}	50	A
Initial rate of rise of on-state current. Linear current ramp. Maximum ramp value < 50 A		di_T/dt	800	A/µs
Junction temperature		T_J	-40 to +150	°C
Storage temperature range		T_{stg}	-65 to +150	°C

NOTES: 1. Initially the device must be in thermal equilibrium with T_J = 25 °C.
2. These non-repetitive rated currents are peak values of either polarity. The surge may be repeated after the device returns to its initial conditions.

Electrical Characteristics, T_A = 25 °C (Unless Otherwise Noted)

Parameter		Test Conditions		Min	Typ	Max	Unit
I_{DRM}	Repetitive peak off-state current	$V_D = V_{DRM}$	T_A = 25 °C			±5	µA
			T_A = 85 °C			±10	
$V_{(BO)}$	AC Breakover voltage	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω	‘4070J3BJ			±70	V
			‘4080J3BJ			±80	
			‘4095J3BJ			±95	
			‘4115J3BJ			±115	
			‘4125J3BJ			±125	
			‘4145J3BJ			±145	
			‘4165J3BJ			±165	
			‘4180J3BJ			±180	
			‘4200J3BJ			±200	
			‘4219J3BJ			±219	
			‘4250J3BJ			±250	
			‘4290J3BJ			±290	
			‘4350J3BJ			±350	
			‘4395J3BJ			±395	

JULY 2003 – REVISED JULY 2019

Electrical Characteristics, T_A = 25 °C (Unless Otherwise Noted)

Parameter		Test Conditions		Min	Typ	Max	Unit
$V_{(BO)}$	Ramp breakover voltage	dv/dt ≤ ±1000 V/µs, Linear voltage ramp, Maximum ramp value = ±500 V, di/dt = ±20 A/µs, Linear current ramp, Maximum ramp value = ±10 A	‘4070J3BJ			±77	V
			‘4080J3BJ			±88	
			‘4095J3BJ			±104	
			‘4115J3BJ			±125	
			‘4125J3BJ			±135	
			‘4145J3BJ			±156	
			‘4165J3BJ			±177	
			‘4180J3BJ			±192	
			‘4200J3BJ			±212	
			‘4219J3BJ			±231	
			‘4250J3BJ			±263	
			‘4290J3BJ			±303	
			‘4350J3BJ			±364	
			‘4395J3BJ			±409	
$I_{(BO)}$	Breakover current	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω	‘4070J3BJ thru ‘4115J3BJ			±900	mA
			‘4125J3BJ thru ‘4219J3BJ			±800	
			‘4250J3BJ thru ‘4395J3BJ			±600	
I_H	Holding current	I_T = ±5 A, di/dt = ±30 mA/ms		±150		±600	mA
dv/dt	Critical rate of rise of off-state voltage	Linear voltage ramp, Maximum ramp value < 0.85V_{DRM}		±5			kV/µs
I_D	Off-state current	V_D = ±50 V	T_A = 85 °C			±10	µA
C_O	Off-state capacitance	f = 1 MHz, V_d = 1 V rms, V_D = 0	‘4070J3BJ thru ‘4115J3BJ		195	235	pF
			‘4125J3BJ thru ‘4219J3BJ		120	145	
			‘4250J3BJ thru ‘4395J3BJ		105	125	
		f = 1 MHz, V_d = 1 V rms, V_D = -1 V	‘4070J3BJ thru ‘4115J3BJ		180	215	
			‘4125J3BJ thru ‘4219J3BJ		110	132	
			‘4250J3BJ thru ‘4395J3BJ		95	115	
		f = 1 MHz, V_d = 1 V rms, V_D = -2 V	‘4070J3BJ thru ‘4115J3BJ		165	200	
			‘4125J3BJ thru ‘4219J3BJ		100	120	
			‘4250J3BJ thru ‘4395J3BJ		90	105	
		f = 1 MHz, V_d = 1 V rms, V_D = -50 V	‘4070J3BJ thru ‘4115J3BJ		85	100	
			‘4125J3BJ thru ‘4219J3BJ		50	60	
			‘4250J3BJ thru ‘4395J3BJ		42	50	
		f = 1 MHz, V_d = 1 V rms, V_D = -100 V (see Note 3)	‘4125J3BJ thru ‘4219J3BJ		40	50	
			‘4250J3BJ thru ‘4395J3BJ		35	40	

NOTE: 3. To avoid possible clipping, the TISP4125J3BJ is tested with V_D = -98 V.

Thermal Characteristics

Parameter		Test Conditions	Min	Typ	Max	Unit
$R_{\theta JA}$	Junction to ambient thermal resistance	EIA/JESD51-3 PCB, $I_T = I_{TSM(1000)}$ (see Note 4)			90	°C/W

NOTE: 4. EIA/JESD51-2 environment and PCB has standard footprint dimensions connected with 5 A rated printed wiring track widths.

Parameter Measurement Information

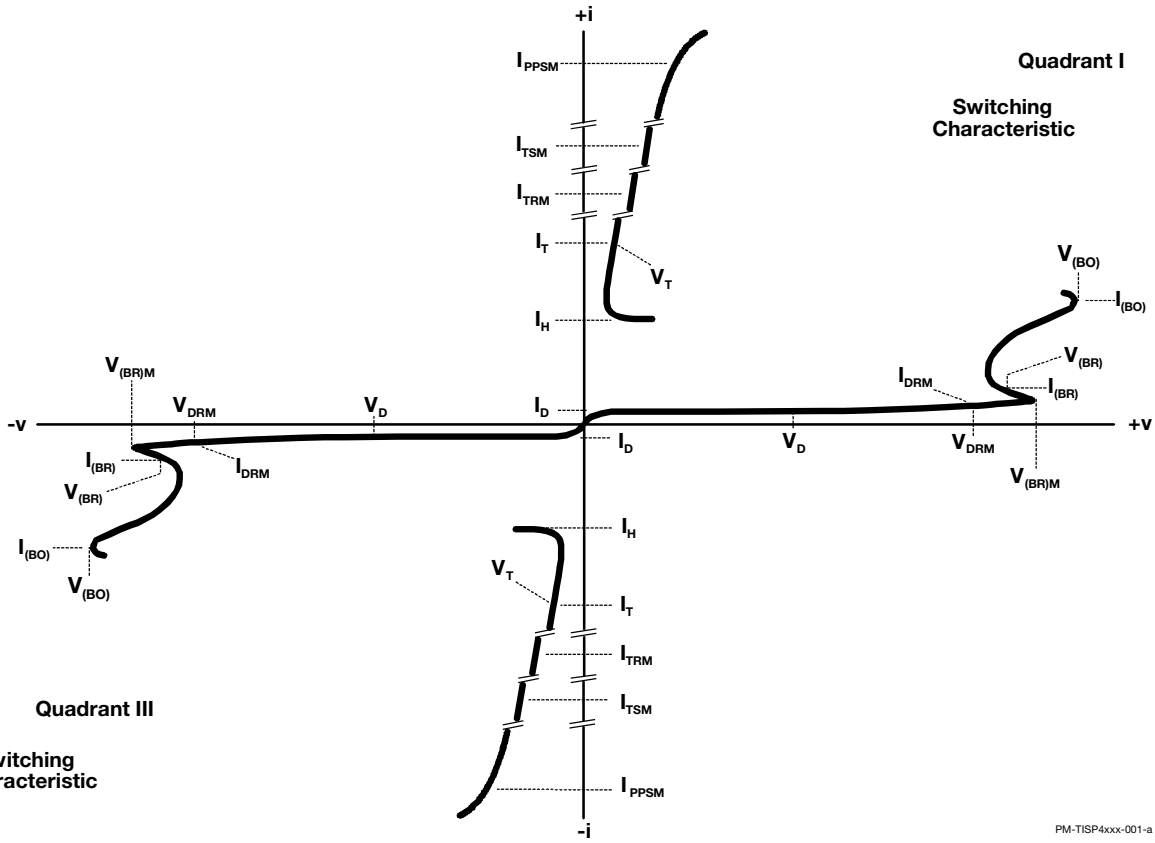

Figure 1. Voltage-Current Characteristic for T and R Terminals
All Measurements are Referenced to the R Terminal

Typical Characteristics

OFF-STATE CURRENT vs JUNCTION TEMPERATURE

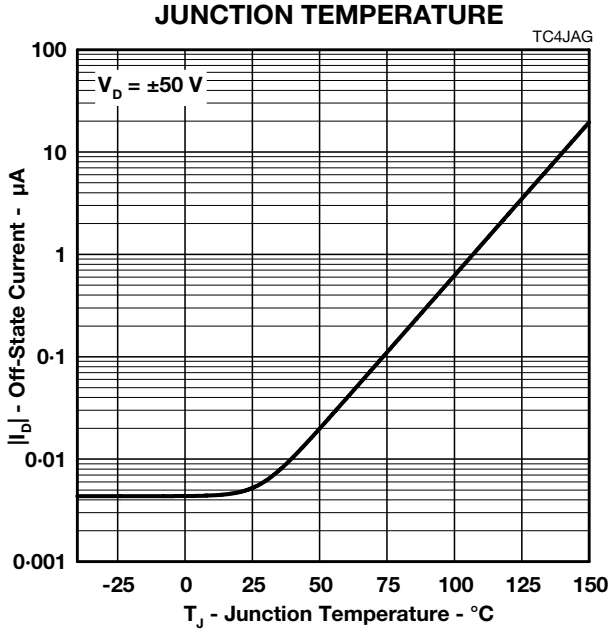

Figure 2.

NORMALIZED BREAKOVER VOLTAGE vs JUNCTION TEMPERATURE

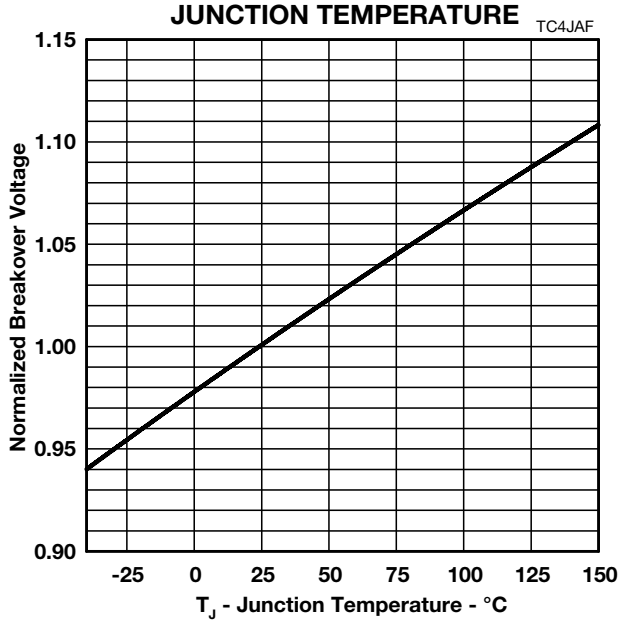

Figure 3.

NORMALIZED HOLDING CURRENT vs JUNCTION TEMPERATURE

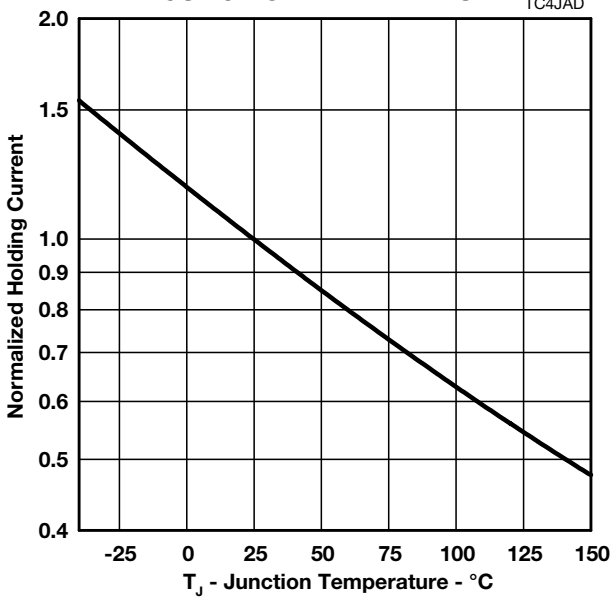

Figure 4.

NORMALIZED CAPACITANCE vs OFF-STATE VOLTAGE

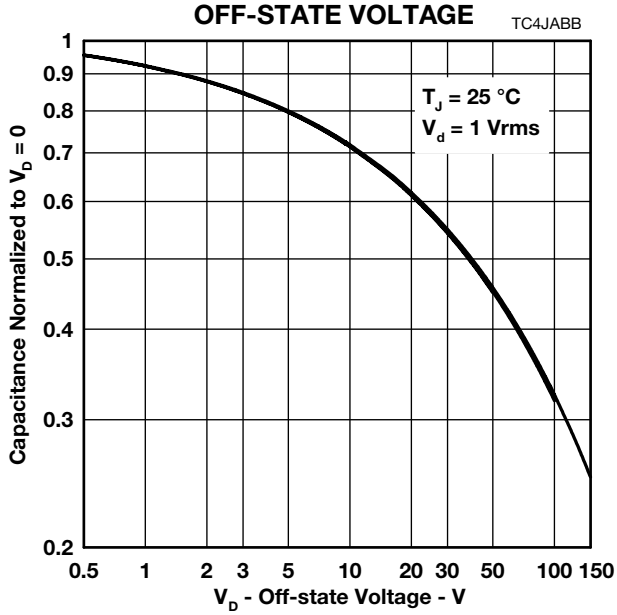

Figure 5.

Rating and Thermal Characteristics

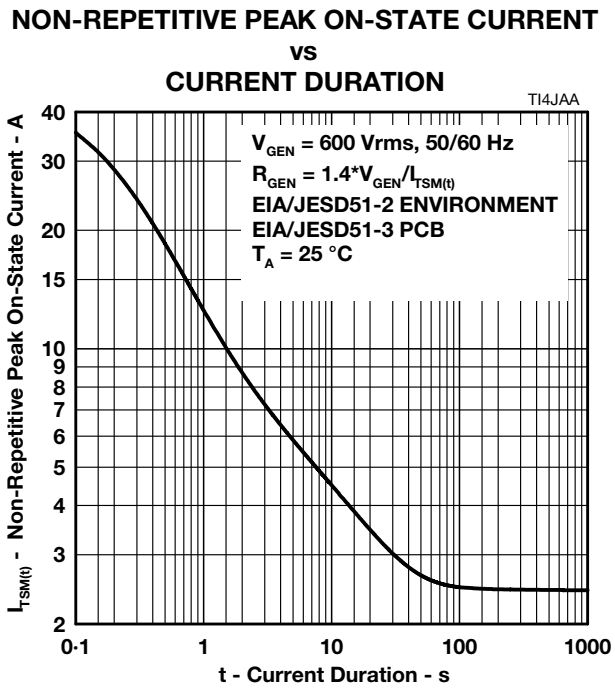

Figure 6.

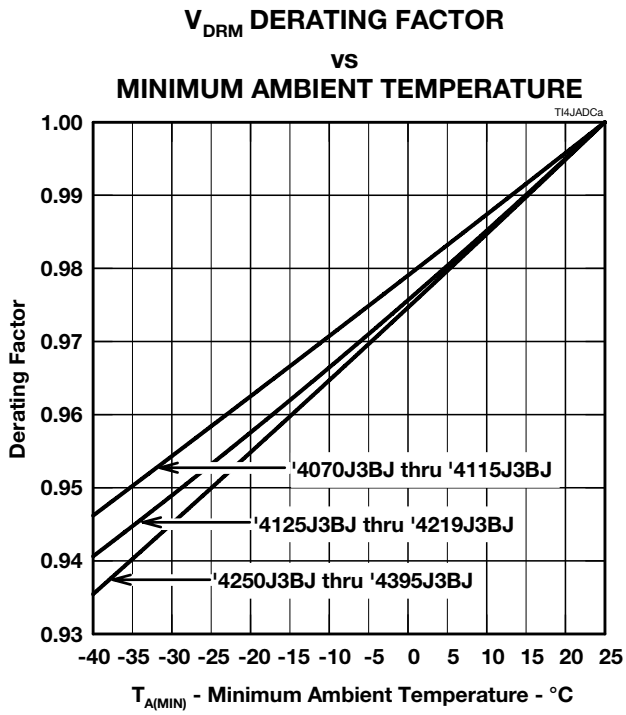

Figure 7.

Applications Information

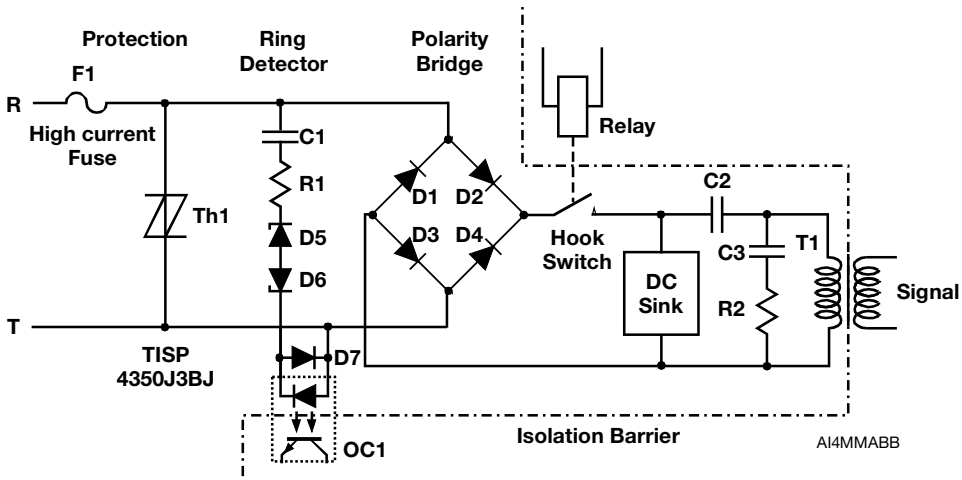

Figure 8. Typical Application Circuit

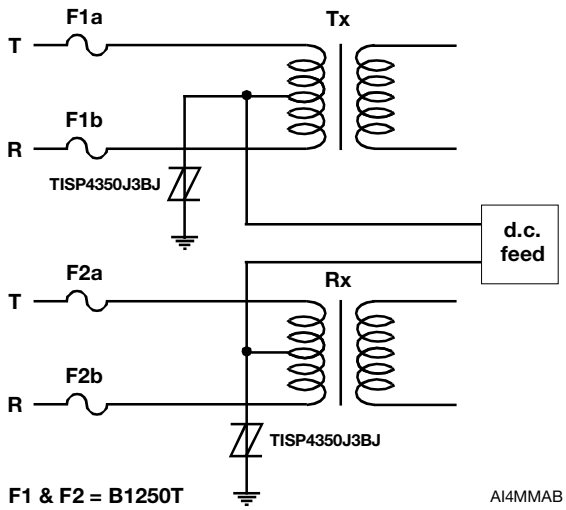

Figure 9. Typical Application Circuit

BOURNS®

Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com
Europe: Tel: +36 88 885 877 • Email: eurocus@bourns.com
The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com
www.bourns.com

JULY 2003 – REVISED JULY 2019

Legal Disclaimer Notice

BOURNS®

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