

Features

- Surface mount SMC package
- Standoff voltage: 12 to 30 volts
- Peak pulse power: 3000 watts
- Typical temperature coefficient:
 $\Delta V_{BR} = 0.1\% \times V_{BR} @ 25^\circ\text{C} \times \Delta T$
- RoHS compliant*

Applications

- Portable communications
- Computing and video equipment

Sustainability

- Recyclable ESD-safe packaging
- ISO 14001, low-impact energy
- Responsibly sourced and produced

Product Overview

Manufacturers 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. This Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 12 to 30 V and Breakdown

Voltage up to 36.8 V. Typical fast response times are less than 1.0 ps for unidirectional devices and less than 5.0 ps 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.

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

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation ($T_p = 1$ ms) (Note 1)	P_{PK}	3000	Watts
Peak Pulse Current with a 10/1000 μs Waveform	I_{PPM}	See Electrical Characteristics Chart	Amps
Peak Forward Surge Current (Note 2) 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I_{FSM}	300	Amps
Steady State Power Dissipation @ $T_L = 75^\circ\text{C}$	$P_{M(AV)}$	5.0	Watts
Maximum Instantaneous Forward Voltage @ $I_{pp} = 100$ A (Note 2)	V_F	3.5	Volts
Operating Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above $T_A = 25^\circ\text{C}$ per Pulse Derating Curve.
2. Forward surge current and forward voltage are only applicable to unidirectional models.
3. 8.3 ms Single Sine Wave duty cycle = 4 pulses maximum per minute.

Contact Information

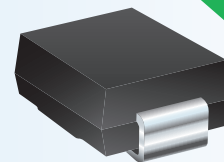
www.bourns.com	Phone	Email
Asia-Pacific	+886-2 2562-4117	asiacus@bourns.com
Europe	+36 88 885 877	eurocus@bourns.com
Mexico	+52 614 478 0400	mexicus@bourns.com
The Americas	+1-951 781-5500	americus@bourns.com

How to Order

Package _____ **SMLJ 12 CA - R**
 SMLJ = SMC/DO-214AB
 Working Peak Reverse Voltage _____
 12 = 12 V_{RWM} (Volts)
 ⋮
 30 = 30 V_{RWM} (Volts)
 Suffix _____
 A = 5 % Tolerance Unidirectional Device
 CA = 5 % Tolerance Bidirectional Device
 Reel _____
 -R = 3,000 pcs. per 13-inch reel

* 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.

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

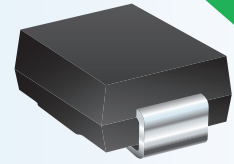
Unidirectional Device		Bidirectional Device		Breakdown Voltage V _{BR} (V)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V _{RWM}	Maximum Clamping Voltage @ I _{pp} (10/1000 μs)	Maximum Peak Pulse Current (10/1000 μs)	Maximum Clamping Voltage @ I _{pp} (8/20 μs)	Maximum Peak Pulse Current (8/20 μs)
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I _T (mA)	V _{RWM} (V)	I _R (μA)	V _C (V)	I _{pp} (A)	V _C (V)	I _{pp} (A)
SMLJ12A-R	HEE	SMLJ12CA-R	IEE	13.3	14.7	1	12	2	19.9	150.60	25.90	754.00
SMLJ13A-R	HEG	SMLJ13CA-R	IEG	14.4	15.9	1	13	2	21.5	139.40	28.00	697.50
SMLJ14A-R	HEK	SMLJ14CA-R	IEK	15.6	17.2	1	14	2	23.2	129.40	30.20	646.50
SMLJ15A-R	HEM	SMLJ15CA-R	IEM	16.7	18.5	1	15	2	24.4	123.00	31.70	615.00
SMLJ16A-R	HEP	SMLJ16CA-R	IEP	17.8	19.7	1	16	2	26	115.40	33.80	577.00
SMLJ17A-R	HER	SMLJ17CA-R	IER	18.9	20.9	1	17	2	27.6	106.60	35.90	543.50
SMLJ18A-R	HET	SMLJ18CA-R	IET	20.0	22.1	1	18	2	29.2	102.80	38.00	513.50
SMLJ20A-R	HEV	SMLJ20CA-R	IEV	22.2	24.5	1	20	2	32.4	92.60	42.10	463.00
SMLJ22A-R	HEX	–	–	24.4	26.9	1	22	2	35.5	84.40	46.20	422.50
SMLJ24A-R	HEZ	–	–	26.7	29.5	1	24	2	38.9	77.20	50.60	385.50
SMLJ26A-R	HFE	–	–	28.9	31.9	1	26	2	42.1	71.20	54.70	356.50
SMLJ28A-R	HFG	–	–	31.1	34.4	1	28	2	45.4	66.00	59.00	330.50
SMLJ30A-R	HFK	–	–	33.3	36.8	1	30	2	48.4	62.00	62.90	310.00

Notes:

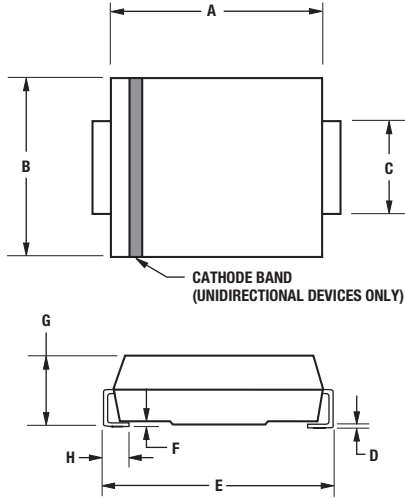
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.

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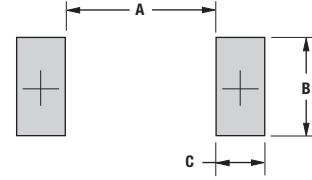
Product Dimensions



Dimension	SMC (D0-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.90 - 3.20}{(0.114 - 0.126)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.012)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.00 - 2.62}{(0.079 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Footprint

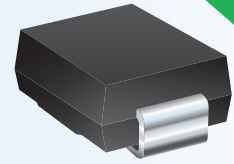


Dimension	SMC (D0-214AB)
A (Max.)	$\frac{4.69}{(0.185)}$
B (Min.)	$\frac{3.07}{(0.121)}$
C (Min.)	$\frac{1.52}{(0.060)}$

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

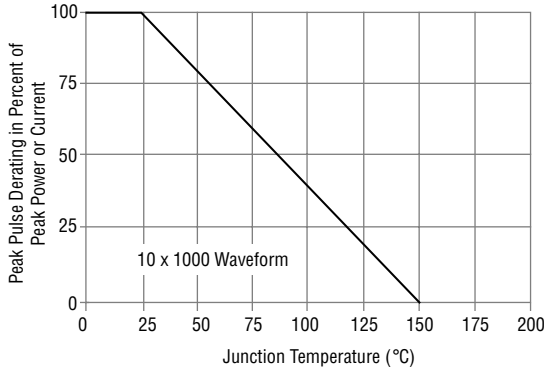
Physical Specifications

Case Molded plastic per UL Class 94V-0
 Polarity Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device

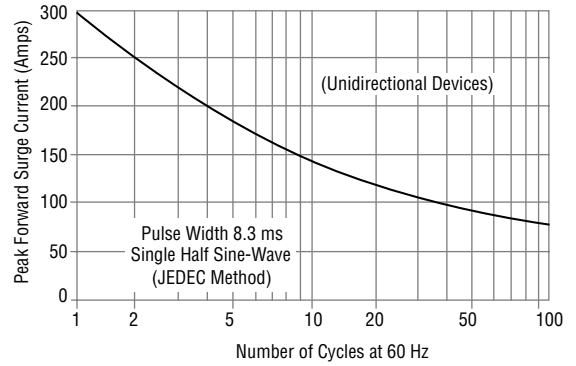


Rating & Characteristic Curves

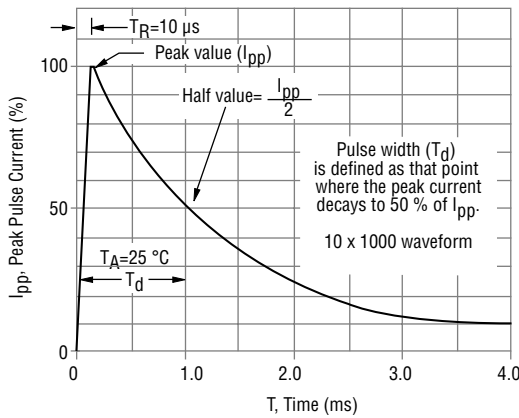
Pulse Derating Curve



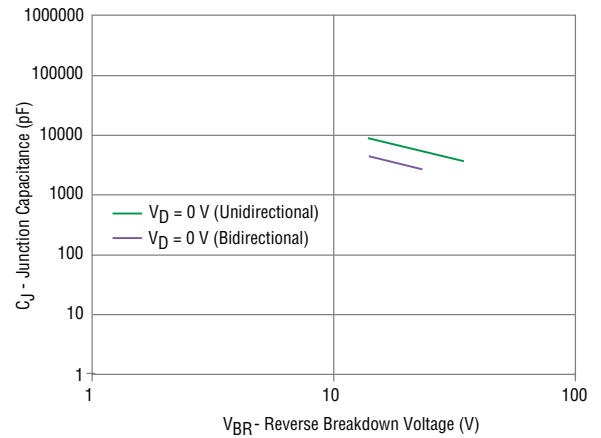
Maximum Non-Repetitive Surge Current



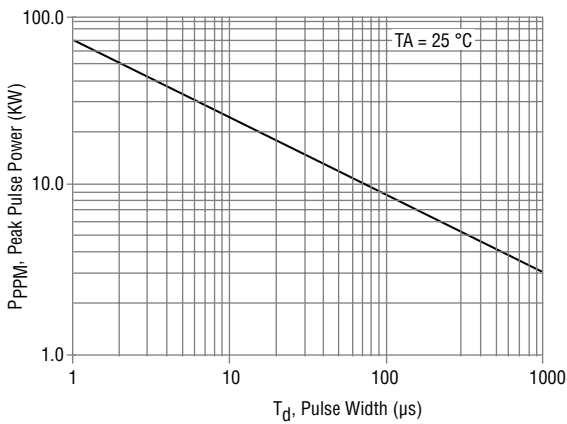
Pulse Waveform



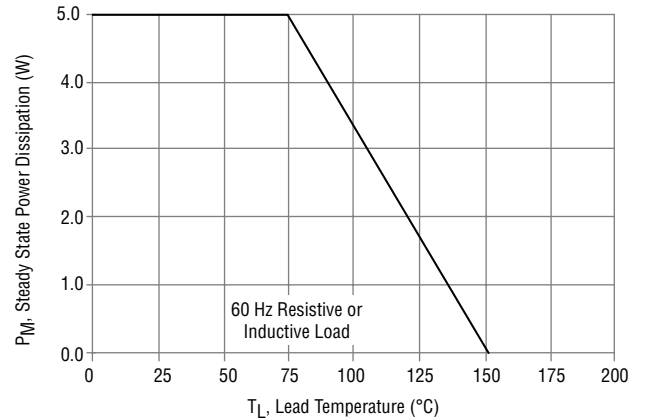
Typical Junction Capacitance



Pulse Derating Curve

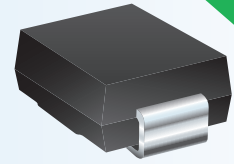


Steady State Power Derating Curve



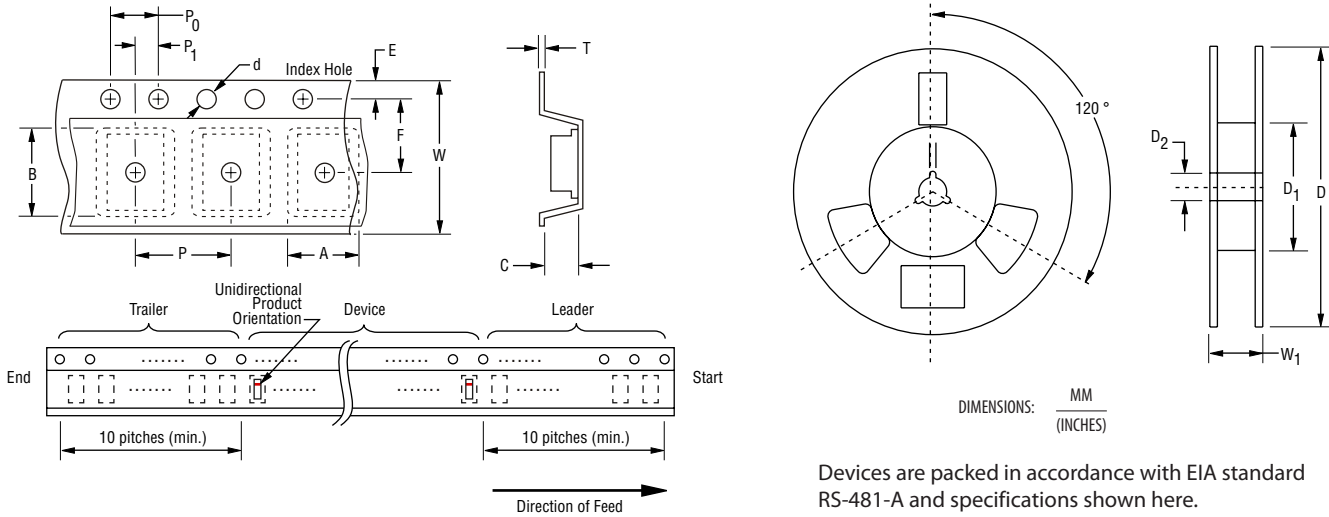
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Packaging Specifications

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



Item	Symbol	SMC (DO-214AB)
		13-Inch Reel
Carrier Width	A	$\frac{6.0 \pm 2.0}{(0.236 - 0.079)}$
Carrier Length	B	$\frac{8.3 \pm 0.20}{(0.327 \pm 0.008)}$
Carrier Depth	C	$\frac{2.5 \pm 0.20}{(0.098 \pm 0.008)}$
Sprocket Hole	d	$\frac{1.50 \pm 0.10}{(0.059 \pm 0.004)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 + 0.50/-0.20}{(0.512 + 0.020/-0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{7.50 \pm 0.10}{(0.295 \pm 0.004)}$
Punch Hole Pitch	P	$\frac{8.00 \pm 0.10}{(0.315 \pm 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$
Tape Width	W	$\frac{16.00 \pm 0.30}{(0.630 \pm 0.012)}$
Reel Width	W ₁	$\frac{22.4}{(0.882)}$ MAX.
Quantity per Reel	--	3,000

REV. 03/26

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