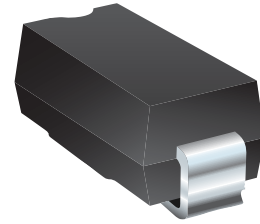


Product Change Notification

CHIP DIODES

Bourns Manufacturers Representatives
Corporate Distributor Product Managers
Americas Sales Team
Asia Sales Team
Europe Sales Team



February, 2011

Bourns® Semiconductor Products Announces the Addition of Back-end Package Assembly Location

Bourns is adding back-end package assembly capacity in Taiwan for the diode part numbers below to help ensure continued secure supply chain management and delivery support to our customers.

Bourns P/N	Bourns P/N
SMAJ Series	CD214A-TxxLF Series
SMBJ Series	CD214B-TxxLF Series
SMCJ Series	CD214C-TxxLF Series
SMLJ Series	CD214L-TxxLF Series

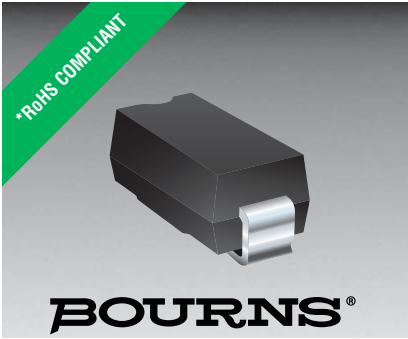
Reliability data, SGS and MDS reports on the package assembly incorporating the above changes have been available since January 1, 2011.

Bourns is issuing 90 days notice that mass production using the above back-end package assembly location will be available beginning March 31, 2011.

Product data sheet specifications will continue to be met with no change to fit, form or function and we do not anticipate any impact to our customers' applications.

Some product will be available immediately if requested by customers.

If you have any questions, please contact [Bourns Customer Service](#).



Features

- RoHS compliant*
- Surface Mount SMA package
- Standoff Voltage: 5.0 to 170 volts
- Power Dissipation: 400 watts

Applications

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

SMAJ 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-214AC (SMA) 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.

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _p = 1 ms) (Note 1,2)	P _{PK}	400	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	40	Amps
Steady State Power Dissipation @ T _L = 75 °C	P _{M(AV)}	1.0	Watts
Maximum Instantaneous Forward Voltage @ I _{PP} = 35 A (For Unidirectional Units Only)	V _F	3.5	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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 %.



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www.bourns.com

How to Order

SMAJ 5.0 CA

Package _____
SMAJ = SMA/DO-214AC

Working Peak Reverse Voltage _____
5.0 = 5.0 VRWM (Volts)

Suffix _____
A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMAJ Transient Voltage Suppressor Diode Series

BOURNS®

Electrical Characteristics (@ T_A = 25 °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 (μA)	V _{RSM} (Volts)	I _{RSM} (Amps)
SMAJ5.0A	HE	SMAJ5.0CA	TE	6.40	7.00	10	5.0	800 / 1600	9.2	43.5
SMAJ6.0A	HG	SMAJ6.0CA	TG	6.67	7.37	10	6.0	800 / 1600	10.3	38.8
SMAJ6.5A	HK	SMAJ6.5CA	TK	7.22	7.98	10	6.5	500 / 1000	11.2	35.7
SMAJ7.0A	HM	SMAJ7.0CA	TM	7.78	8.60	10	7.0	200 / 400	12.0	33.3
SMAJ7.5A	HP	SMAJ7.5CA	TP	8.33	9.21	1.0	7.5	100 / 200	12.9	31.0
SMAJ8.0A	HR	SMAJ8.0CA	TR	8.89	9.83	1.0	8.0	50 / 100	13.6	29.4
SMAJ8.5A	HT	SMAJ8.5CA	TT	9.44	10.4	1.0	8.5	10 / 20	14.4	27.7
SMAJ9.0A	HV	SMAJ9.0CA	TV	10.0	11.1	1.0	9.0	5 / 10	15.4	26.0
SMAJ10A	HX	SMAJ10CA	TX	11.1	12.3	1.0	10	5 / 10	17.0	23.5
SMAJ11A	HZ	SMAJ11CA	TZ	12.2	13.2	1.0	11	5.0	18.2	22.0
SMAJ12A	IE	SMAJ12CA	UE	13.3	14.7	1.0	12	5.0	19.9	20.1
SMAJ13A	IG	SMAJ13CA	UG	14.4	15.9	1.0	13	5.0	21.5	18.6
SMAJ14A	IK	SMAJ14CA	UK	15.6	17.2	1.0	14	5.0	23.2	17.2
SMAJ15A	IM	SMAJ15CA	UM	16.7	18.5	1.0	15	5.0	24.4	16.4
SMAJ16A	IP	SMAJ16CA	UP	17.8	19.7	1.0	16	5.0	26.0	15.3
SMAJ17A	IR	SMAJ17CA	UR	18.9	20.9	1.0	17	5.0	27.6	14.5
SMAJ18A	IT	SMAJ18CA	UT	20.0	22.1	1.0	18	5.0	29.2	13.7
SMAJ20A	IV	SMAJ20CA	UV	22.2	24.5	1.0	20	5.0	32.4	12.3
SMAJ22A	IX	SMAJ22CA	UX	24.4	26.9	1.0	22	5.0	35.5	11.2
SMAJ24A	IZ	SMAJ24CA	UZ	26.7	29.5	1.0	24	5.0	38.9	10.3
SMAJ26A	JE	SMAJ26CA	VE	28.9	31.9	1.0	26	5.0	42.1	9.5
SMAJ28A	JG	SMAJ28CA	VG	31.1	34.4	1.0	28	5.0	45.4	8.8
SMAJ30A	JK	SMAJ30CA	VK	33.3	36.8	1.0	30	5.0	48.4	8.3
SMAJ33A	JM	SMAJ33CA	VM	36.7	40.6	1.0	33	5.0	53.3	7.5
SMAJ36A	JP	SMAJ36CA	VP	40	44.2	1.0	36	5.0	58.1	6.9
SMAJ40A	JR	SMAJ40CA	VR	44.4	49.1	1.0	40	5.0	64.5	6.2
SMAJ43A	JT	SMAJ43CA	VT	47.8	52.8	1.0	43	5.0	69.4	5.7
SMAJ45A	JV	SMAJ45CA	VV	50	55.3	1.0	45	5.0	72.7	5.5
SMAJ48A	JX	SMAJ48CA	VX	53.3	58.9	1.0	48	5.0	77.4	5.2
SMAJ51A	JZ	SMAJ51CA	VZ	56.7	62.7	1.0	51	5.0	82.4	4.9
SMAJ54A	RE	SMAJ54CA	WE	60	66.3	1.0	54	5.0	87.1	4.6
SMAJ58A	RG	SMAJ58CA	WG	64.4	71.2	1.0	58	5.0	93.6	4.3
SMAJ60A	RK	SMAJ60CA	WK	66.7	73.7	1.0	60	5.0	96.8	4.1
SMAJ64A	RM	SMAJ64CA	WM	71.1	78.6	1.0	64	5.0	103	3.9
SMAJ70A	RP	SMAJ70CA	WP	77.8	86.0	1.0	70	5.0	113	3.5
SMAJ75A	RR	SMAJ75CA	WR	83.3	92.1	1.0	75	5.0	121	3.3
SMAJ78A	RT	SMAJ78CA	WT	86.7	95.8	1.0	78	5.0	126	3.2
SMAJ85A	RV	SMAJ85CA	WV	94.4	104	1.0	85	5.0	137	2.9
SMAJ90A	RX	SMAJ90CA	WX	100	111	1.0	90	5.0	146	2.7
SMAJ100A	RZ	SMAJ100CA	WZ	111	123	1.0	100	5.0	162	2.5
SMAJ110A	SE	SMAJ110CA	XE	122	135	1.0	110	5.0	177	2.3
SMAJ120A	SG	SMAJ120CA	XG	133	147	1.0	120	5.0	193	2.0
SMAJ130A	SK	SMAJ130CA	XK	144	159	1.0	130	5.0	209	1.9
SMAJ150A	SM	SMAJ150CA	XM	167	185	1.0	150	5.0	243	1.6
SMAJ160A	SP	SMAJ160CA	XP	178	197	1.0	160	5.0	259	1.5
SMAJ170A	SR	SMAJ170CA	XR	189	209	1.0	170	5.0	275	1.4

Notes:

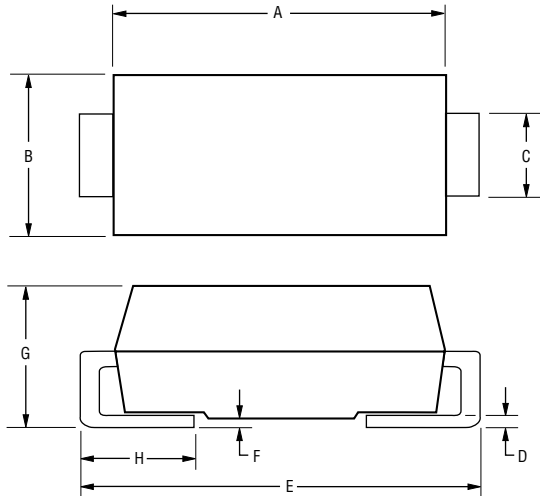
- Suffix 'A' denotes a 5 % tolerance unidirectional device.
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
- For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms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

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMAJ Transient Voltage Suppressor Diode Series

BOURNS®

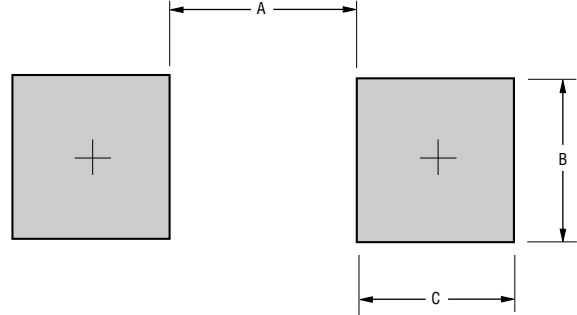
Product Dimensions



Dimension	SMA (DO-214AC)
A	$\frac{4.06 - 4.57}{(0.160 - 0.180)}$
B	$\frac{2.29 - 2.92}{(0.090 - 0.115)}$
C	$\frac{1.27 - 1.63}{(0.050 - 0.064)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{4.83 - 5.59}{(0.190 - 0.220)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Footprint



Dimension	SMA (DO-214AC)
A (Max.)	$\frac{2.70}{(0.106)}$
B (Min.)	$\frac{2.10}{(0.083)}$
C (Min.)	$\frac{1.27}{(0.050)}$

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

Physical Specifications

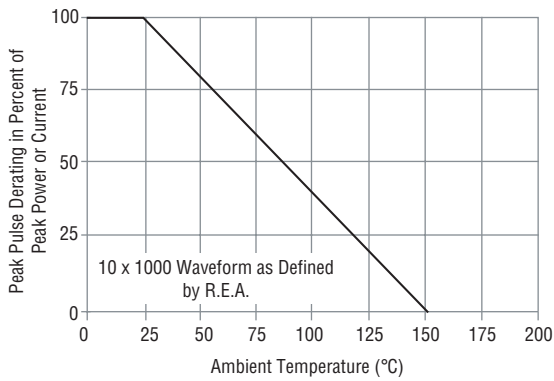
CaseMolded plastic per UL Class 94V-0
 Polarity Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.002 ounces / 0.064 grams

SMAJ Transient Voltage Suppressor Diode Series

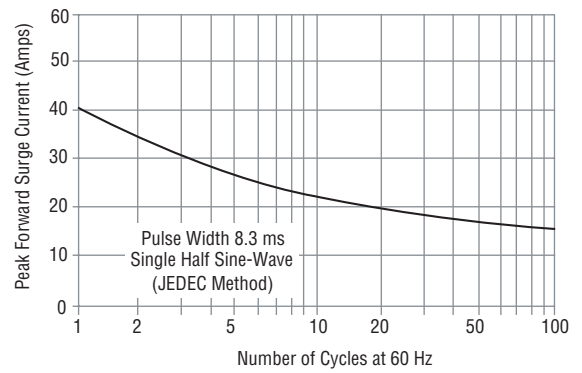
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Rating & Characteristic Curves

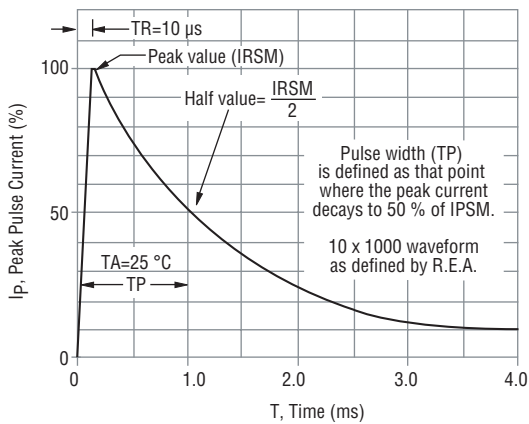
Pulse Derating Curve



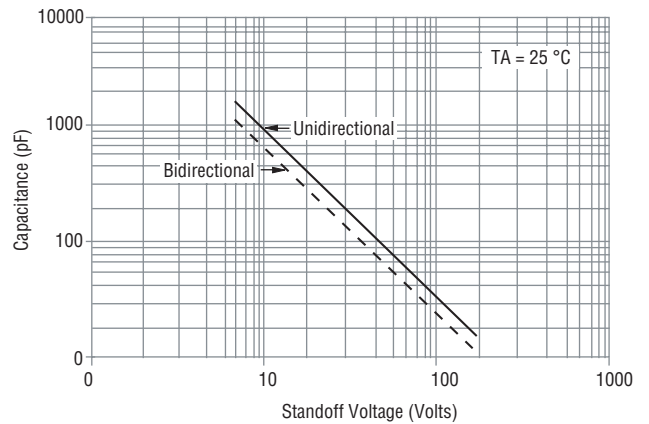
Maximum Non-Repetitive Surge Current



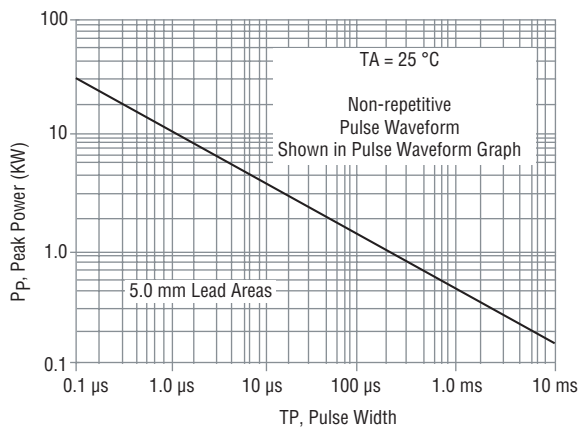
Pulse Waveform



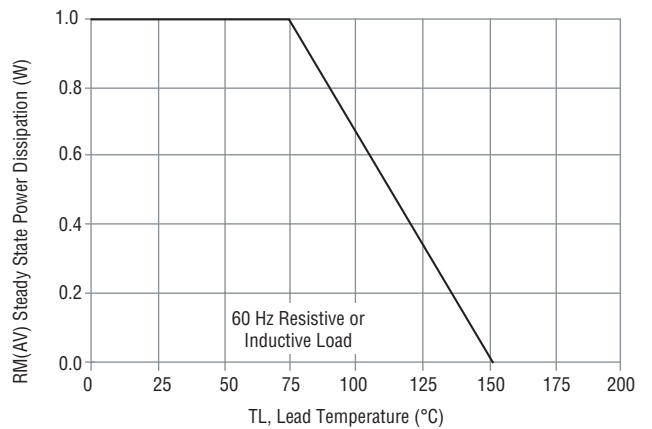
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



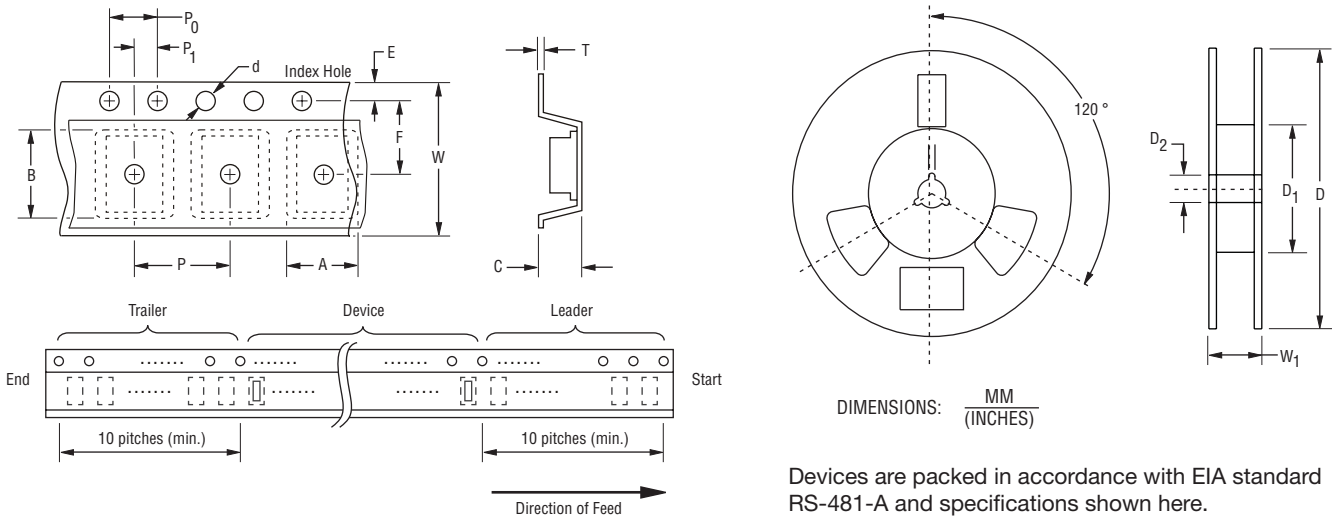
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMAJ Transient Voltage Suppressor Diode Series

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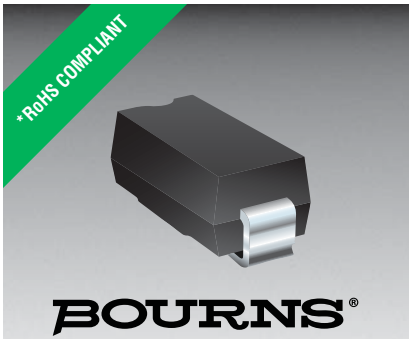
Packaging Information

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-214AC)
Carrier Width	A	$\frac{2.90 \pm 0.10}{(0.114 \pm 0.004)}$
Carrier Length	B	$\frac{5.59 \pm 0.10}{(0.220 \pm 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 \pm 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
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 ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$
Tape Width	W	$\frac{12.00 \pm 0.20}{(0.472 \pm 0.008)}$
Reel Width	W ₁	$\frac{18.4}{(0.724)}$ MAX.
Quantity per Reel	--	5,000



Features

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

Applications

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

SMBJ 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.

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

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

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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_F = 3.5 V on SMBJ5.0A through SMBJ90A and V_F = 5.0 V on SMBJ100A through SMBJ170A.



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How to Order

SMBJ 5.0 CA

Package _____
SMBJ = SMA/DO-214AA

Working Peak Reverse Voltage _____
5.0 = 5.0 V_{RWM} (Volts)

Suffix _____
A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.
Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

SMBJ Transient Voltage Suppressor Diode Series

BOURNS®

Electrical Characteristics (@ T_A = 25 °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 (μA)	V _{RSM} (Volts)	I _{RSM} (Amps)
SMBJ5.0A	KE	SMBJ5.0CA	AE	6.40	7.25	10	5.0	800	9.2	65.2
SMBJ6.0A	KG	SMBJ6.0CA	AG	6.67	7.67	10	6.0	800	10.3	58.3
SMBJ6.5A	KK	SMBJ6.5CA	AK	7.22	8.30	10	6.5	500	11.2	53.6
SMBJ7.0A	KM	SMBJ7.0CA	AM	7.78	8.95	10	7.0	200	12.0	50.0
SMBJ7.5A	KP	SMBJ7.5CA	AP	8.33	9.58	1.0	7.5	100	12.9	46.5
SMBJ8.0A	KR	SMBJ8.0CA	AR	8.89	10.2	1.0	8.0	50	13.6	44.1
SMBJ8.5A	KT	SMBJ8.5CA	AT	9.44	10.8	1.0	8.5	20	14.4	41.7
SMBJ9.0A	KV	SMBJ9.0CA	AV	10.0	11.5	1.0	9.0	10	15.4	39.0
SMBJ10A	KX	SMBJ10CA	AX	11.1	12.8	1.0	10	5.0	17.0	35.3
SMBJ11A	KZ	SMBJ11CA	AZ	12.2	14.4	1.0	11	5.0	18.2	33.0
SMBJ12A	LE	SMBJ12CA	BE	13.3	15.3	1.0	12	5.0	19.9	30.2
SMBJ13A	LG	SMBJ13CA	BG	14.4	16.5	1.0	13	5.0	21.5	27.9
SMBJ14A	LK	SMBJ14CA	BK	15.6	17.9	1.0	14	5.0	23.2	25.8
SMBJ15A	LM	SMBJ15CA	BM	16.7	19.2	1.0	15	5.0	24.4	24.0
SMBJ16A	LP	SMBJ16CA	BP	17.8	20.5	1.0	16	5.0	26.0	23.1
SMBJ17A	LR	SMBJ17CA	BR	18.9	21.7	1.0	17	5.0	27.6	21.7
SMBJ18A	LT	SMBJ18CA	BT	20.0	23.3	1.0	18	5.0	29.2	20.5
SMBJ20A	LV	SMBJ20CA	BV	22.2	25.5	1.0	20	5.0	32.4	18.5
SMBJ22A	LX	SMBJ22CA	BX	24.4	28.0	1.0	22	5.0	35.5	16.9
SMBJ24A	LZ	SMBJ24CA	BZ	26.7	30.7	1.0	24	5.0	38.9	15.4
SMBJ26A	ME	SMBJ26CA	CE	28.9	32.2	1.0	26	5.0	42.1	14.2
SMBJ28A	MG	SMBJ28CA	CG	31.1	35.8	1.0	28	5.0	45.4	13.2
SMBJ30A	MK	SMBJ30CA	CK	33.3	38.3	1.0	30	5.0	48.4	12.4
SMBJ33A	MM	SMBJ33CA	CM	36.7	42.2	1.0	33	5.0	53.3	11.3
SMBJ36A	MP	SMBJ36CA	CP	40	46.0	1.0	36	5.0	58.1	10.3
SMBJ40A	MR	SMBJ40CA	CR	44.4	51.1	1.0	40	5.0	64.5	9.3
SMBJ43A	MT	SMBJ43CA	CT	47.8	54.9	1.0	43	5.0	69.4	8.6
SMBJ45A	MV	SMBJ45CA	CV	50	57.5	1.0	45	5.0	72.7	8.3
SMBJ48A	MX	SMBJ48CA	CX	53.3	61.3	1.0	48	5.0	77.4	7.7
SMBJ51A	MZ	SMBJ51CA	CZ	56.7	65.2	1.0	51	5.0	82.4	7.3
SMBJ54A	NE	SMBJ54CA	DE	60	69	1.0	54	5.0	87.1	6.9
SMBJ58A	NG	SMBJ58CA	DG	64.4	74.6	1.0	58	5.0	93.6	6.4
SMBJ60A	NK	SMBJ60CA	DK	66.7	76.7	1.0	60	5.0	96.8	6.2
SMBJ64A	NM	SMBJ64CA	DM	71.1	81.8	1.0	64	5.0	103	5.8
SMBJ70A	NP	SMBJ70CA	DP	77.8	89.5	1.0	70	5.0	113	5.3
SMBJ75A	NR	SMBJ75CA	DR	83.3	95.8	1.0	75	5.0	121	4.9
SMBJ78A	NT	SMBJ78CA	DT	86.7	99.7	1.0	78	5.0	126	4.7
SMBJ85A	NV	SMBJ85CA	DV	94.4	109	1.0	85	5.0	137	4.4
SMBJ90A	NX	SMBJ90CA	DX	100	116	1.0	90	5.0	146	4.1
SMBJ100A	NZ	SMBJ100CA	DZ	111	128	1.0	100	5.0	162	3.7
SMBJ110A	PE	SMBJ110CA	EE	122	140	1.0	110	5.0	177	3.4
SMBJ120A	PG	SMBJ120CA	EG	133	153	1.0	120	5.0	193	3.1
SMBJ130A	PK	SMBJ130CA	EK	144	165	1.0	130	5.0	209	2.9
SMBJ150A	PM	SMBJ150CA	EM	167	192	1.0	150	5.0	243	2.5
SMBJ160A	PP	SMBJ160CA	EP	178	205	1.0	160	5.0	259	2.3
SMBJ170A	PR	SMBJ170CA	ER	189	218	1.0	170	5.0	275	2.2

Notes:

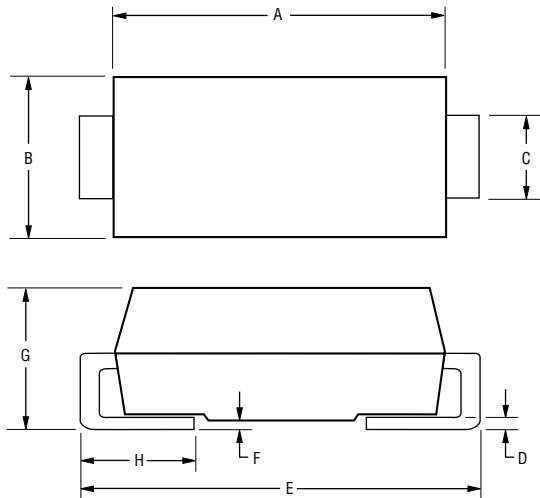
- Suffix 'A' denotes a 5 % tolerance unidirectional device.
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
- For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms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

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMBJ Transient Voltage Suppressor Diode Series

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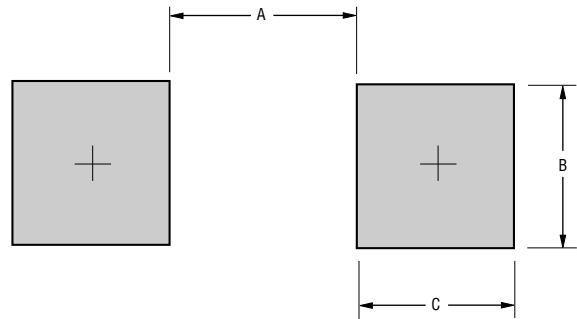
Product Dimensions



Dimension	SMB (DO-214AA)
A	$\frac{4.06 - 4.57}{(0.160 - 0.180)}$
B	$\frac{3.30 - 3.94}{(0.130 - 0.155)}$
C	$\frac{1.96 - 2.21}{(0.077 - 0.087)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{5.21 - 5.59}{(0.205 - 0.220)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Footprint



Dimension	SMB (DO-214AA)
A (Max.)	$\frac{2.69}{(0.106)}$
B (Min.)	$\frac{2.10}{(0.083)}$
C (Min.)	$\frac{1.27}{(0.050)}$

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

Physical Specifications

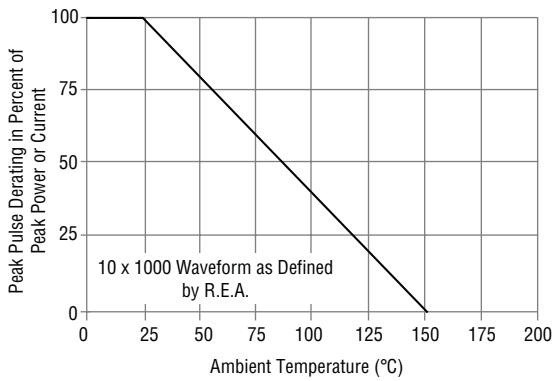
CaseMolded plastic per UL Class 94V-0
 Polarity Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.003 ounces / 0.093 grams

SMBJ Transient Voltage Suppressor Diode Series

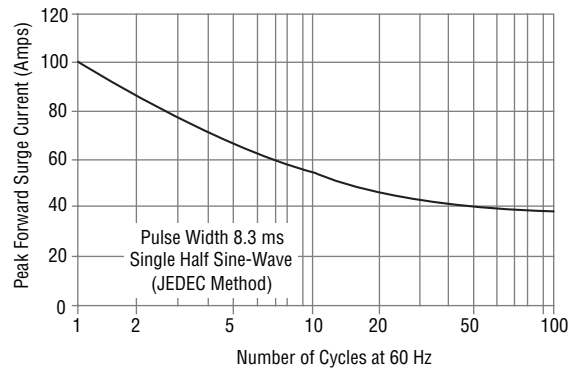


Rating & Characteristic Curves

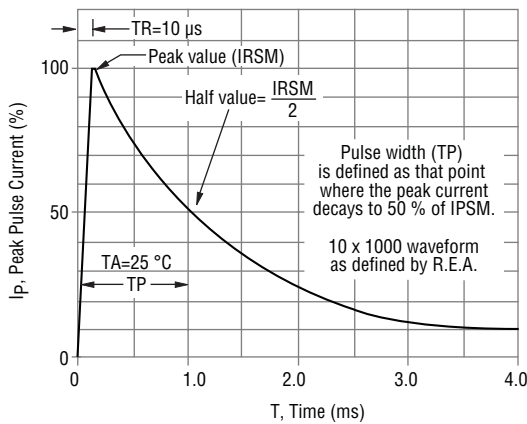
Pulse Derating Curve



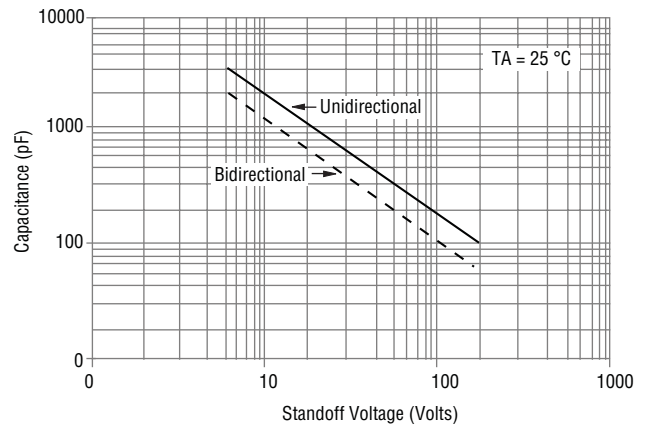
Maximum Non-Repetitive Surge Current



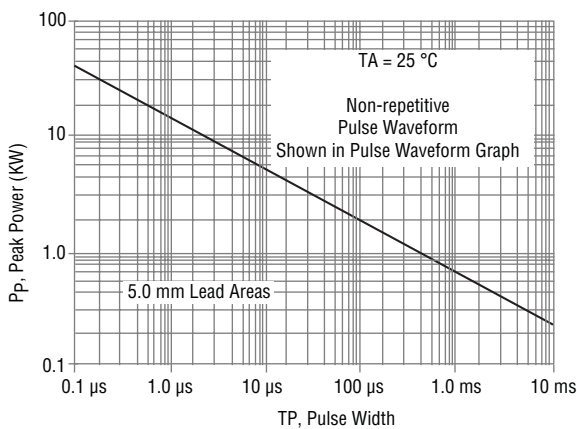
Pulse Waveform



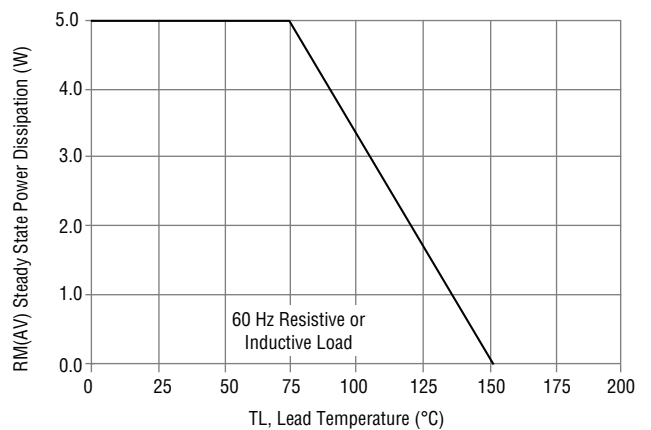
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



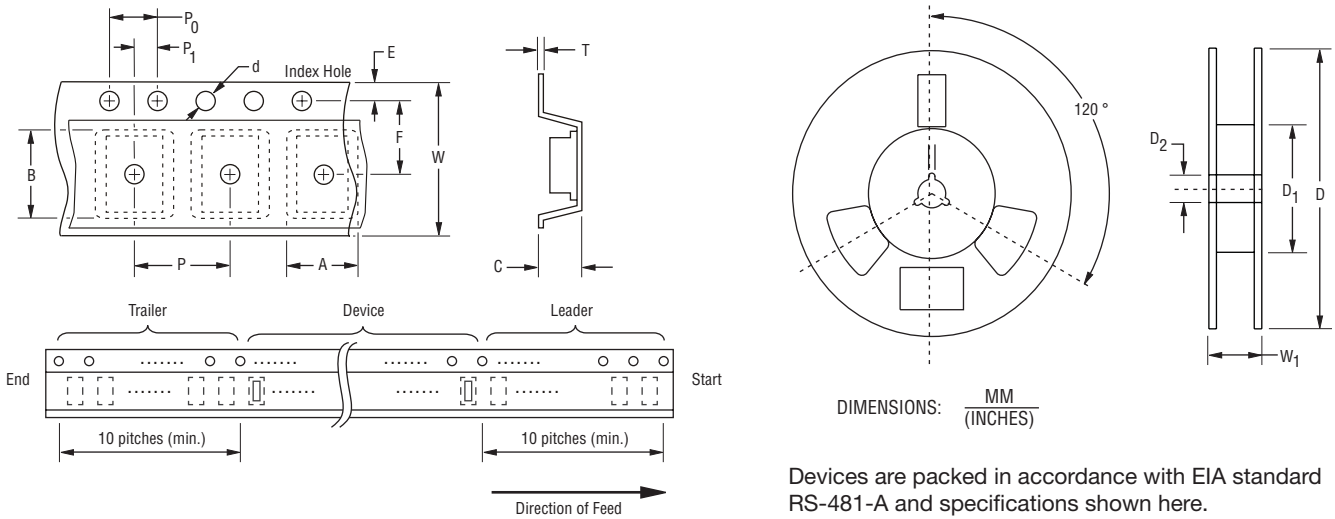
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMBJ Transient Voltage Suppressor Diode Series

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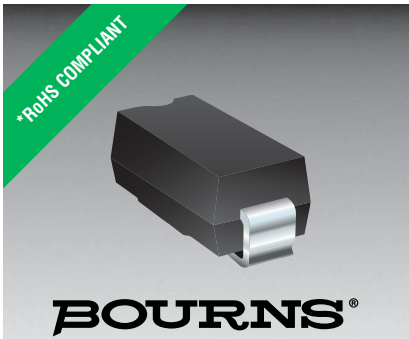
Packaging Information

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	SMB (DO-214AA)
Carrier Width	A	$\frac{4.94 \pm 0.10}{(0.194 - 0.004)}$
Carrier Length	B	$\frac{5.57 \pm 0.10}{(0.210 \pm 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 \pm 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
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 ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$
Tape Width	W	$\frac{12.00 \pm 0.20}{(0.472 \pm 0.008)}$
Reel Width	W ₁	$\frac{18.4}{(0.724)}$ MAX.
Quantity per Reel	--	3,000



Features

- RoHS compliant*
- Surface Mount SMC package
- Standoff Voltage: 5.0 to 170 volts
- Power Dissipation: 1500 watts

Applications

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

SMCJ 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 the flat configuration minimizes roll away.

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _p = 1 ms) (Note 1,2)	P _{PK}	1500	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	200	Amps
Steady State Power Dissipation @ T _L = 75 °C	P _{M(AV)}	5.0	Watts
Maximum Instantaneous Forward Voltage @ I _{PP} = 100 A (For Unidirectional Units Only)	V _F	(Note 5)	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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_F = 3.5 V on SMCJ5.0A through SMCJ90A and V_F = 5.0 V on SMCJ100A through SMCJ170A.



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www.bourns.com

How to Order

SMCJ 5.0 CA

Package _____
SMCJ = SMC/DO-214AB

Working Peak Reverse Voltage _____
5.0 = 5.0 V_{RWM} (Volts)

Suffix _____
A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.
Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

SMCJ Transient Voltage Suppressor Diode Series

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Electrical Characteristics (@ T_A = 25 °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 (μA)	V _{RSM} (Volts)	I _{RSM} (Amps)
SMCJ5.0A	GDE	SMCJ5.0CA	BDE	6.4	7.23	10	5	1000	9.2	163
SMCJ6.0A	GDG	SMCJ6.0CA	BDG	6.67	7.67	10	6	1000	10.3	145.6
SMCJ6.5A	GDK	SMCJ6.5CA	BDK	7.22	8.3	10	6.5	500	11.2	133.9
SMCJ7.0A	GDM	SMCJ7.0CA	BDM	7.78	8.95	10	7	200	12	125
SMCJ7.5A	GDP	SMCJ7.5CA	BDP	8.33	9.58	1	7.5	100	12.9	116.3
SMCJ8.0A	GDR	SMCJ8.0CA	BDR	8.89	10.2	1	8	50	13.6	110.3
SMCJ8.5A	GDT	SMCJ8.5CA	BDT	9.44	10.8	1	8.5	20	14.4	104.2
SMCJ9.0A	GDV	SMCJ9.0CA	BDV	10	11.5	1	9	10	15.4	97.4
SMCJ10A	GDX	SMCJ10CA	BDX	11.1	12.8	1	10	5	17	88.2
SMCJ11A	GDZ	SMCJ11CA	BDZ	12.2	14.4	1	11	5	18.2	82.4
SMCJ12A	GEE	SMCJ12CA	BEE	13.3	15.3	1	12	5	19.9	75.3
SMCJ13A	GEG	SMCJ13CA	BEG	14.4	16.5	1	13	5	21.5	69.7
SMCJ14A	GEK	SMCJ14CA	BEK	15.6	17.9	1	14	5	23.2	64.7
SMCJ15A	GEM	SMCJ15CA	BEM	16.7	19.2	1	15	5	24.4	61.5
SMCJ16A	GEP	SMCJ16CA	BEP	17.8	20.5	1	16	5	26	57.7
SMCJ17A	GER	SMCJ17CA	BER	18.9	21.7	1	17	5	27.6	53.3
SMCJ18A	GET	SMCJ18CA	BET	20	23.3	1	18	5	29.2	51.4
SMCJ20A	GEV	SMCJ20CA	BEV	22.2	25.5	1	20	5	32.4	46.3
SMCJ22A	GEX	SMCJ22CA	BEX	24.4	28	1	22	5	35.5	42.2
SMCJ24A	GEZ	SMCJ24CA	BEZ	26.7	30.7	1	24	5	38.9	38.6
SMCJ26A	GFE	SMCJ26CA	BFE	28.9	32.2	1	26	5	42.1	35.6
SMCJ28A	GFG	SMCJ28CA	BFG	31.1	35.8	1	28	5	45.4	33
SMCJ30A	GFK	SMCJ30CA	BFK	33.3	38.3	1	30	5	48.4	31
SMCJ33A	GFM	SMCJ33CA	BFM	36.7	42.2	1	33	5	53.3	28.1
SMCJ36A	GFP	SMCJ36CA	BFP	40	46	1	36	5	58.1	25.8
SMCJ40A	GFR	SMCJ40CA	BFR	44.4	51.1	1	40	5	64.5	23.3
SMCJ43A	GFT	SMCJ43CA	BFT	47.8	54.9	1	43	5	69.4	21.6
SMCJ45A	GFV	SMCJ45CA	BFV	50	57.5	1	45	5	72.7	20.6
SMCJ48A	GFX	SMCJ48CA	BFX	53.3	61.3	1	48	5	77.4	19.4
SMCJ51A	GFZ	SMCJ51CA	BFZ	56.7	65.2	1	51	5	82.4	18.2
SMCJ54A	GGE	SMCJ54CA	BGE	60	69	1	54	5	87.1	17.2
SMCJ58A	GGG	SMCJ58CA	BGG	64.4	74.6	1	58	5	93.6	16
SMCJ60A	GGK	SMCJ60CA	BGK	66.7	76.7	1	60	5	96.8	15.5
SMCJ64A	GGM	SMCJ64CA	BGM	71.1	81.8	1	64	5	103	14.6
SMCJ70A	GGP	SMCJ70CA	BGP	77.8	89.5	1	70	5	113	13.3
SMCJ75A	GGR	SMCJ75CA	BGR	83.3	95.8	1	75	5	121	12.4
SMCJ78A	GGT	SMCJ78CA	BGT	86.7	99.7	1	78	5	126	11.4
SMCJ85A	GGV	SMCJ85CA	BGV	94.4	108.2	1	85	5	137	10.4
SMCJ90A	GGX	SMCJ90CA	BGX	100	115.5	1	90	5	146	10.3
SMCJ100A	GGZ	SMCJ100CA	BGZ	111	128	1	100	5	162	9.3
SMCJ110A	GHE	SMCJ110CA	BHE	122	140	1	110	5	177	8.4
SMCJ120A	GHG	SMCJ120CA	BHG	133	153	1	120	5	193	7.9
SMCJ130A	GHK	SMCJ130CA	BHK	144	165	1	130	5	209	7.2
SMCJ150A	GHM	SMCJ150CA	BHM	167	192	1	150	5	243	6.2
SMCJ160A	GHP	SMCJ160CA	BHP	178	205	1	160	5	259	5.8
SMCJ170A	GHR	SMCJ170CA	BHR	189	217.5	1	170	5	275	5.5

Notes:

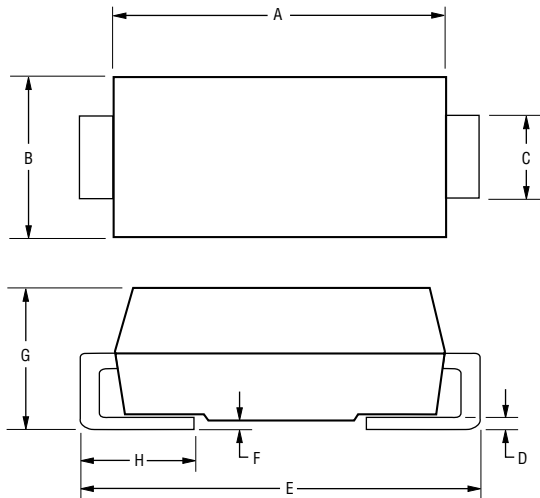
- Suffix 'A' denotes a 5 % tolerance unidirectional device.
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
- For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms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

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMCJ Transient Voltage Suppressor Diode Series

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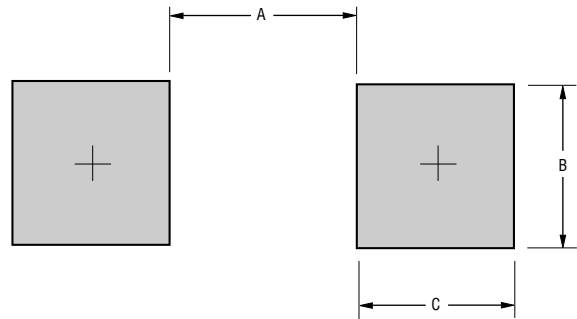
Product Dimensions



Dimension	SMC (DO-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.92 - 3.18}{(0.115 - 0.125)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Footprint



Dimension	SMC (DO-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

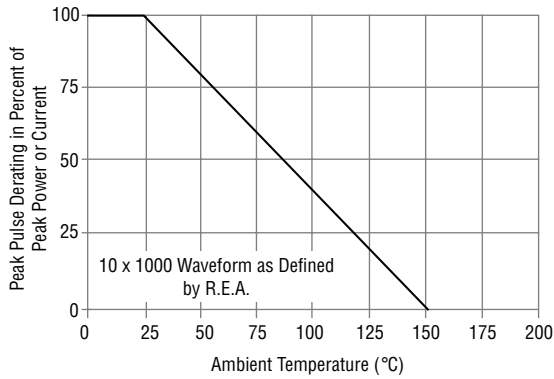
CaseMolded plastic per UL Class 94V-0
 Polarity Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.007 ounces / 0.21 grams

SMCJ Transient Voltage Suppressor Diode Series

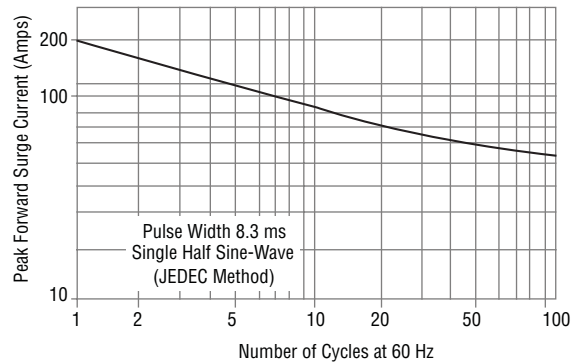
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Rating & Characteristic Curves

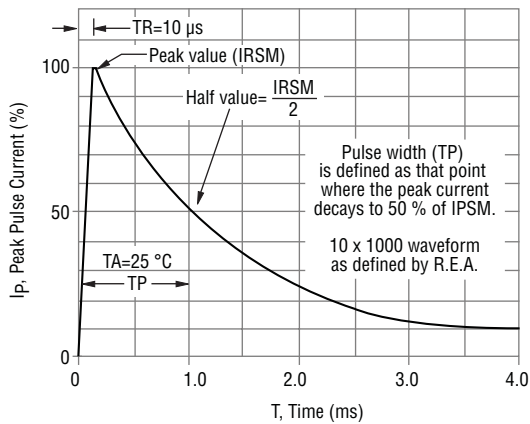
Pulse Derating Curve



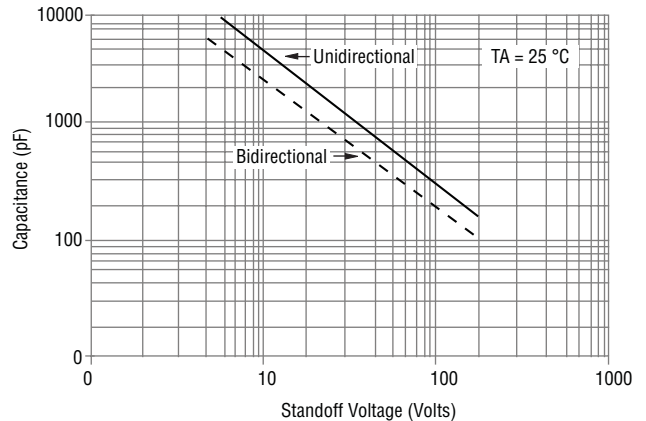
Maximum Non-Repetitive Surge Current



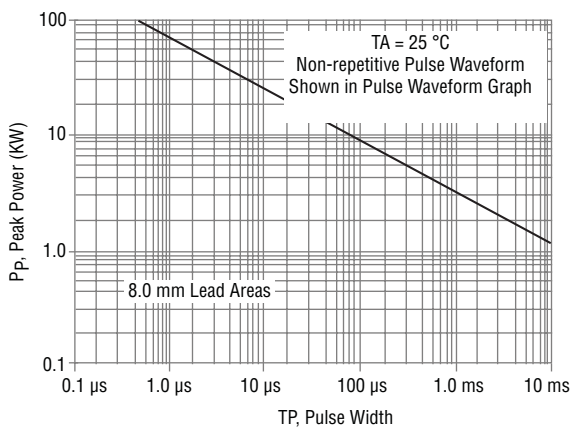
Pulse Waveform



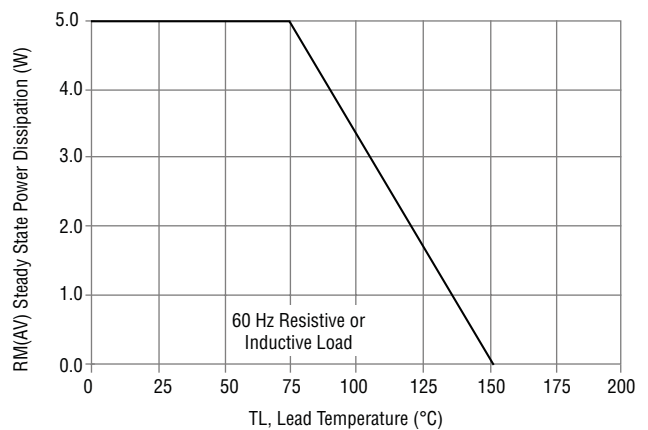
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



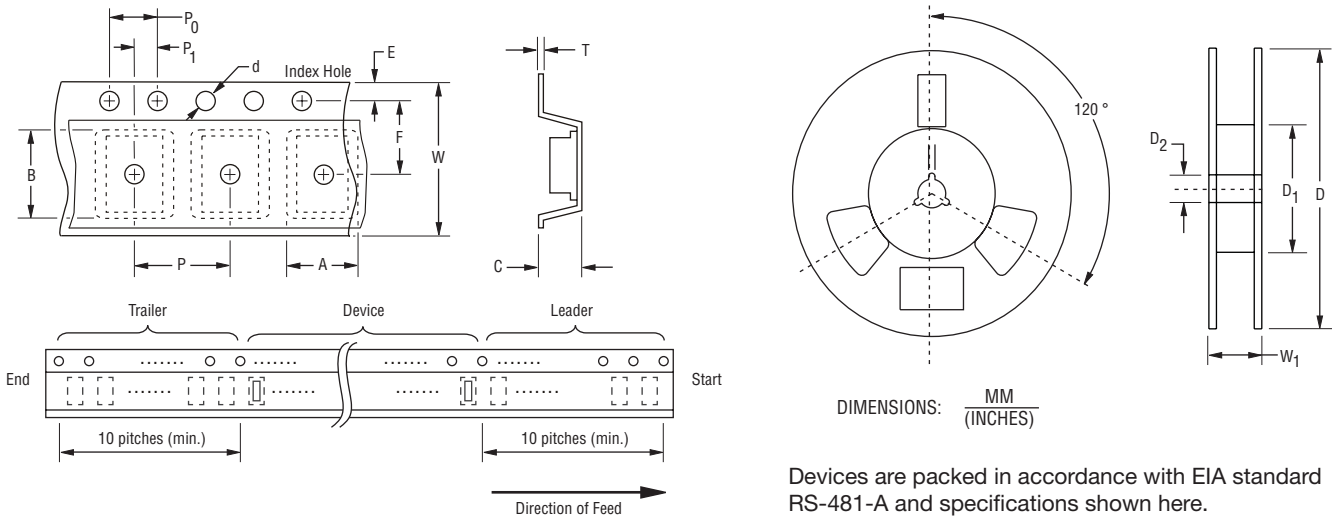
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMCJ Transient Voltage Suppressor Diode Series

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Packaging Information

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



Item	Symbol	SMC (DO-214AB)
Carrier Width	A	$\frac{7.22 \pm 0.10}{(0.284 - 0.004)}$
Carrier Length	B	$\frac{8.11 \pm 0.10}{(0.319 \pm 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 \pm 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{7.50 \pm 0.05}{(0.295 \pm 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$
Tape Width	W	$\frac{16.00 \pm 0.20}{(0.630 \pm 0.008)}$
Reel Width	W ₁	$\frac{22.4}{(0.882)}$ MAX.
Quantity per Reel	--	3,000



Features

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

Applications

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

SMLJ 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 the flat configuration minimizes roll away.

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _p = 1 ms) (Note 1,2)	P _{PK}	3000	Watts
Peak Forward Surge Current 8.3 ms Single Ha Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	300	Amps
Steady State Power Dissipation @ T _L = 75 °C	P _{M(AV)}	5.0	Watts
Maximum Instantaneous Forward Voltage @ I _{PP} = 100 A (For Unidirectional Units Only)	V _F	(Note 5)	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Ha-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).
4. Single Phase, Ha Wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20 %.
5. V_F = 3.5 V on SMLJ5.0A through SMLJ90A and V_F = 5.0 V on SMLJ100A through SMLJ170A.



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How to Order

SMLJ 5.0 CA

Package _____
SMLJ = SMC/DO-214AB

Working Peak Reverse Voltage _____
5.0 = 5.0 V_{RWM} (Volts)

Suffix _____
A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.
Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

SMLJ Transient Voltage Suppressor Diode Series

BOURNS®

Electrical Characteristics (@ T_A = 25 °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 (μA)	V _{RSM} (Volts)	I _{RSM} (Amps)
SMLJ5.0A	HDE	SMLJ5.0CA	IDE	6.40	7.82	10	5	1000	9.2	326.00
SMLJ6.0A	HDG	SMLJ6.0CA	IDG	6.67	8.15	10	6	1000	10.3	291.30
SMLJ6.5A	HDK	SMLJ6.5CA	IDK	7.22	7.98	10	6.5	500	11.2	267.90
SMLJ7.0A	HDM	SMLJ7.0CA	IDM	7.78	8.60	10	7	200	12	250.00
SMLJ7.5A	HDP	SMLJ7.5CA	IDP	8.33	9.21	1	7.5	100	12.9	232.60
SMLJ8.0A	HDR	SMLJ8.0CA	IDR	8.89	9.83	1	8	50	13.6	220.60
SMLJ8.5A	HDT	SMLJ8.5CA	IDT	9.44	10.43	1	8.5	25	14.4	208.40
SMLJ9.0A	HDV	SMLJ9.0CA	IDV	10.00	11.05	1	9	10	15.4	194.80
SMLJ10A	HDX	SMLJ10CA	IDX	11.10	12.27	1	10	5	17	176.40
SMLJ11A	HDZ	SMLJ11CA	IDZ	12.20	13.50	1	11	5	18.2	164.80
SMLJ12A	HEE	SMLJ12CA	IEE	13.30	14.70	1	12	5	19.9	150.60
SMLJ13A	HEG	SMLJ13CA	IEG	14.40	15.90	1	13	5	21.5	139.40
SMLJ14A	HEK	SMLJ14CA	IEK	15.60	17.20	1	14	5	23.2	129.40
SMLJ15A	HEM	SMLJ15CA	IEM	16.70	18.50	1	15	5	24.4	123.00
SMLJ16A	HEP	SMLJ16CA	IEP	17.80	19.70	1	16	5	26	115.40
SMLJ17A	HER	SMLJ17CA	IER	18.90	20.90	1	17	5	27.6	106.60
SMLJ18A	HET	SMLJ18CA	IET	20.00	22.10	1	18	5	29.2	102.80
SMLJ20A	HEV	SMLJ20CA	IEV	22.20	24.50	1	20	5	32.4	92.60
SMLJ22A	HEX	SMLJ22CA	IEX	24.40	27.00	1	22	5	35.5	84.40
SMLJ24A	HEZ	SMLJ24CA	IEZ	26.70	29.50	1	24	5	38.9	77.20
SMLJ26A	HFE	SMLJ26CA	IFE	28.90	31.90	1	26	5	42.1	71.20
SMLJ28A	HFG	SMLJ28CA	IFG	31.10	34.40	1	28	5	45.4	66.00
SMLJ30A	HFK	SMLJ30CA	IFK	33.30	36.80	1	30	5	48.4	62.00
SMLJ33A	HFM	SMLJ33CA	IFM	36.70	40.60	1	33	5	53.3	56.20
SMLJ36A	HFP	SMLJ36CA	IFP	40.00	44.20	1	36	5	58.1	51.60
SMLJ40A	HFR	SMLJ40CA	IFR	44.40	49.10	1	40	5	64.5	46.40
SMLJ43A	HFT	SMLJ43CA	IFT	47.80	52.80	1	43	5	69.4	43.20
SMLJ45A	HFV	SMLJ45CA	IFV	50.00	55.30	1	45	5	72.7	41.20
SMLJ48A	HFX	SMLJ48CA	IFX	53.30	58.90	1	48	5	77.4	38.80
SMLJ51A	HFZ	SMLJ51CA	IFZ	56.70	62.70	1	51	5	82.4	36.40
SMLJ54A	HGE	SMLJ54CA	IGE	60.00	66.30	1	54	5	87.1	34.40
SMLJ58A	HGG	SMLJ58CA	IGG	64.40	71.20	1	58	5	93.6	32.00
SMLJ60A	HGK	SMLJ60CA	IGK	66.70	73.70	1	60	5	96.8	31.00
SMLJ64A	HGM	SMLJ64CA	IGM	71.10	78.60	1	64	5	103	29.20
SMLJ70A	HGP	SMLJ70CA	IGP	77.80	86.00	1	70	5	113	26.60
SMLJ75A	HGR	SMLJ75CA	IGR	83.30	92.10	1	75	5	121	24.80
SMLJ78A	HGT	SMLJ78CA	IGT	86.70	95.80	1	78	5	126	22.80
SMLJ85A	HGV	SMLJ85CA	IGV	94.40	104.30	1	85	5	137	20.80
SMLJ90A	HGX	SMLJ90CA	IGX	100.00	110.50	1	90	5	146	20.60
SMLJ100A	HGZ	SMLJ100CA	IGZ	111.00	122.70	1	100	5	162	18.60
SMLJ110A	HHE	SMLJ110CA	IHE	122.00	134.80	1	110	5	177	16.80
SMLJ120A	HHG	SMLJ120CA	IHG	133.00	147.00	1	120	5	193	15.60
SMLJ130A	HHH	SMLJ130CA	IHH	144.00	159.20	1	130	5	209	14.40
SMLJ150A	HHM	SMLJ150CA	IHM	167.00	184.60	1	150	5	243	12.40
SMLJ160A	HHP	SMLJ160CA	IHP	178.00	196.70	1	160	5	259	11.60
SMLJ170A	HHR	SMLJ170CA	IHR	189.00	208.90	1	170	5	275	11.00

Notes:

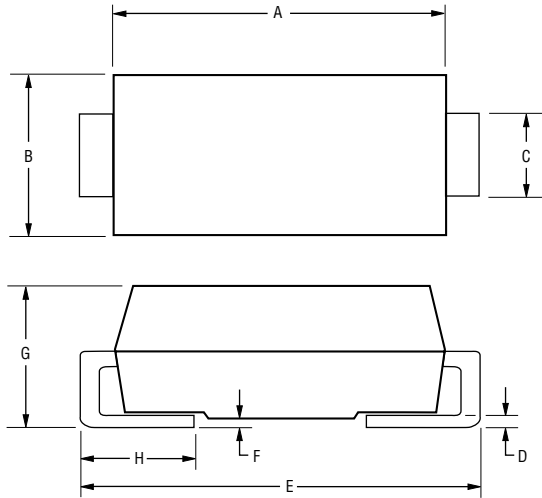
- Suffix 'A' denotes a 5 % tolerance unidirectional device.
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
- For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms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

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMLJ Transient Voltage Suppressor Diode Series



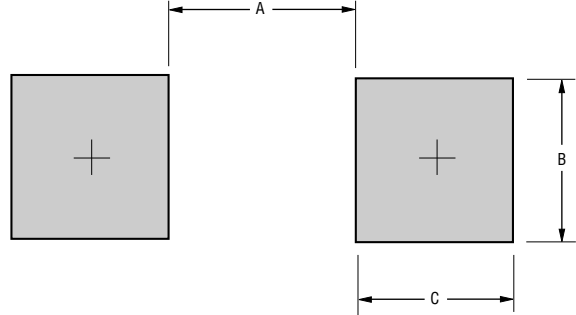
Product Dimensions



Dimension	SMC (DO-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.92 - 3.18}{(0.115 - 0.125)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Footprint



Dimension	SMC (DO-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

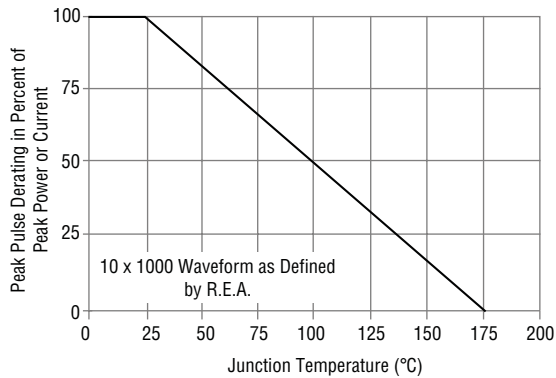
CaseMolded plastic per UL Class 94V-0
 Polarity Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.007 ounces / 0.21 grams

SMLJ Transient Voltage Suppressor Diode Series

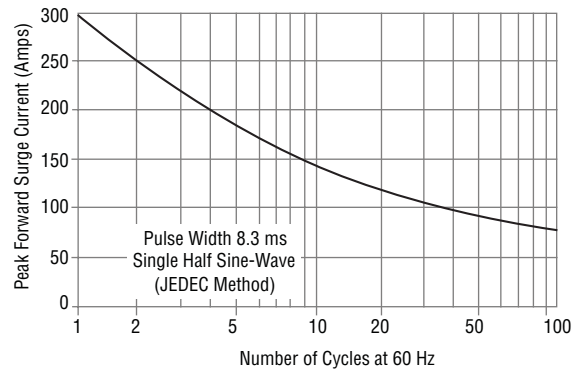


Rating & Characteristic Curves

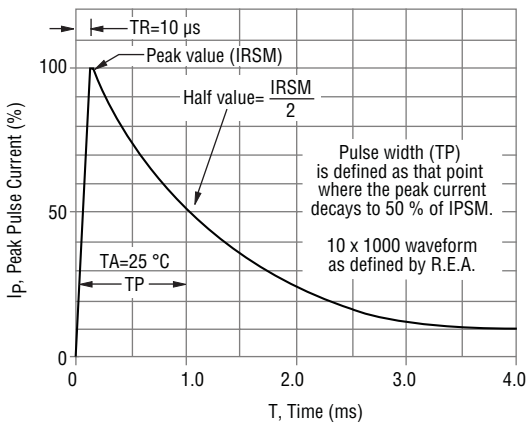
Pulse Derating Curve



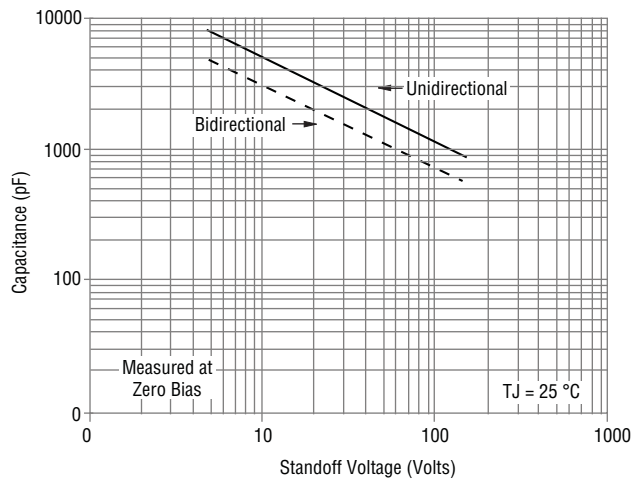
Maximum Non-Repetitive Surge Current



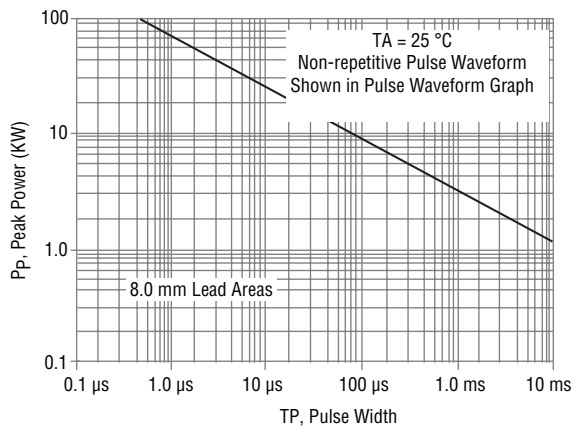
Pulse Waveform



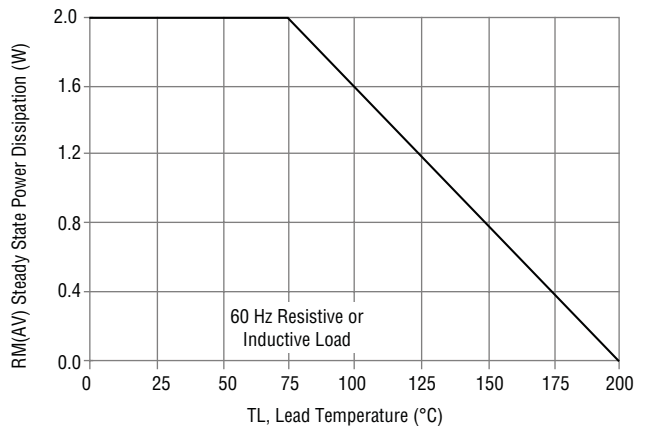
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



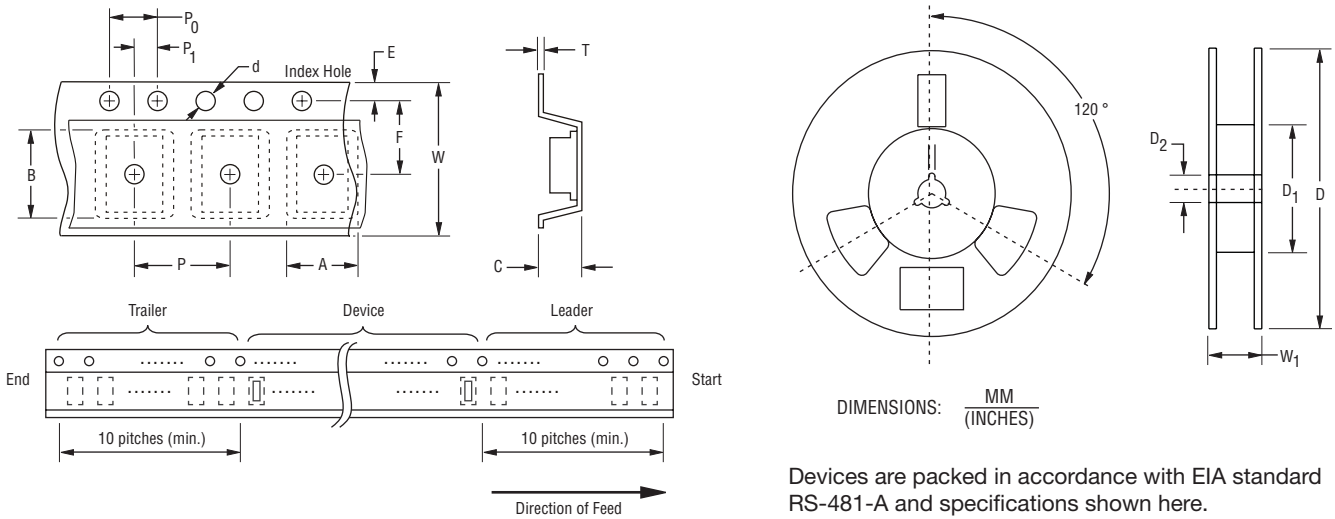
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

SMLJ Transient Voltage Suppressor Diode Series

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Packaging Information

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



Item	Symbol	SMC (DO-214AB)
Carrier Width	A	$\frac{7.22 \pm 0.10}{(0.284 - 0.004)}$
Carrier Length	B	$\frac{8.11 \pm 0.10}{(0.319 \pm 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 \pm 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{7.50 \pm 0.05}{(0.295 \pm 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$
Tape Width	W	$\frac{16.00 \pm 0.20}{(0.630 \pm 0.008)}$
Reel Width	W ₁	$\frac{22.4}{(0.882)}$ MAX.
Quantity per Reel	--	3,000



Features

- Lead free
- RoHS compliant*
- Surface Mount SMA package
- Standoff Voltage: 5.0 to 170 volts
- Power Dissipation: 400 watts



Model CD214A is currently available, although not recommended for new designs. **Model SMAJ** is preferred.

CD214A 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-214AC (SMA) 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.

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _P = 1 ms) <small>(Note 1,2)</small>	P _{PK}	400	Watts
Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) <small>(Note 3)</small>	I _{FSM}	40	Amps
Steady State Power Dissipation @ T _L = 75 °C	P _{M(AV)}	1.0	Watts
Maximum Instantaneous Forward Voltage @ I _{PP} = 35 A (For Unidirectional Units Only)	V _F	3.5	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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 %.



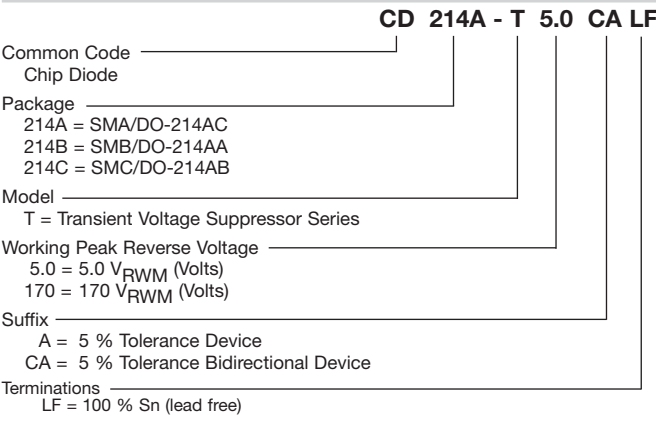
Asia-Pacific:
Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

Europe:
Tel: +41-41 768 5555 • Fax: +41-41 768 5510

The Americas:
Tel: +1-951 781-5500 • Fax: +1-951 781-5700

www.bourns.com

How To Order



*RoHS Directive 2002/95/EC Jan 27 2003 including Annex
 Specifications are subject to change without notice.
 Customers should verify actual device performance in their specific applications.

Compliance

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

CD214A Transient Voltage Suppressor Diode Series

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Electrical Characteristics (@T_A = 25 °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 (µA)	V _{RSM} (Volts)	I _{RSM} (Amps)
CD214A-T5.0A	HE	CD214A-T5.0CA	TE	6.40	7.00	10	5.0	800 / 1600	9.2	43.5
CD214A-T6.0A	HG	CD214A-T6.0CA	TG	6.67	7.37	10	6.0	800 / 1600	10.3	38.8
CD214A-T6.5A	HK	CD214A-T6.5CA	TK	7.22	7.98	10	6.5	500 / 1000	11.2	35.7
CD214A-T7.0A	HM	CD214A-T7.0CA	TM	7.78	8.60	10	7.0	200 / 400	12.0	33.3
CD214A-T7.5A	HP	CD214A-T7.5CA	TP	8.33	9.21	1.0	7.5	100 / 200	12.9	31.0
CD214A-T8.0A	HR	CD214A-T8.0CA	TR	8.89	9.83	1.0	8.0	50 / 100	13.6	29.4
CD214A-T8.5A	HT	CD214A-T8.5CA	TT	9.44	10.4	1.0	8.5	10 / 20	14.4	27.7
CD214A-T9.0A	HV	CD214A-T9.0CA	TV	10.0	11.1	1.0	9.0	5 / 10	15.4	26.0
CD214A-T10A	HX	CD214A-T10CA	TX	11.1	12.3	1.0	10	5 / 10	17.0	23.5
CD214A-T11A	HZ	CD214A-T11CA	TZ	12.2	13.2	1.0	11	5.0	18.2	22.0
CD214A-T12A	IE	CD214A-T12CA	UE	13.3	14.7	1.0	12	5.0	19.9	20.1
CD214A-T13A	IG	CD214A-T13CA	UG	14.4	15.9	1.0	13	5.0	21.5	18.6
CD214A-T14A	IK	CD214A-T14CA	UK	15.6	17.2	1.0	14	5.0	23.2	17.2
CD214A-T15A	IM	CD214A-T15CA	UM	16.7	18.5	1.0	15	5.0	24.4	16.4
CD214A-T16A	IP	CD214A-T16CA	UP	17.8	19.7	1.0	16	5.0	26.0	15.3
CD214A-T17A	IR	CD214A-T17CA	UR	18.9	20.9	1.0	17	5.0	27.6	14.5
CD214A-T18A	IT	CD214A-T18CA	UT	20.0	22.1	1.0	18	5.0	29.2	13.7
CD214A-T20A	IV	CD214A-T20CA	UV	22.2	24.5	1.0	20	5.0	32.4	12.3
CD214A-T22A	IX	CD214A-T22CA	UX	24.4	26.9	1.0	22	5.0	35.5	11.2
CD214A-T24A	IZ	CD214A-T24CA	UZ	26.7	29.5	1.0	24	5.0	38.9	10.3
CD214A-T26A	JE	CD214A-T26CA	VE	28.9	31.9	1.0	26	5.0	42.1	9.5
CD214A-T28A	JG	CD214A-T28CA	VG	31.1	34.4	1.0	28	5.0	45.4	8.8
CD214A-T30A	JK	CD214A-T30CA	VK	33.3	36.8	1.0	30	5.0	48.4	8.3
CD214A-T33A	JM	CD214A-T33CA	VM	36.7	40.6	1.0	33	5.0	53.3	7.5
CD214A-T36A	JP	CD214A-T36CA	VP	40	44.2	1.0	36	5.0	58.1	6.9
CD214A-T40A	JR	CD214A-T40CA	VR	44.4	49.1	1.0	40	5.0	64.5	6.2
CD214A-T43A	JT	CD214A-T43CA	VT	47.8	52.8	1.0	43	5.0	69.4	5.7
CD214A-T45A	JV	CD214A-T45CA	VV	50	55.3	1.0	45	5.0	72.7	5.5
CD214A-T48A	JX	CD214A-T48CA	VX	53.3	58.9	1.0	48	5.0	77.4	5.2
CD214A-T51A	JZ	CD214A-T51CA	VZ	56.7	62.7	1.0	51	5.0	82.4	4.9
CD214A-T54A	RE	CD214A-T54CA	WE	60	66.3	1.0	54	5.0	87.1	4.6
CD214A-T58A	RG	CD214A-T58CA	WG	64.4	71.2	1.0	58	5.0	93.6	4.3
CD214A-T60A	RK	CD214A-T60CA	WK	66.7	73.7	1.0	60	5.0	96.8	4.1
CD214A-T64A	RM	CD214A-T64CA	WM	71.1	78.6	1.0	64	5.0	103	3.9
CD214A-T70A	RP	CD214A-T70CA	WP	77.8	86.0	1.0	70	5.0	113	3.5
CD214A-T75A	RR	CD214A-T75CA	WR	83.3	92.1	1.0	75	5.0	121	3.3
CD214A-T78A	RT	CD214A-T78CA	WT	86.7	95.8	1.0	78	5.0	126	3.2
CD214A-T85A	RV	CD214A-T85CA	VV	94.4	104	1.0	85	5.0	137	2.9
CD214A-T90A	RX	CD214A-T90CA	WX	100	111	1.0	90	5.0	146	2.7
CD214A-T100A	RZ	CD214A-T100CA	WZ	111	123	1.0	100	5.0	162	2.5
CD214A-T110A	SE	CD214A-T110CA	XE	122	135	1.0	110	5.0	177	2.3
CD214A-T120A	SG	CD214A-T120CA	XG	133	147	1.0	120	5.0	193	2.0
CD214A-T130A	SK	CD214A-T130CA	XK	144	159	1.0	130	5.0	209	1.9
CD214A-T150A	SM	CD214A-T150CA	XM	167	185	1.0	150	5.0	243	1.6
CD214A-T160A	SP	CD214A-T160CA	XP	178	197	1.0	160	5.0	259	1.5
CD214A-T170A	SR	CD214A-T170CA	XR	189	209	1.0	170	5.0	275	1.4

Notes:

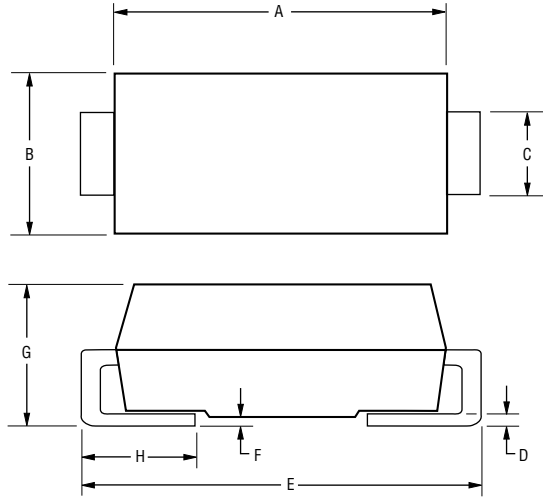
1. Suffix 'A' denotes a 5 % tolerance device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
4. For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

CD214A Transient Voltage Suppressor Diode Series

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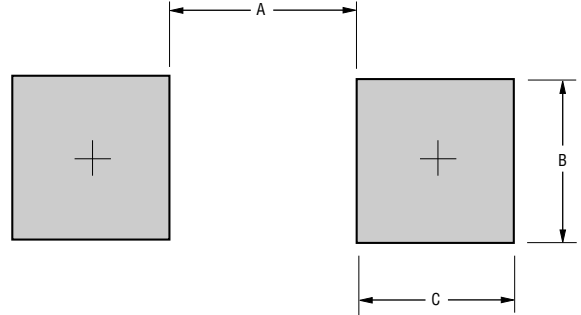
Product Dimensions



Dimension	SMA (DO-214AC)
A	$\frac{4.06 - 4.57}{(0.160 - 0.180)}$
B	$\frac{2.29 - 2.92}{(0.090 - 0.115)}$
C	$\frac{1.27 - 1.63}{(0.050 - 0.064)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{4.83 - 5.59}{(0.190 - 0.220)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Pad Layout



Dimension	SMA (DO-214AC)
A (Max.)	$\frac{2.70}{(0.106)}$
B (Min.)	$\frac{2.10}{(0.083)}$
C (Min.)	$\frac{1.27}{(0.050)}$

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

Physical Specifications

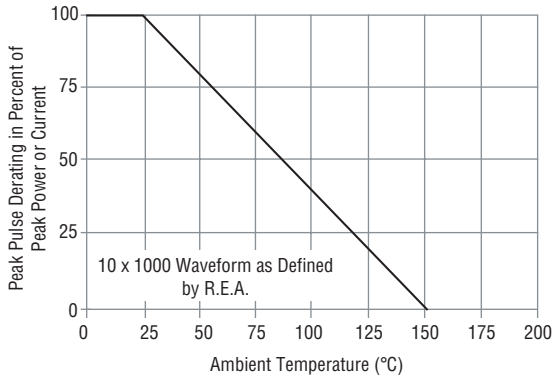
CaseMolded plastic per UL Class 94V-0
 Polarity.....Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.002 ounces / 0.064 grams

CD214A Transient Voltage Suppressor Diode Series

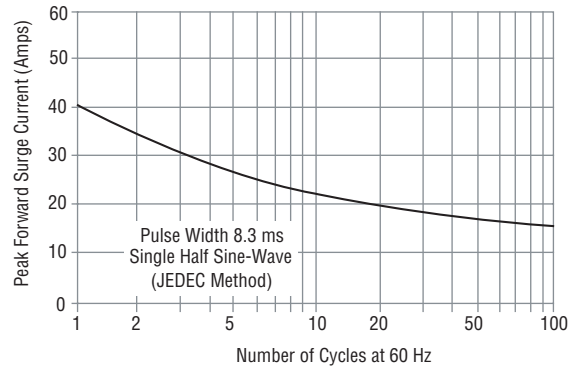


Rating and Characteristic Curves

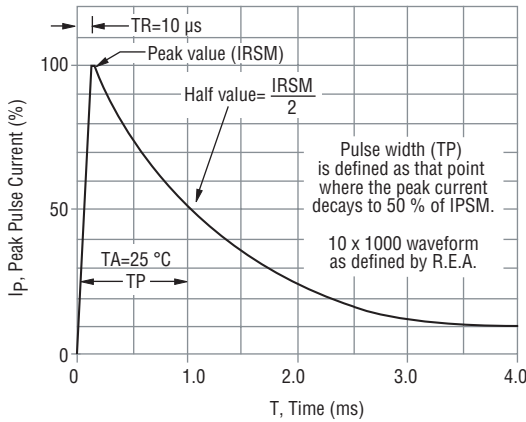
Pulse Derating Curve



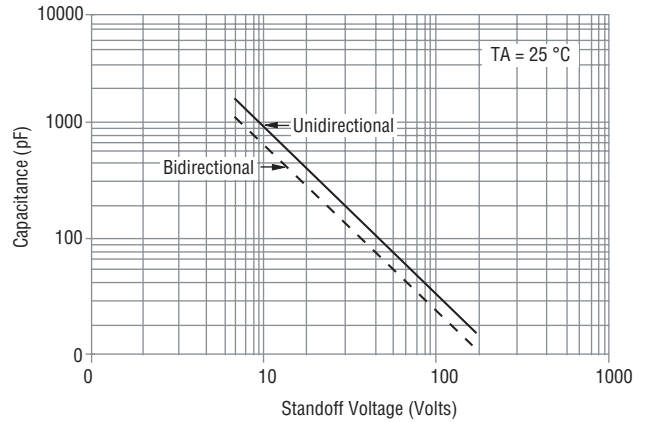
Maximum Non-Repetitive Surge Current



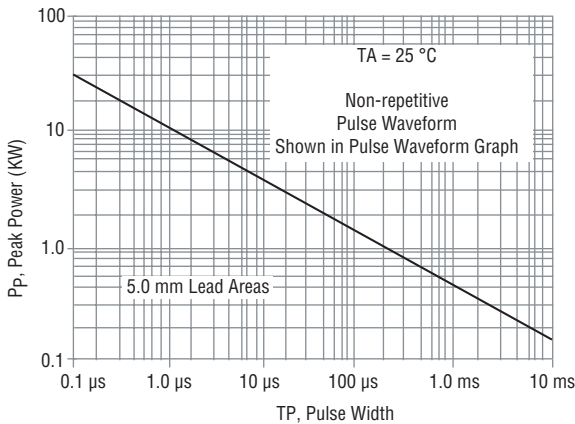
Pulse Waveform



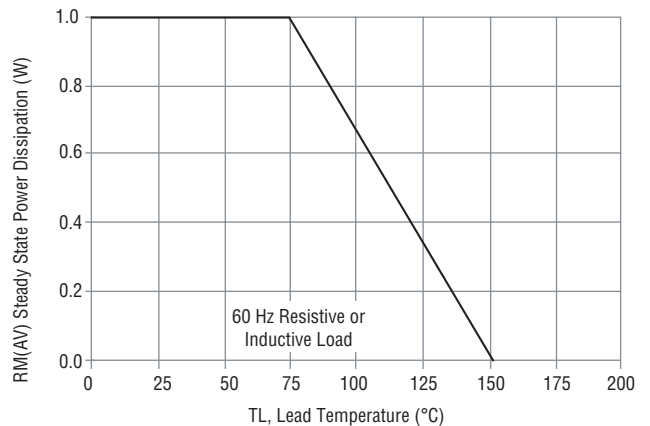
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



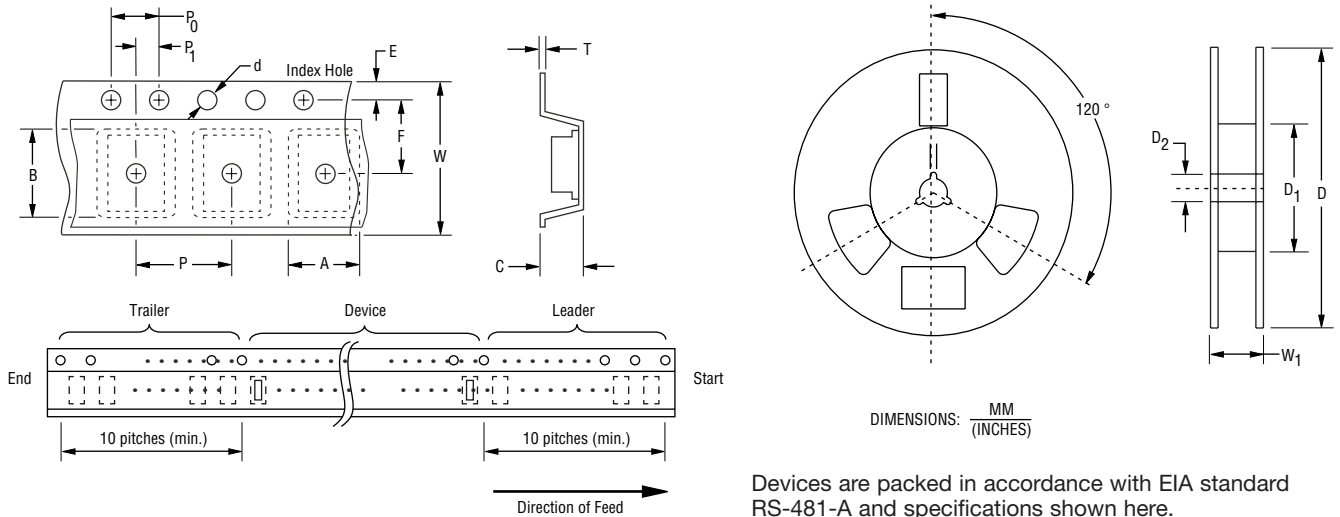
Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

CD214A Transient Voltage Suppressor Diode Series

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Packaging Information

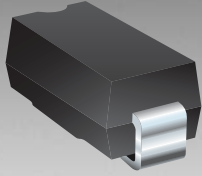
The product will be dispensed in Tape and Reel format (see diagram below).



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

Item	Symbol	SMA (DO-214AC)
Carrier Width	A	$\frac{2.90 \pm 0.10}{(0.114 - 0.004)}$
Carrier Length	B	$\frac{5.59 \pm 0.10}{(0.220 - 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 - 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 - 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 - 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 - 0.004)}$
Punch Hole Position	F	$\frac{5.50 \pm 0.05}{(0.217 - 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 - 0.002)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 - 0.004)}$
Tape Width	W	$\frac{12.00 \pm 0.20}{(0.472 - 0.008)}$
Reel Width	W ₁	$\frac{18.4}{(0.724)}$ MAX.
Quantity per Reel	--	5,000

*RoHS COMPLIANT



BOURNS®

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.

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

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

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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_F = 3.5 V on CD214B-T5.0A through CD214B-T90A and V_F = 5.0 V on CD214B-T100A through CD214B-T170A.

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_{RWM} (Volts)
170 = 170 V_{RWM} (Volts)

Suffix _____
A = 5 % Tolerance Device
CA = 5 % Tolerance Bidirectional Device

Terminations _____
LF = 100 % Sn (lead free)



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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 °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 (µA)	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:

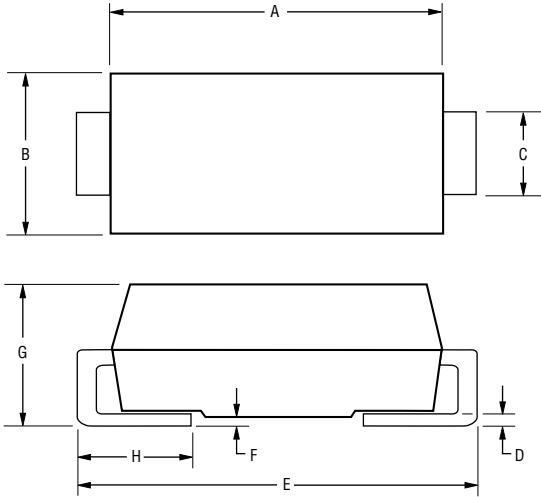
1. Suffix 'A' denotes a 5 % tolerance device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
4. For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

CD214B Transient Voltage Suppressor Diode Series



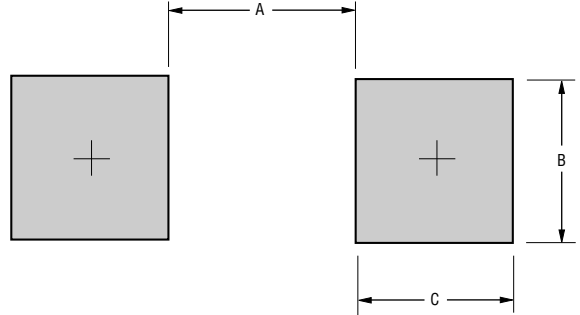
Product Dimensions



Dimension	SMB (DO-214AA)
A	$\frac{4.06 - 4.57}{(0.160 - 0.180)}$
B	$\frac{3.30 - 3.94}{(0.130 - 0.155)}$
C	$\frac{1.96 - 2.21}{(0.077 - 0.087)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{5.21 - 5.59}{(0.205 - 0.220)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Pad Layout



Dimension	SMB (DO-214AA)
A (Max.)	$\frac{2.69}{(0.106)}$
B (Min.)	$\frac{2.10}{(0.083)}$
C (Min.)	$\frac{1.27}{(0.050)}$

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

Physical Specifications

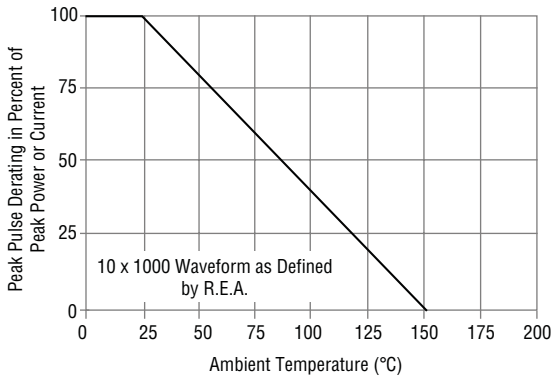
CaseMolded plastic per UL Class 94V-0
PolarityCathode band indicates unidirectional device
No cathode band indicates bidirectional device
Weight0.003 ounces / 0.093 grams

CD214B Transient Voltage Suppressor Diode Series

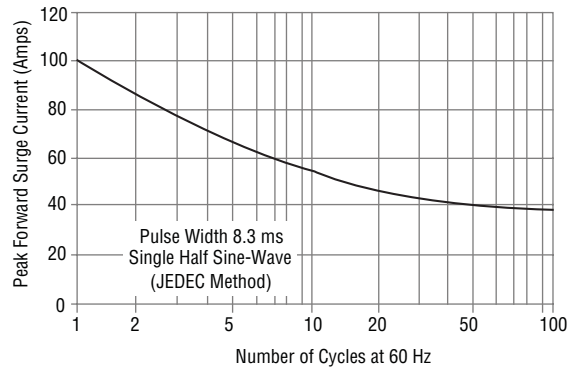


Rating and Characteristic Curves

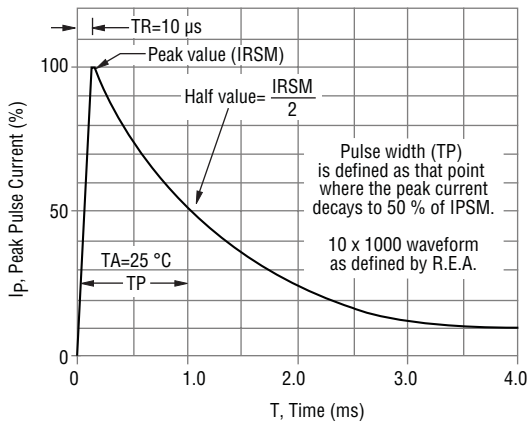
Pulse Derating Curve



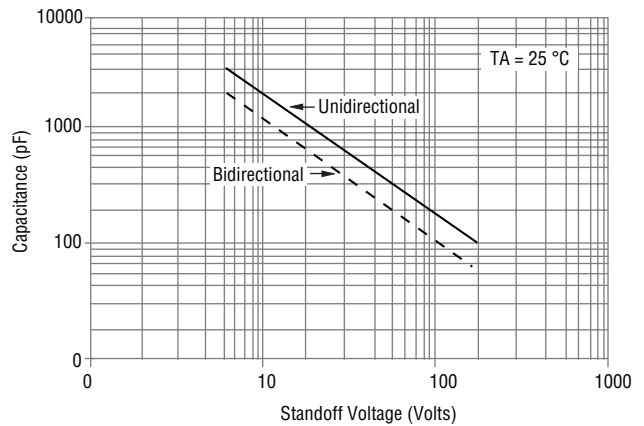
Maximum Non-Repetitive Surge Current



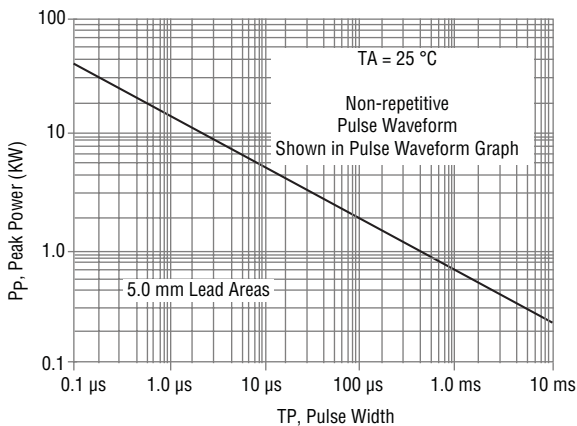
Pulse Waveform



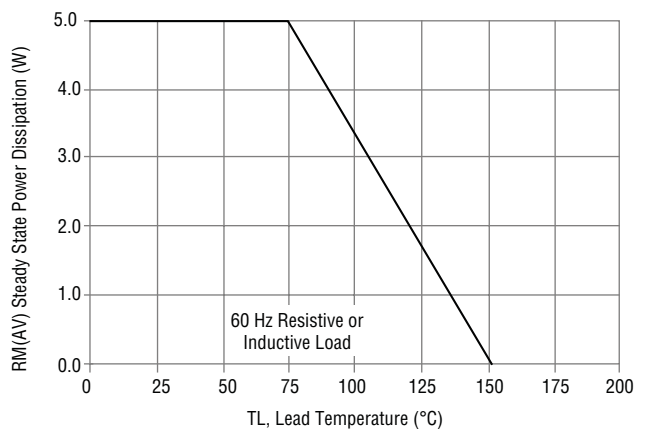
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



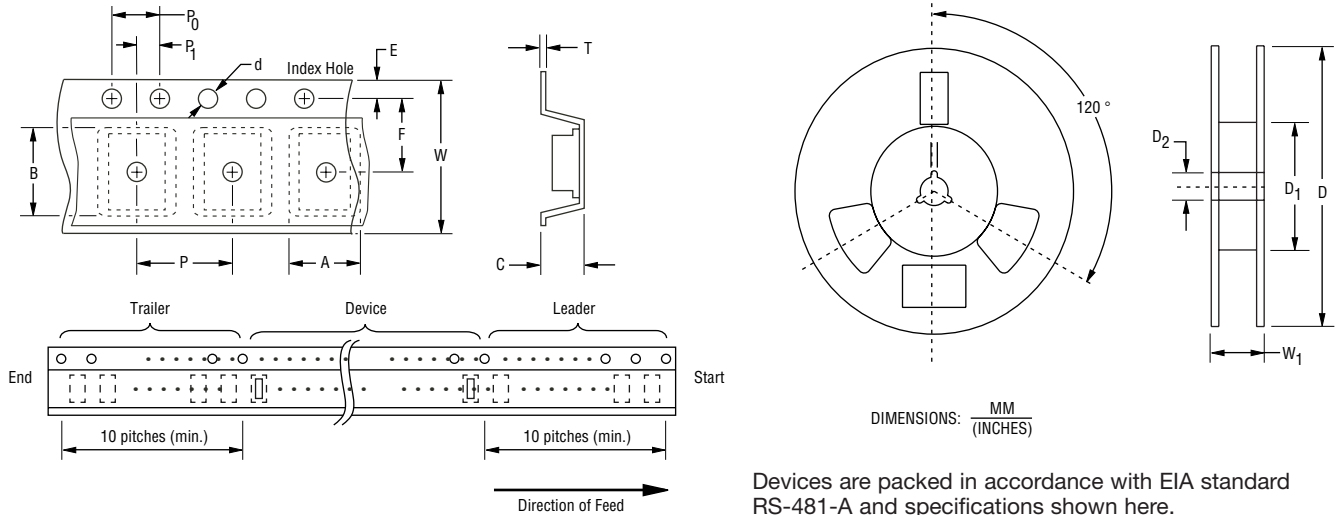
Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

CD214B Transient Voltage Suppressor Diode Series

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Packaging Information

The product will be dispensed in Tape and Reel format (see diagram below).



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



Features

- Lead free
- RoHS compliant*
- Surface Mount SMC package
- Standoff Voltage: 5.0 to 170 volts
- Power Dissipation: 1500 watts



Model CD214C is currently available, although not recommended for new designs. [Model SMCJ](#) is preferred.

CD214C 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 the flat configuration minimizes roll away.

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _P = 1 ms) <small>(Note 1,2)</small>	P _{PK}	1500	Watts
Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) <small>(Note 3)</small>	I _{FSM}	200	Amps
Steady State Power Dissipation @ T _L = 75 °C	P _{M(AV)}	5.0	Watts
Maximum Instantaneous Forward Voltage @ I _{PP} = 100 A (For Unidirectional Units Only)	V _F	<small>(Note 5)</small>	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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_F = 3.5 V on CD214C-T5.0A through CD214C-T90A and V_F = 5.0 V on CD214C-T100A through CD214C-T170A.

How To Order

	CD 214C - 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 _{RWM} (Volts)	
170 = 170 V _{RWM} (Volts)	
Suffix _____	
A = 5 % Tolerance Device	
CA = 5 % Tolerance Bidirectional Device	
Terminations _____	
LF = 100 % Sn (lead free)	



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Compliance

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

CD214C Transient Voltage Suppressor Diode Series

BOURNS®

Electrical Characteristics (@T_A = 25 °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 (µA)	V _{RSM} (Volts)	I _{RSM} (Amps)
CD214C-T5.0A	GDE	CD214C-T5.0CA	BDE	6.4	7.23	10	5	1000	9.2	163
CD214C-T6.0A	GDG	CD214C-T6.0CA	BDG	6.67	7.67	10	6	1000	10.3	145.6
CD214C-T6.5A	GDK	CD214C-T6.5CA	BDK	7.22	8.3	10	6.5	500	11.2	133.9
CD214C-T7.0A	GDM	CD214C-T7.0CA	BDM	7.78	8.95	10	7	200	12	125
CD214C-T7.5A	GDP	CD214C-T7.5CA	BDP	8.33	9.58	1	7.5	100	12.9	116.3
CD214C-T8.0A	GDR	CD214C-T8.0CA	BDR	8.89	10.2	1	8	50	13.6	110.3
CD214C-T8.5A	GDT	CD214C-T8.5CA	BDT	9.44	10.8	1	8.5	20	14.4	104.2
CD214C-T9.0A	GDV	CD214C-T9.0CA	BDV	10	11.5	1	9	10	15.4	97.4
CD214C-T10A	GDY	CD214C-T10CA	BDY	11.1	12.8	1	10	5	17	88.2
CD214C-T11A	GDZ	CD214C-T11CA	BDZ	12.2	14.4	1	11	5	18.2	82.4
CD214C-T12A	GEE	CD214C-T12CA	BEE	13.3	15.3	1	12	5	19.9	75.3
CD214C-T13A	GEG	CD214C-T13CA	BEG	14.4	16.5	1	13	5	21.5	69.7
CD214C-T14A	GEK	CD214C-T14CA	BEK	15.6	17.9	1	14	5	23.2	64.7
CD214C-T15A	GEM	CD214C-T15CA	BEM	16.7	19.2	1	15	5	24.4	61.5
CD214C-T16A	GEP	CD214C-T16CA	BEP	17.8	20.5	1	16	5	26	57.7
CD214C-T17A	GER	CD214C-T17CA	BER	18.9	21.7	1	17	5	27.6	53.3
CD214C-T18A	GET	CD214C-T18CA	BET	20	23.3	1	18	5	29.2	51.4
CD214C-T20A	GEV	CD214C-T20CA	BEV	22.2	25.5	1	20	5	32.4	46.3
CD214C-T22A	GEX	CD214C-T22CA	BEX	24.4	28	1	22	5	35.5	42.2
CD214C-T24A	GEZ	CD214C-T24CA	BEZ	26.7	30.7	1	24	5	38.9	38.6
CD214C-T26A	GFE	CD214C-T26CA	BFE	28.9	32.2	1	26	5	42.1	35.6
CD214C-T28A	GFG	CD214C-T28CA	BFG	31.1	35.8	1	28	5	45.4	33
CD214C-T30A	GFK	CD214C-T30CA	BFK	33.3	38.3	1	30	5	48.4	31
CD214C-T33A	GFM	CD214C-T33CA	BFM	36.7	42.2	1	33	5	53.3	28.1
CD214C-T36A	GFP	CD214C-T36CA	BFP	40	46	1	36	5	58.1	25.8
CD214C-T40A	GFR	CD214C-T40CA	BFR	44.4	51.1	1	40	5	64.5	23.3
CD214C-T43A	GFT	CD214C-T43CA	BFT	47.8	54.9	1	43	5	69.4	21.6
CD214C-T45A	GFV	CD214C-T45CA	BFV	50	57.5	1	45	5	72.7	20.6
CD214C-T48A	GFX	CD214C-T48CA	BFX	53.3	61.3	1	48	5	77.4	19.4
CD214C-T51A	GFZ	CD214C-T51CA	BFZ	56.7	65.2	1	51	5	82.4	18.2
CD214C-T54A	GGE	CD214C-T54CA	BGE	60	69	1	54	5	87.1	17.2
CD214C-T58A	GGG	CD214C-T58CA	BGG	64.4	74.6	1	58	5	93.6	16
CD214C-T60A	GGK	CD214C-T60CA	BGK	66.7	76.7	1	60	5	96.8	15.5
CD214C-T64A	GGM	CD214C-T64CA	BGM	71.1	81.8	1	64	5	103	14.6
CD214C-T70A	GGP	CD214C-T70CA	BGP	77.8	89.5	1	70	5	113	13.3
CD214C-T75A	GGR	CD214C-T75CA	BGR	83.3	95.8	1	75	5	121	12.4
CD214C-T78A	GGT	CD214C-T78CA	BGT	86.7	99.7	1	78	5	126	11.4
CD214C-T85A	GGV	CD214C-T85CA	BGV	94.4	108.2	1	85	5	137	10.4
CD214C-T90A	GGX	CD214C-T90CA	BGX	100	115.5	1	90	5	146	10.3
CD214C-T100A	GGZ	CD214C-T100CA	BGZ	111	128	1	100	5	162	9.3
CD214C-T110A	GHE	CD214C-T110CA	BHE	122	140	1	110	5	177	8.4
CD214C-T120A	GHG	CD214C-T120CA	BHG	133	153	1	120	5	193	7.9
CD214C-T130A	GHK	CD214C-T130CA	BHK	144	165	1	130	5	209	7.2
CD214C-T150A	GHM	CD214C-T150CA	BHM	167	192	1	150	5	243	6.2
CD214C-T160A	GHP	CD214C-T160CA	BHP	178	205	1	160	5	259	5.8
CD214C-T170A	GHR	CD214C-T170CA	BHR	189	217.5	1	170	5	275	5.5

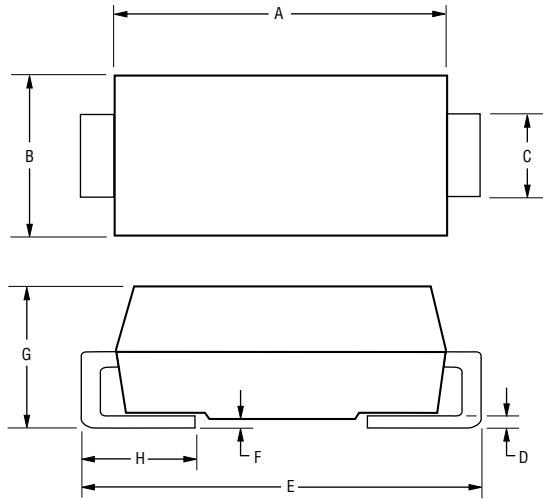
Notes:

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.

CD214C Transient Voltage Suppressor Diode Series

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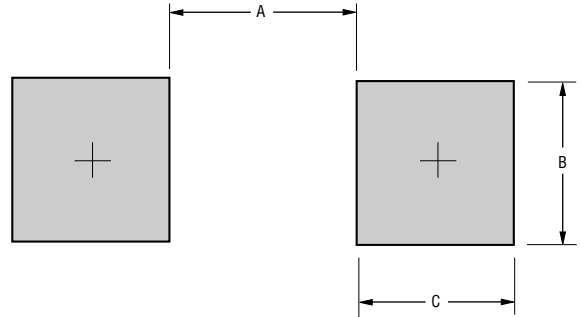
Product Dimensions



Dimension	SMC (DO-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.92 - 3.18}{(0.115 - 0.125)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Pad Layout



Dimension	SMC (DO-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

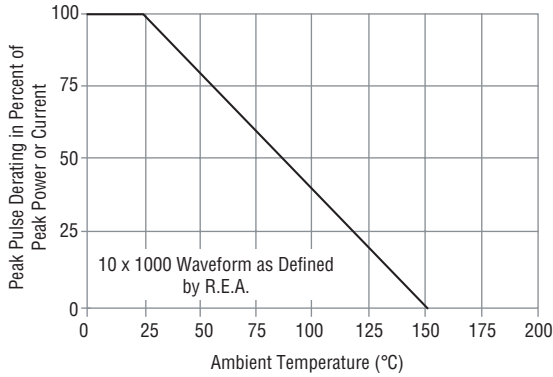
CaseMolded plastic per UL Class 94V-0
 Polarity.....Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.007 ounces / 0.21 grams

CD214C Transient Voltage Suppressor Diode Series

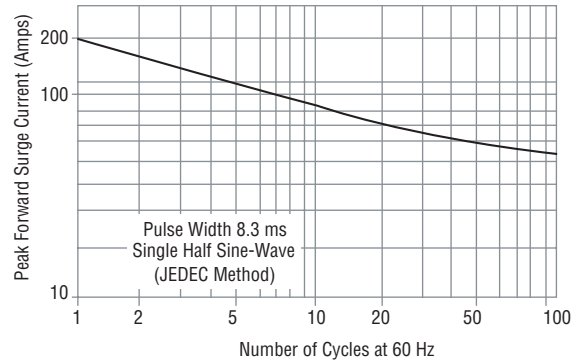


Rating and Characteristic Curves

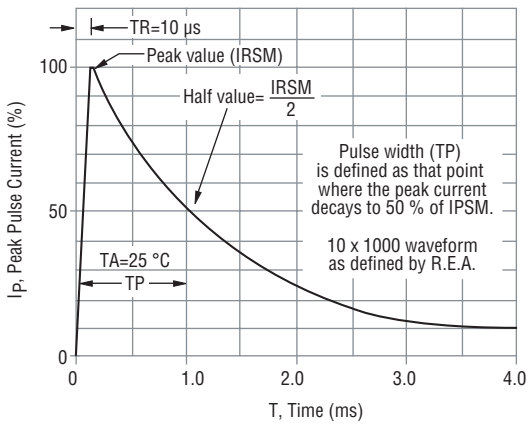
Pulse Derating Curve



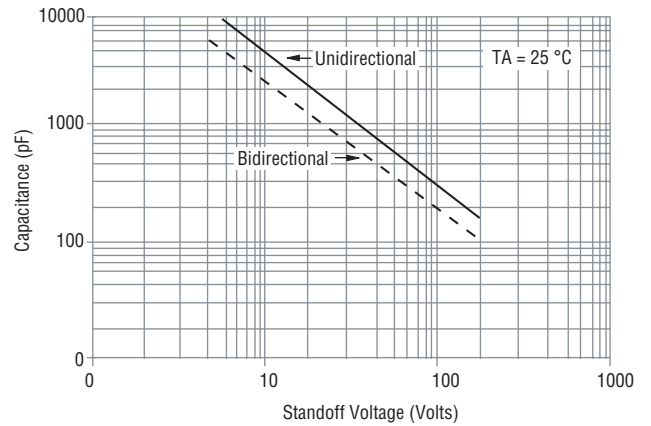
Maximum Non-Repetitive Surge Current



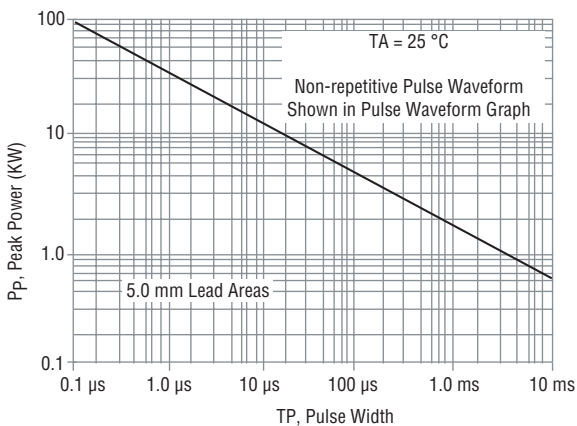
Pulse Waveform



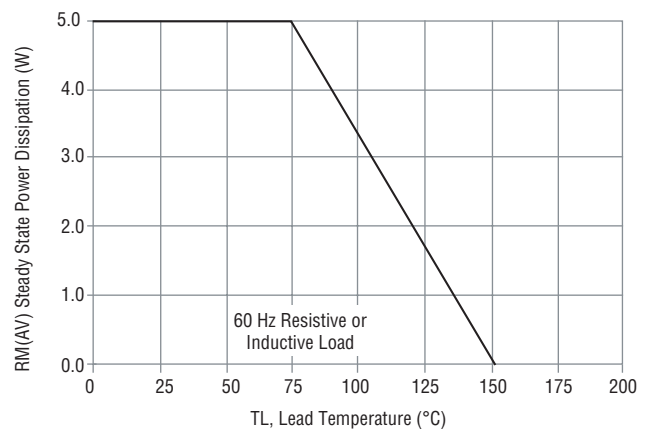
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



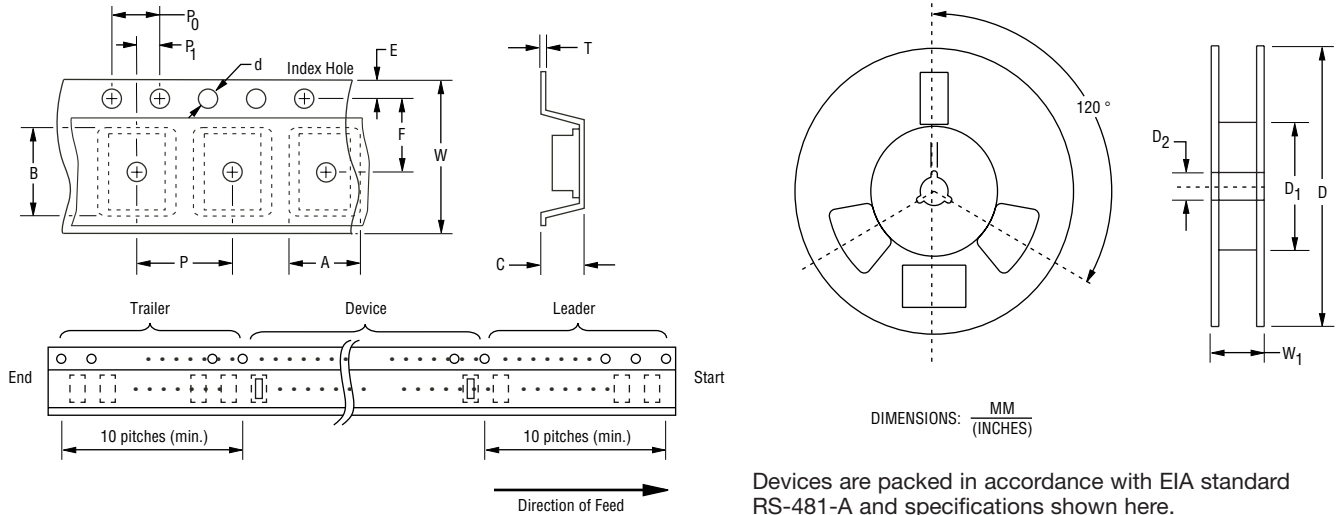
Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

CD214C Transient Voltage Suppressor Diode Series

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Packaging Information

The product will be dispensed in Tape and Reel format (see diagram below).



Item	Symbol	SMC (DO-214AB)
Carrier Width	A	$\frac{7.22 \pm 0.10}{(0.284 - 0.004)}$
Carrier Length	B	$\frac{8.11 \pm 0.10}{(0.319 - 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 - 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 - 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 - 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 - 0.004)}$
Punch Hole Position	F	$\frac{7.50 \pm 0.10}{(0.295 - 0.004)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.10}{(0.079 - 0.004)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 - 0.004)}$
Tape Width	W	$\frac{16.00 \pm 0.20}{(0.630 - 0.008)}$
Reel Width	W ₁	$\frac{22.4}{(0.882)}$ MAX.
Quantity per Reel	--	3,000



Features

- Lead free as standard
- RoHS compliant (lead free)*
- 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 the flat configuration minimizes roll away.

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _P = 1 ms) ^(Note 1,2)	P _{PK}	3000	Watts
Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) ^(Note 3)	I _{FSM}	300	Amps
Steady State Power Dissipation @ T _L = 75 °C	P _{M(AV)}	5.0	Watts
Maximum Instantaneous Forward Voltage @ I _{PP} = 100 A (For Unidirectional Units Only)	V _F	^(Note 5)	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 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_F = 3.5 V on CD214L-T5.0ALF through CD214L-T90ALF and V_F = 5.0 V on CD214L-T100ALF through CD214L-T170ALF.

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 _{RWM} (Volts)	
170 = 170 V _{RWM} (Volts)	
Suffix _____	
A = 5 % Tolerance Device	
CA = 5 % Tolerance Bidirectional Device	
Terminations _____	
LF = 100 % Sn (lead free)	



Asia-Pacific:

Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

Europe:

Tel: +41-41 768 5555 • Fax: +41-41 768 5510

The Americas:

Tel: +1-951 781-5500 • Fax: +1-951 781-5700

www.bourns.com

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

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Electrical Characteristics (@T_A = 25 °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 (uA)	V _{RSM} (Volts)	I _{RSM} (Amps)
CD214L-T5.0ALF	HDE	CD214L-T5.0CALF	IDE	6.40	7.82	10	5	1000	9.2	326.00
CD214L-T6.0ALF	HDG	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:

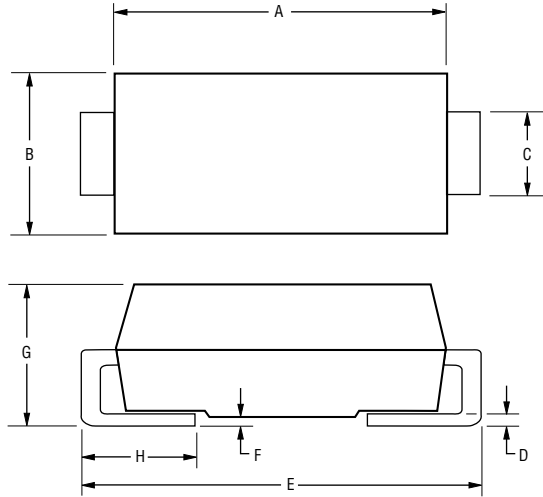
1. Suffix 'A' denotes a 5 % tolerance device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
4. For unidirectional devices with a V_F max. of 3.5 V at an I_F of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

CD214L Transient Voltage Suppressor Diode Series



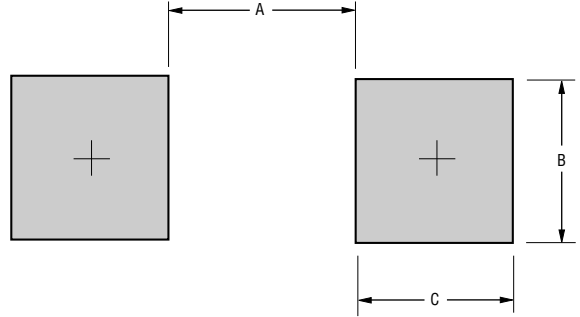
Product Dimensions



Dimension	SMC (DO-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.92 - 3.18}{(0.115 - 0.125)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Recommended Pad Layout



Dimension	SMC (DO-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

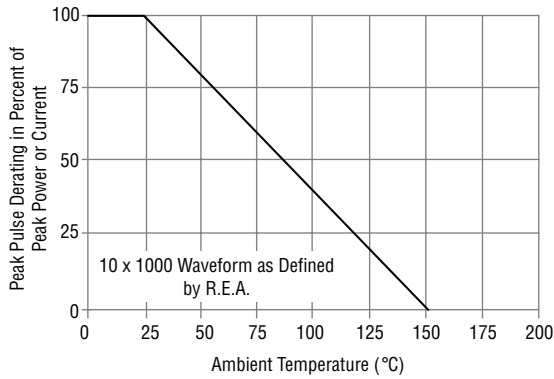
CaseMolded plastic per UL Class 94V-0
 PolarityCathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.007 ounces / 0.21 grams

CD214L Transient Voltage Suppressor Diode Series

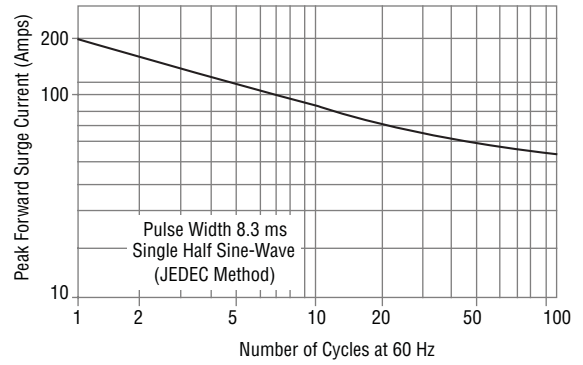
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Rating and Characteristic Curves

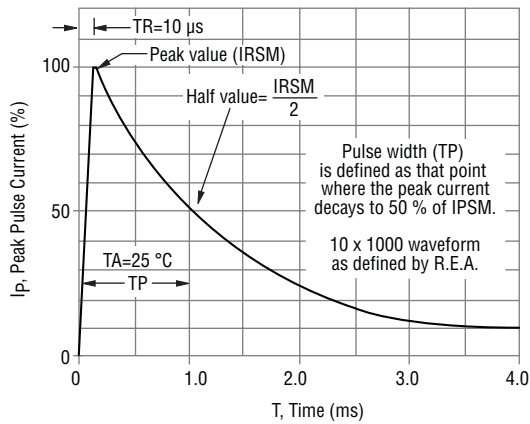
Pulse Derating Curve



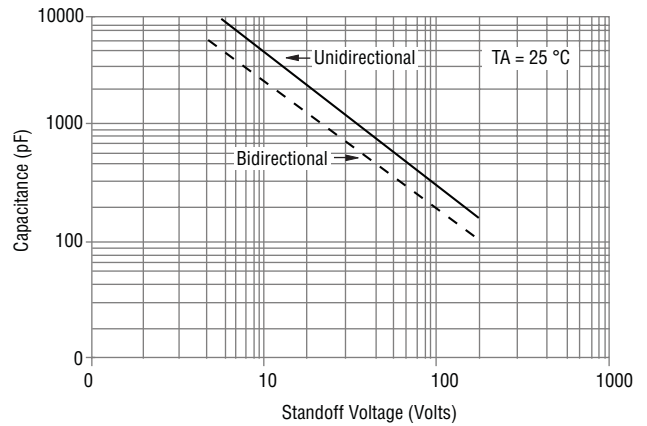
Maximum Non-Repetitive Surge Current



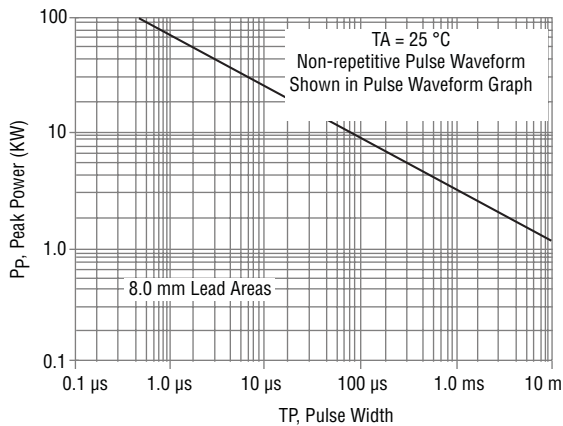
Pulse Waveform



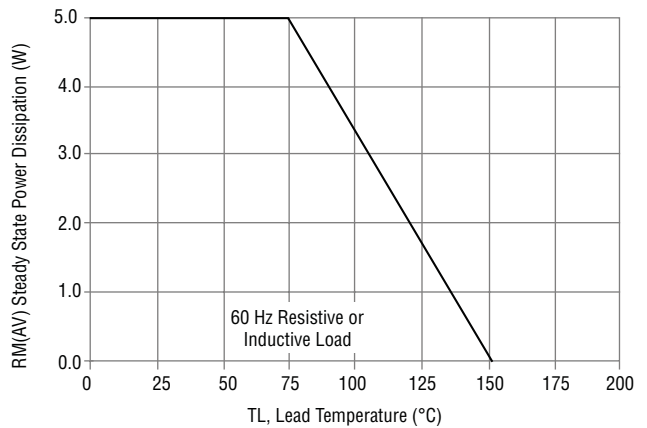
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



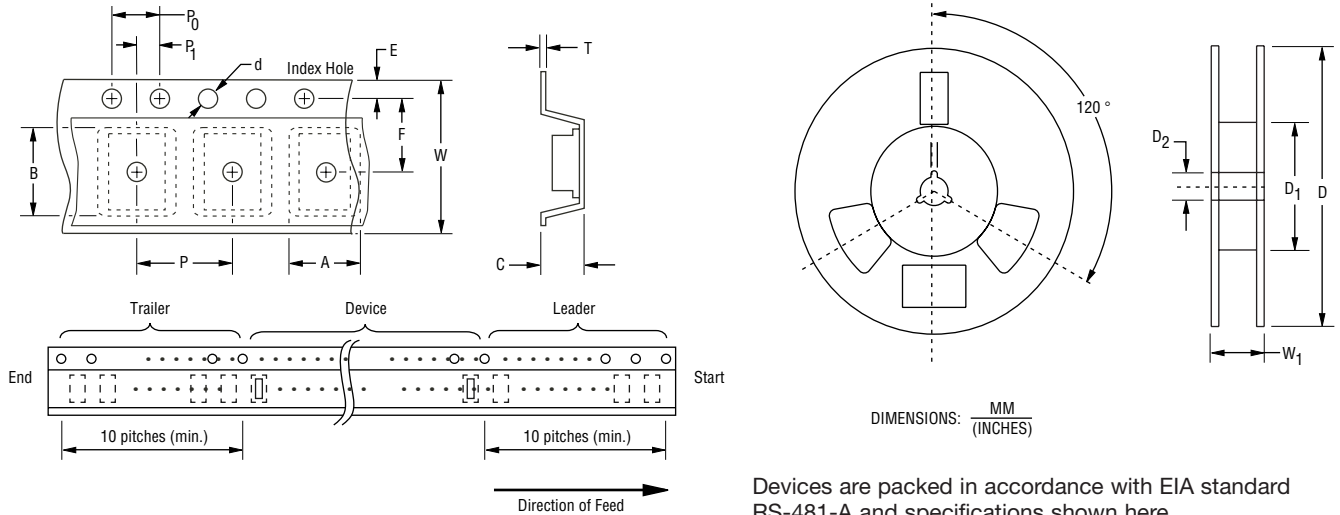
Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

CD214L Transient Voltage Suppressor Diode Series

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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	SMC (DO-214AB)
Carrier Width	A	$\frac{7.22 \pm 0.10}{(0.284 - 0.004)}$
Carrier Length	B	$\frac{8.11 \pm 0.10}{(0.319 - 0.004)}$
Carrier Depth	C	$\frac{2.36 \pm 0.10}{(0.093 - 0.004)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 - 0.002)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 - 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 - 0.004)}$
Punch Hole Position	F	$\frac{7.50 \pm 0.10}{(0.295 - 0.004)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.10}{(0.079 - 0.004)}$
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 - 0.004)}$
Tape Width	W	$\frac{16.00 \pm 0.20}{(0.630 - 0.008)}$
Reel Width	W ₁	$\frac{22.4}{(0.882)}$ MAX.
Quantity per Reel	--	3,000