



## Features

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

## 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<sub>A</sub> = 25 °C Unless Otherwise Noted)

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

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T<sub>A</sub> = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).
4. Single Phase, Half Wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20 %.
5. V<sub>F</sub> = 3.5 V on CD214C-T5.0A through CD214C-T90A and V<sub>F</sub> = 5.0 V on CD214C-T100A through CD214C-T170A.

### How To Order

	<b>CD 214C - T 5.0 CA LF</b>
Common Code _____	
Chip Diode _____	
Package _____	
214A = SMA/DO-214AC	
214B = SMB/DO-214AA 214C = SMC/DO-214AB	
Model _____	
T = Transient Voltage Suppressor Series	
Working Peak Reverse Voltage _____	
5.0 = 5.0 V <sub>RWM</sub> (Volts) 170 = 170 V <sub>RWM</sub> (Volts)	
Suffix _____	
A = 5 % Tolerance Device CA = 5 % Tolerance Bidirectional Device	
Terminations _____	
LF = 100 % Sn (lead free)	



Reliable Electronic Solutions

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

\*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.

# CD214C Transient Voltage Suppressor Diode Series

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## Electrical Characteristics (@T<sub>A</sub> = 25 °C unless otherwise noted)

Unidirectional Device		Bidirectional Device		Breakdown Voltage V <sub>BR</sub> (Volts)			Working Peak Reverse Voltage V <sub>RWM</sub> (Volts)	Maximum Reverse Leakage @ V <sub>RWM</sub> I <sub>R</sub> (uA)	Maximum Reverse Voltage @ I <sub>RSM</sub> V <sub>RSM</sub> (Volts)	Maximum Reverse Surge Current I <sub>RSM</sub> (Amps)
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I <sub>T</sub> (mA)				
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	GDX	CD214C-T10CA	BDX	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:**

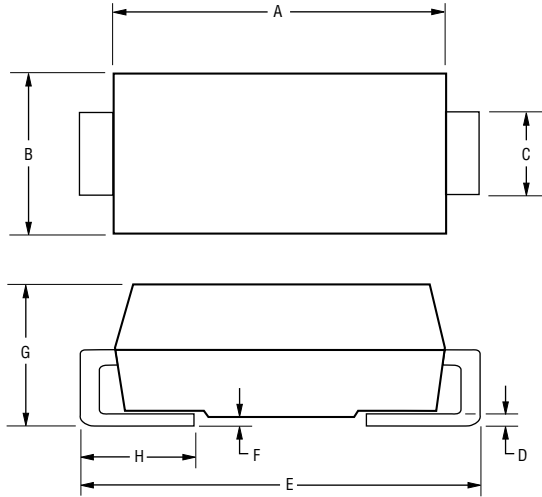
- Suffix 'A' denotes a 5 % tolerance device.
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- For bidirectional devices with a V<sub>R</sub> of 10 volts or less, the I<sub>R</sub> limit is double.
- For unidirectional devices with a V<sub>F</sub> max. of 3.5 V at an I<sub>F</sub> of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

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# CD214C Transient Voltage Suppressor Diode Series

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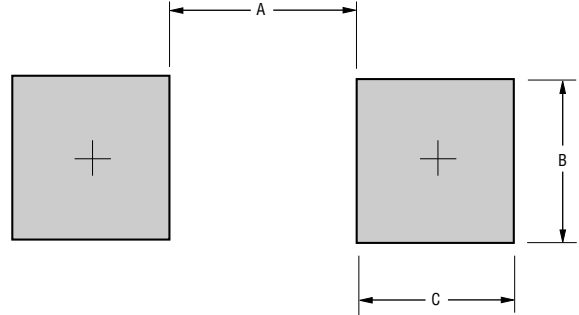
## Product Dimensions



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

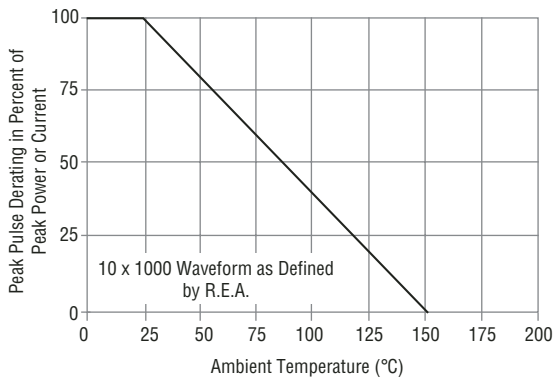
Case .....Molded plastic per UL Class 94V-0  
 Polarity .....Cathode band indicates unidirectional device  
                   No cathode band indicates bidirectional device  
 Weight .....0.007 ounces / 0.21 grams

# CD214C Transient Voltage Suppressor Diode Series

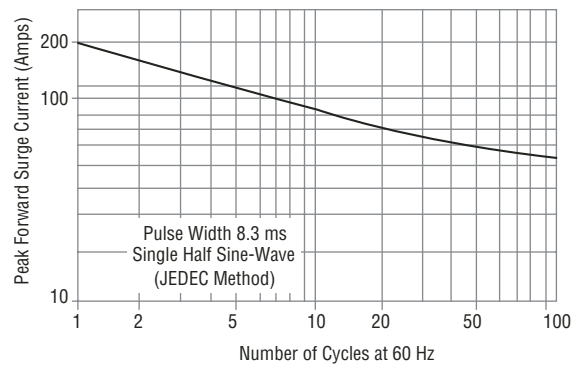


## Rating and Characteristic Curves

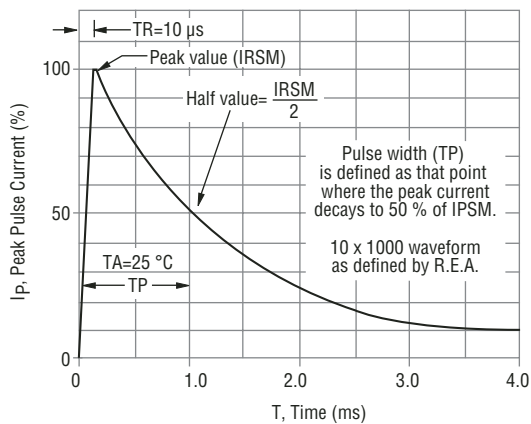
### Pulse Derating Curve



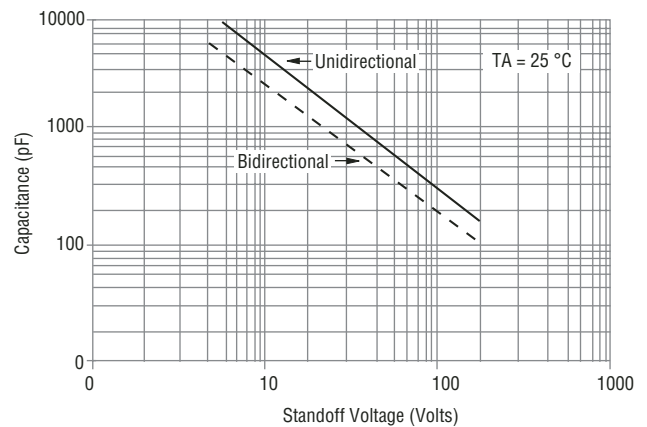
### Maximum Non-Repetitive Surge Current



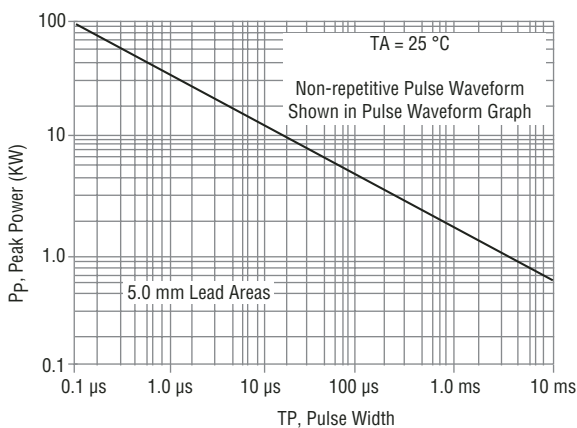
### Pulse Waveform



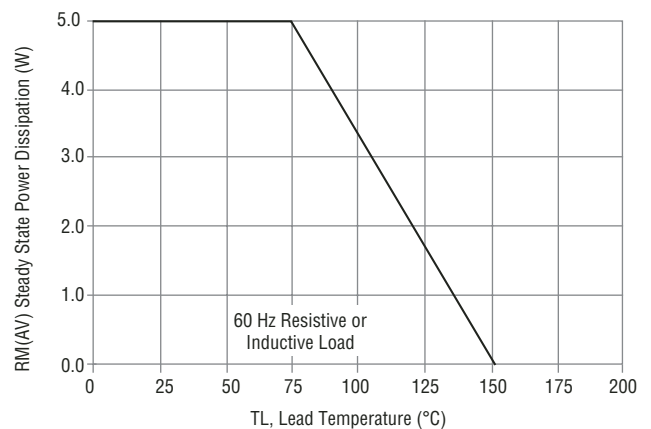
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



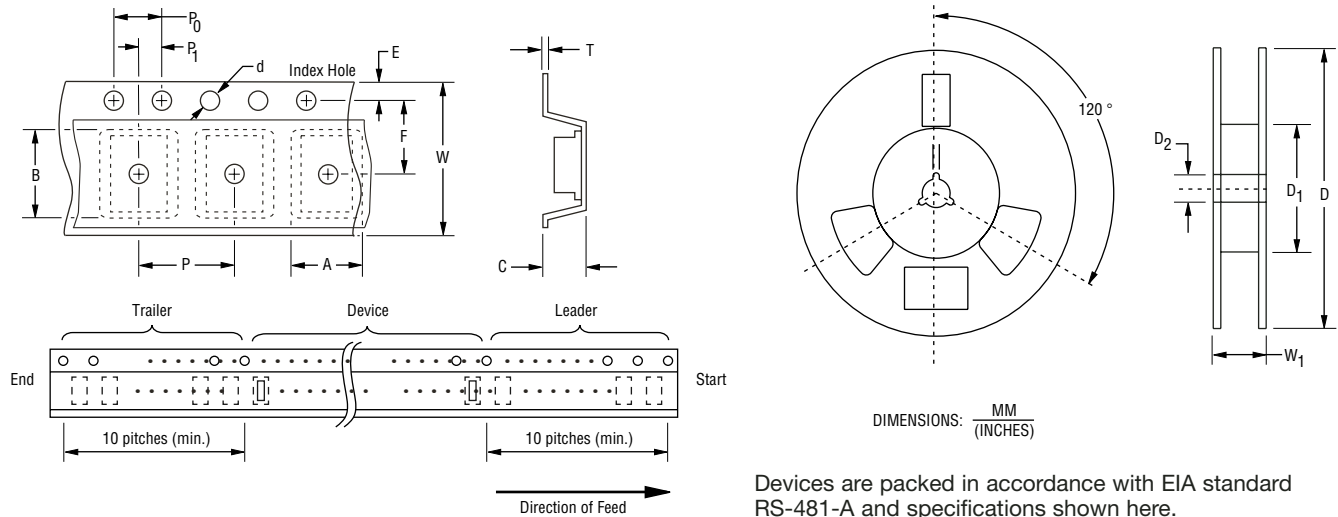
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# CD214C Transient Voltage Suppressor Diode Series

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## Packaging Information

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



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 <sub>1</sub>	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D <sub>2</sub>	$\frac{13.0 \pm 0.20}{(0.512 - 0.008)}$
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 <sub>0</sub>	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.10}{(0.079 - 0.004)}$
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 <sub>1</sub>	$\frac{22.4}{(0.882)}$ MAX.
Quantity per Reel	--	3,000

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