



## Features

- Lead free versions available
- RoHS compliant (lead free version)\*
- 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>	(Note 5)	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 limited above T<sub>J</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 Sine 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.

MODELS MARKED WITH AN ASTERISK (\*) ARE OBSOLETE



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

### How To Order

**CD 214C - T 5.0 CA**

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  
 C = Bidirectional Device\*  
 CA = 5 % Tolerance Bidirectional Device  
 \_ = 10 % Tolerance Unidirectional Device\*

Terminations \_\_\_\_\_  
 LF = 100 % Sn (lead free)  
 Blank = Sn/Pb

\*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-T5.0*	GDD	CD214C-T5.0C*	BDD	6.4	7.55	10	5	1000	9.6	156.3
CD214C-T5.0A	GDE	CD214C-T5.0CA	BDE	6.4	7.23	10	5	1000	9.2	163
CD214C-T6.0*	GDF	CD214C-T6.0C*	BDF	6.67	8.45	10	6	1000	11.4	131.6
CD214C-T6.0A	GDG	CD214C-T6.0CA	BDG	6.67	7.67	10	6	1000	10.3	145.6
CD214C-T6.5*	GDH	CD214C-T6.5C*	BDH	7.22	9.14	10	6.5	500	12.3	122
CD214C-T6.5A	GDK	CD214C-T6.5CA	BDK	7.22	8.3	10	6.5	500	11.2	133.9
CD214C-T7.0*	GDL	CD214C-T7.0C*	BDL	7.78	9.86	10	7	200	13.3	112.8
CD214C-T7.0A	GDM	CD214C-T7.0CA	BDM	7.78	8.95	10	7	200	12	125
CD214C-T7.5*	GDN	CD214C-T7.5C*	BDN	8.33	10.8	1	7.5	100	14.3	104.9
CD214C-T7.5A	GDP	CD214C-T7.5CA	BDP	8.33	9.58	1	7.5	100	12.9	116.3
CD214C-T8.0*	GDQ	CD214C-T8.0C*	BDQ	8.89	11.3	1	8	50	15	100
CD214C-T8.0A	GDR	CD214C-T8.0CA	BDR	8.89	10.2	1	8	50	13.6	110.3
CD214C-T8.5*	GDS	CD214C-T8.5C*	BDS	9.44	11.9	1	8.5	20	13.9	95.3
CD214C-T8.5A	GDT	CD214C-T8.5CA	BDT	9.44	10.8	1	8.5	20	14.4	104.2
CD214C-T9.0*	GDU	CD214C-T9.0C*	BDU	10	12.8	1	9	10	16.9	88.7
CD214C-T9.0A	GDV	CD214C-T9.0CA	BDV	10	11.5	1	9	10	15.4	97.4
CD214C-T10*	GDW	CD214C-T10C*	BDW	10	14.8	1	10	5	18.8	79.8
CD214C-T10A	GDX	CD214C-T10CA	BDX	11.1	13.8	1	10	5	17	88.2
CD214C-T11*	GDY	CD214C-T11C*	BDY	12.2	15.4	1	11	5	20.1	74.6
CD214C-T11A	GDZ	CD214C-T11CA	BDZ	12.2	14.4	1	11	5	18.2	82.4
CD214C-T12*	GED	CD214C-T12C*	BED	13.3	16.9	1	12	5	22	68.2
CD214C-T12A	GEE	CD214C-T12CA	BEE	13.3	15.3	1	12	5	19.9	75.3
CD214C-T13*	GEF	CD214C-T13C*	BEF	14.4	18.2	1	13	5	23.8	63
CD214C-T13A	GEG	CD214C-T13CA	BEG	14.4	17.5	1	13	5	21.5	69.7
CD214C-T14*	GEH	CD214C-T14C*	BEH	15.6	19.8	1	14	5	25.8	58.1
CD214C-T14A	GEK	CD214C-T14CA	BEK	15.6	17.9	1	14	5	23.2	64.7
CD214C-T15*	GEL	CD214C-T15C*	BEL	16.7	21.1	1	15	5	26.9	55.8
CD214C-T15A	GEM	CD214C-T15CA	BEM	16.7	19.2	1	15	5	24.4	61.5
CD214C-T16*	GEN	CD214C-T16C*	BEN	17.8	22.6	1	16	5	28.8	52.1
CD214C-T16A	GEP	CD214C-T16CA	BEP	17.8	20.5	1	16	5	26	57.7
CD214C-T17*	GEQ	CD214C-T17C*	BEQ	18.9	23.9	1	17	5	30.5	49.2
CD214C-T17A	GER	CD214C-T17CA	BER	18.9	21.7	1	17	5	27.6	53.3
CD214C-T18*	GES	CD214C-T18C*	BES	20	25.3	1	18	5	32.2	46.6
CD214C-T18A	GET	CD214C-T18CA	BET	20	23.3	1	18	5	29.2	51.4
CD214C-T20*	GEU	CD214C-T20C*	BEU	22.2	28.1	1	20	5	35.8	41.9
CD214C-T20A	GEV	CD214C-T20CA	BEV	22.2	25.5	1	20	5	32.4	46.3
CD214C-T22*	GEW	CD214C-T22C*	BEW	24.4	30.9	1	22	5	39.4	38.1
CD214C-T22A	GEX	CD214C-T22CA	BEX	24.4	28	1	22	5	35.5	42.2
CD214C-T24*	GEY	CD214C-T24C*	BEY	26.7	33.8	1	24	5	43	34.9
CD214C-T24A	GEZ	CD214C-T24CA	BEZ	26.7	30.7	1	24	5	38.9	38.6
CD214C-T26*	GFD	CD214C-T26C*	BFD	28.9	36.8	1	26	5	46.6	32.2
CD214C-T26A	GFE	CD214C-T26CA	BFE	28.9	32.2	1	26	5	42.1	35.6
CD214C-T28*	GFF	CD214C-T28C*	BFF	31.1	39.4	1	28	5	50	30
CD214C-T28A	GFG	CD214C-T28CA	BFG	31.1	35.8	1	28	5	45.4	33
CD214C-T30*	GFH	CD214C-T30C*	BFH	33.3	42.4	1	30	5	53.5	28
CD214C-T30A	GFK	CD214C-T30CA	BFK	33.3	38.3	1	30	5	48.4	31
CD214C-T33*	GFL	CD214C-T33C*	BFL	36.7	46.9	1	33	5	59	25.4
CD214C-T33A	GFM	CD214C-T33CA	BFM	36.7	42.2	1	33	5	53.3	28.1

Notes:

- Suffix 'A' denotes a 5 % tolerance device.
- Suffix 'C' denotes a bidirectional device.\*
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- No suffix denotes a 10 % tolerance unidirectional 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.

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	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Reverse Voltage @I <sub>RSM</sub>	Maximum Reverse Surge Current
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I <sub>T</sub> (mA)	V <sub>RWM</sub> (Volts)	I <sub>R</sub> (µA)	V <sub>RSM</sub> (Volts)	I <sub>RSM</sub> (Amps)
CD214C-T36*	GFN	CD214C-T36C*	BFN	40	50.7	1	36	5	64.3	23.3
CD214C-T36A	GFP	CD214C-T36CA	BFP	40	46	1	36	5	58.1	25.8
CD214C-T40*	GFQ	CD214C-T40C*	BFQ	44.4	56.3	1	40	5	71.4	21
CD214C-T40A	GFR	CD214C-T40CA	BFR	44.4	51.1	1	40	5	64.5	23.3
CD214C-T43*	GFS	CD214C-T43C*	BFS	47.8	60.5	1	43	5	76.7	19.6
CD214C-T43A	GFT	CD214C-T43CA	BFT	47.8	54.9	1	43	5	69.4	21.6
CD214C-T45*	GFU	CD214C-T45C*	BFU	50	63.3	1	45	5	80.3	18.7
CD214C-T45A	GFV	CD214C-T45CA	BFV	50	57.5	1	45	5	72.7	20.6
CD214C-T48*	GFW	CD214C-T48C*	BFW	53.3	67.5	1	48	5	85.5	17.5
CD214C-T48A	GFX	CD214C-T48CA	BFX	53.3	61.3	1	48	5	77.4	19.4
CD214C-T51*	GFY	CD214C-T51C*	BFY	56.7	71.8	1	51	5	91.1	16.5
CD214C-T51A	GFZ	CD214C-T51CA	BFZ	56.7	65.2	1	51	5	82.4	18.2
CD214C-T54*	GGD	CD214C-T54C*	BGD	60	76	1	54	5	96.3	15.6
CD214C-T54A	GGE	CD214C-T54CA	BGE	60	60	1	54	5	87.1	17.2
CD214C-T58*	GGF	CD214C-T58C*	BGF	64.4	81.6	1	58	5	103	14.6
CD214C-T58A	GGG	CD214C-T58CA	BGG	64.4	74.6	1	58	5	93.6	16
CD214C-T60*	GGH	CD214C-T60C*	BGH	66.7	83.5	1	60	5	107	14
CD214C-T60A	GGK	CD214C-T60CA	BGK	66.7	76.7	1	60	5	96.8	15.5
CD214C-T64*	GGL	CD214C-T64C*	BGL	71.1	90.1	1	64	5	114	13.2
CD214C-T64A	GGM	CD214C-T64CA	BGM	71.1	81.8	1	64	5	103	14.6
CD214C-T70*	GGN	CD214C-T70C*	BGN	77.8	98.6	1	70	5	125	12
CD214C-T70A	GGP	CD214C-T70CA	BGP	77.8	89.5	1	70	5	113	13.3
CD214C-T75*	GGQ	CD214C-T75C*	BGQ	83.3	105	1	75	5	134	11.2
CD214C-T75A	GGR	CD214C-T75CA	BGR	83.3	95.8	1	75	5	121	12.4
CD214C-T78*	GGS	CD214C-T78C*	BGS	86.7	110	1	78	5	139	10.8
CD214C-T78A	GGT	CD214C-T78CA	BGT	86.7	99.7	1	78	5	126	11.4
CD214C-T85*	GGU	CD214C-T85C*	BGU	94.4	119.2	1	85	5	151	9.9
CD214C-T85A	GGV	CD214C-T85CA	BGV	94.4	108.2	1	85	5	137	10.4
CD214C-T90*	GGW	CD214C-T90C*	BGW	100	126.5	1	90	5	160	9.4
CD214C-T90A	GGX	CD214C-T90CA	BGX	100	115.5	1	90	5	146	10.3
CD214C-T100*	GGY	CD214C-T100C*	BGY	111	141	1	100	5	179	8.4
CD214C-T100A	GGZ	CD214C-T100CA	BGZ	111	128	1	100	5	162	9.3
CD214C-T110*	GHD	CD214C-T110C*	BHD	122	154	1	110	5	196	7.7
CD214C-T110A	GHE	CD214C-T110CA	BHE	122	140	1	110	5	177	8.4
CD214C-T120*	GHF	CD214C-T120C*	BHF	133	169	1	120	5	214	7
CD214C-T120A	GHG	CD214C-T120CA	BHG	133	153	1	120	5	193	7.9
CD214C-T130*	GHH	CD214C-T130C*	BHH	144	182	1	130	5	231	6.5
CD214C-T130A	GHK	CD214C-T130CA	BHK	144	165	1	130	5	209	7.2
CD214C-T150*	GHL	CD214C-T150C*	BHL	167	211.5	1	150	5	268	5.6
CD214C-T150A	GHM	CD214C-T150CA	BHM	167	192	1	150	5	243	6.2
CD214C-T160*	GHN	CD214C-T160C*	BHN	178	226	1	160	5	287	5.2
CD214C-T160A	GHP	CD214C-T160CA	BHP	178	205	1	160	5	259	5.8
CD214C-T170*	GHQ	CD214C-T170C*	BHQ	189	239.5	1	170	5	304	4.9
CD214C-T170A	GHR	CD214C-T170CA	BHR	189	217.5	1	170	5	275	5.5

**Notes:**

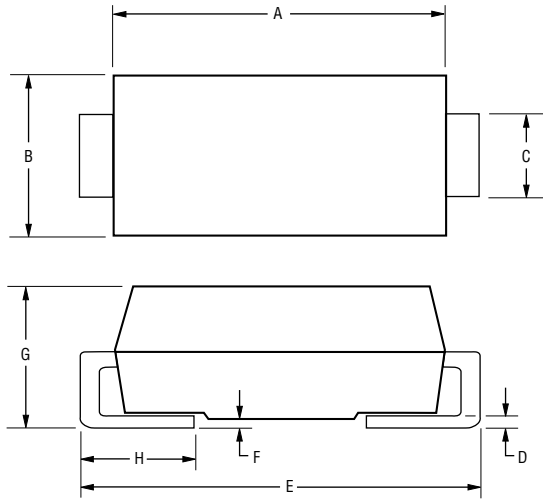
- Suffix 'A' denotes a 5 % tolerance device.
- Suffix 'CA' denotes a bidirectional device.\*
- Suffix 'C' denotes a 5 % tolerance bidirectional device.
- No suffix denotes a 10 % tolerance unidirectional device.\*
- For bidirectional devices with a V<sub>BR</sub> of 10 volts or less, the I<sub>R</sub> 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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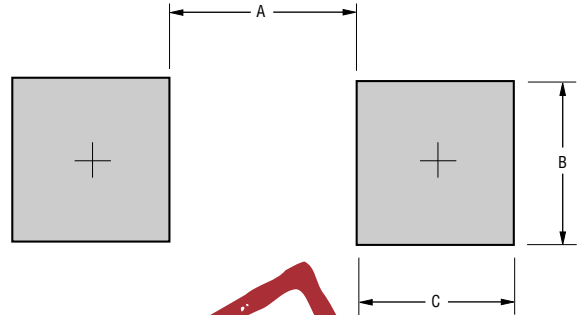
## Product Dimensions



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	$\frac{2.92 - 3.30}{(0.115 - 0.125)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.012)}$
E	$\frac{8.35 - 8.13}{(0.330 - 0.320)}$
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.)	$\frac{4.13}{(0.163)}$
B (Max.)	$\frac{3.07}{(0.121)}$
C (Min.)	$\frac{1.52}{(0.060)}$

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

ALL MODELS MARKED WITH AN ASTERISK (\*) ARE OBSOLETE

## 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

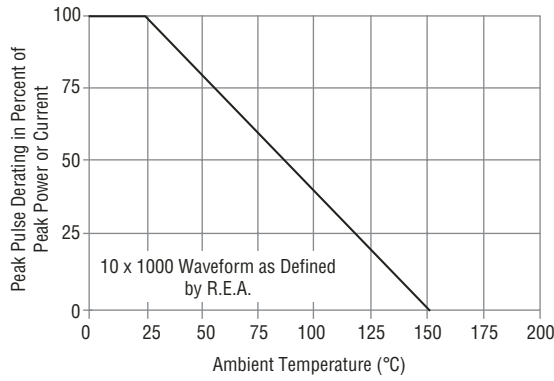
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# CD214C Transient Voltage Suppressor Diode Series

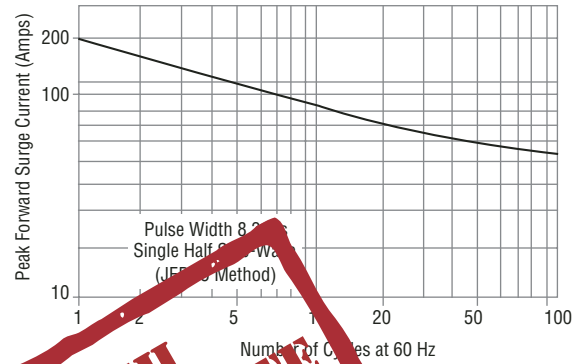
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## Rating and Characteristic Curves

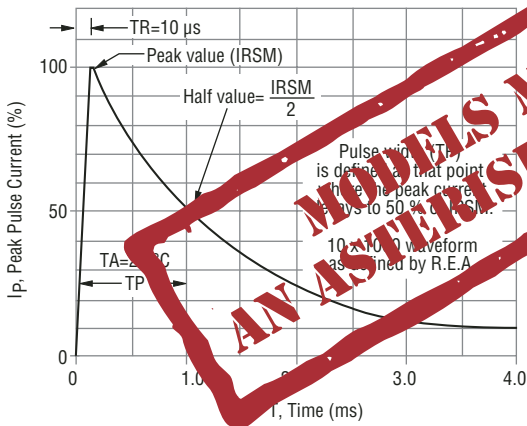
### Pulse Derating Curve



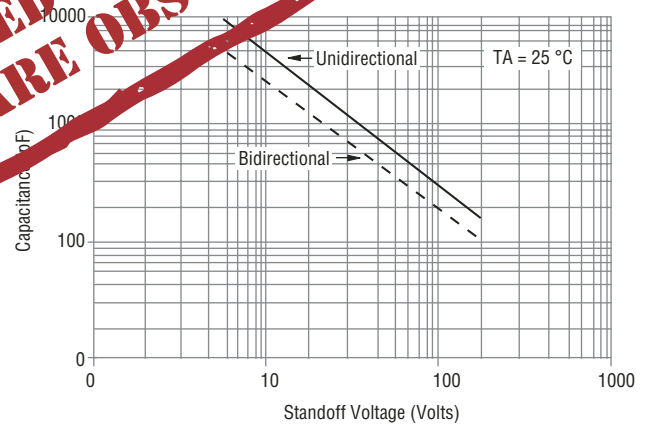
### Maximum Non-Repetitive Surge Current



### Pulse Waveform

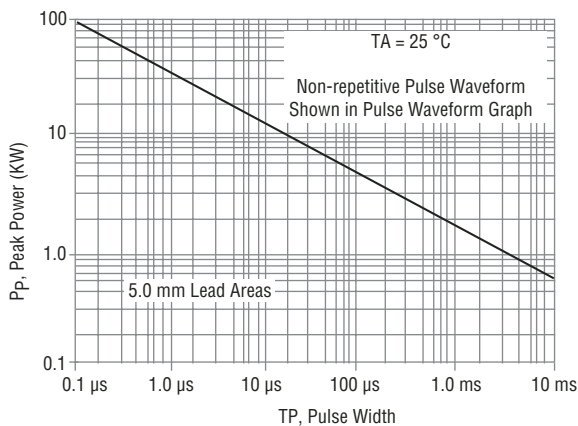


### Typical Junction Capacitance

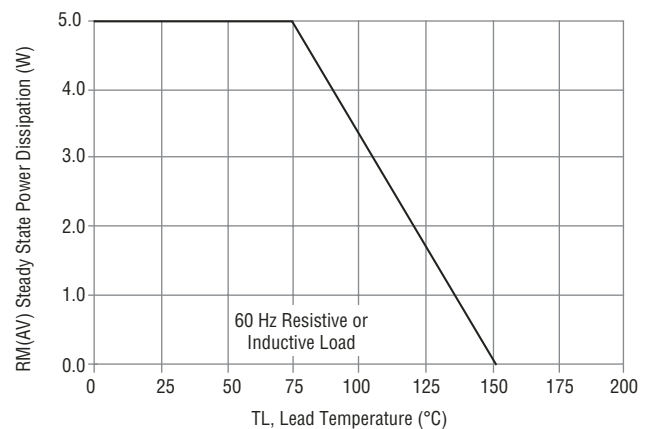


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### Pulse Rating Curve



### Steady State Power Derating Curve



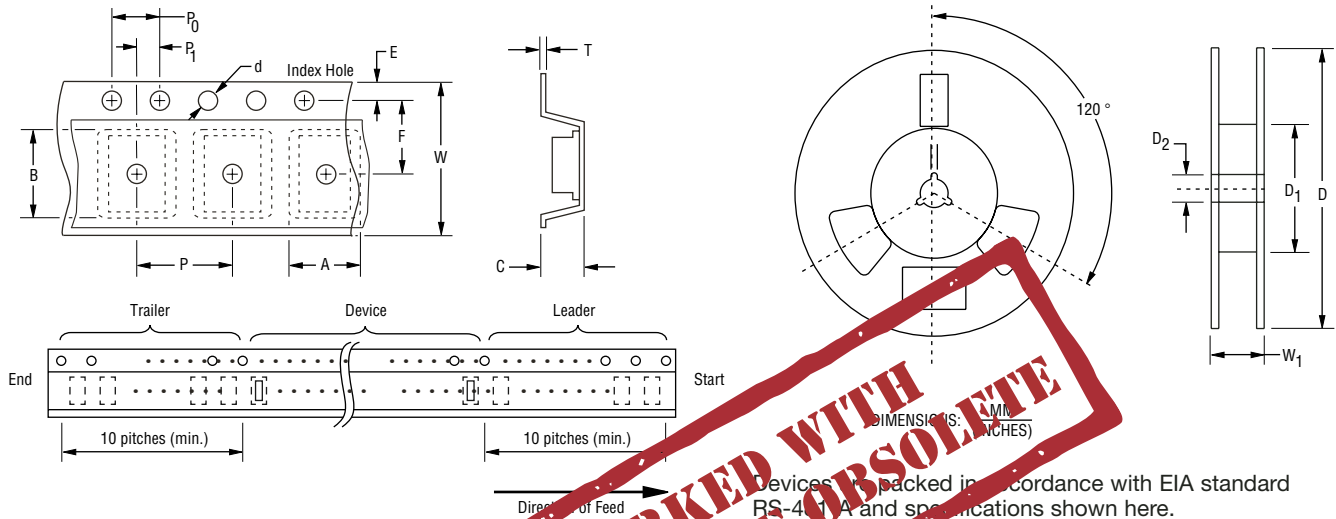
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# CD214C Transient Voltage Suppressor Diode Series

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## Packaging Information

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



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