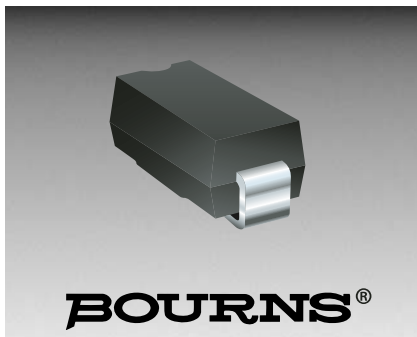




Features

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

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation ($T_P = 1\text{ ms}$) ^(Note 1,2)	P_{PK}	400	Watts
Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) ^(Note 3)	I_{FSM}	40	Amps
Steady State Power Dissipation @ $T_L = 75^\circ\text{C}$	$P_{M(AV)}$	1.0	Watts
Maximum Instantaneous Forward Voltage @ $I_{PP} = 35\text{ A}$ (For Unidirectional Units Only)	V_F	3.5	Volts
Operating Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +175	$^\circ\text{C}$

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above $T_A = 25^\circ\text{C}$ per Pulse Derating Curve.

2. 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 %.



Reliable Electronic Solutions

Asia-Pacific:

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

Europe:

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

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Tel: +1-951 781-5500 • Fax: +1-951 781-5700 (after 7/17/04)

www.bourns.com

How To Order

CD 214A - 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_{RWM} (Volts)
170 = 170 V_{RWM} (Volts)

Suffix _____
A = 5 % Tolerance Device
C = Bidirectional Device
CA = 5 % Tolerance Bidirectional Device
— = 10 % Tolerance Unidirectional Device

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 V _{RWM} (Volts)	Maximum Reverse Leakage @ V _{RWM} I _R (uA)	Maximum Reverse Voltage @ I _{RSM} V _{RSM} (Volts)	Maximum Reverse Surge Current I _{RSM} (Amps)
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I _T (mA)				
CD214A-T5.0	HD	CD214A-T5.0C	TD	6.40	7.30	10	5.0	800 / 1600	9.6	41.6
CD214A-T5.0A	HE	CD214A-T5.0CA	TE	6.40	7.00	10	5.0	800 / 1600	9.2	43.5
CD214A-T6.0	HF	CD214A-T6.0C	TF	6.67	8.15	10	6.0	800 / 1600	11.4	35.1
CD214A-T6.0A	HG	CD214A-T6.0CA	TG	6.67	7.37	10	6.0	800 / 1600	10.3	38.8
CD214A-T6.5	HH	CD214A-T6.5C	TH	7.22	8.82	10	6.5	500 / 1000	12.3	32.5
CD214A-T6.5A	HK	CD214A-T6.5CA	TK	7.22	7.98	10	6.5	500 / 1000	11.2	35.7
CD214A-T7.0	HL	CD214A-T7.0C	TL	7.78	9.51	10	7.0	200 / 400	13.3	30.1
CD214A-T7.0A	HM	CD214A-T7.0CA	TM	7.78	8.60	10	7.0	200 / 400	12.0	33.3
CD214A-T7.5	HN	CD214A-T7.5C	TN	8.33	10.3	1.0	7.5	100 / 200	14.3	28.0
CD214A-T7.5A	HP	CD214A-T7.5CA	TP	8.33	9.21	1.0	7.5	100 / 200	12.9	31.0
CD214A-T8.0	HQ	CD214A-T8.0C	TQ	8.89	10.9	1.0	8.0	50 / 100	15.0	26.5
CD214A-T8.0A	HR	CD214A-T8.0CA	TR	8.89	9.83	1.0	8.0	50 / 100	13.6	29.4
CD214A-T8.5	HS	CD214A-T8.5C	TS	9.44	11.5	1.0	8.5	10 / 20	15.9	25.1
CD214A-T8.5A	HT	CD214A-T8.5CA	TT	9.44	10.4	1.0	8.5	10 / 20	14.4	27.7
CD214A-T9.0	HU	CD214A-T9.0C	TU	10.0	12.2	1.0	9.0	5 / 10	16.9	23.6
CD214A-T9.0A	HV	CD214A-T9.0CA	TV	10.0	11.1	1.0	9.0	5 / 10	15.4	26.0
CD214A-T10	HW	CD214A-T10C	TW	11.1	13.6	1.0	10	5 / 10	18.8	21.2
CD214A-T10A	HX	CD214A-T10CA	TX	11.1	12.3	1.0	10	5 / 10	17.0	23.5
CD214A-T11	HY	CD214A-T11C	TY	12.2	14.9	1.0	11	5.0	20.1	20.0
CD214A-T11A	HZ	CD214A-T11CA	TZ	12.2	13.2	1.0	11	5.0	18.2	22.0
CD214A-T12	ID	CD214A-T12C	UD	13.3	16.3	1.0	12	5.0	22.0	18.1
CD214A-T12A	IE	CD214A-T12CA	UE	13.3	14.7	1.0	12	5.0	19.9	20.1
CD214A-T13	IF	CD214A-T13C	UF	14.4	17.6	1.0	13	5.0	23.8	16.8
CD214A-T13A	IG	CD214A-T13CA	UG	14.4	15.9	1.0	13	5.0	21.5	18.6
CD214A-T14	IH	CD214A-T14C	UH	15.6	19.1	1.0	14	5.0	25.8	15.5
CD214A-T14A	IK	CD214A-T14CA	UK	15.6	17.2	1.0	14	5.0	23.2	17.2
CD214A-T15	IL	CD214A-T15C	UL	16.7	20.4	1.0	15	5.0	26.9	14.8
CD214A-T15A	IM	CD214A-T15CA	UM	16.7	18.5	1.0	15	5.0	24.4	16.4
CD214A-T16	IN	CD214A-T16C	UN	17.8	21.8	1.0	16	5.0	28.8	13.8
CD214A-T16A	IP	CD214A-T16CA	UP	17.8	19.7	1.0	16	5.0	26.0	15.3
CD214A-T17	IQ	CD214A-T17C	UQ	18.9	23.1	1.0	17	5.0	30.5	13.1
CD214A-T17A	IR	CD214A-T17CA	UR	18.9	20.9	1.0	17	5.0	27.6	14.5
CD214A-T18	IS	CD214A-T18C	US	20.0	24.4	1.0	18	5.0	32.2	12.4
CD214A-T18A	IT	CD214A-T18CA	UT	20.0	22.1	1.0	18	5.0	29.2	13.7
CD214A-T20	IU	CD214A-T20C	UU	22.2	27.1	1.0	20	5.0	35.8	11.1
CD214A-T20A	IV	CD214A-T20CA	UV	22.2	24.5	1.0	20	5.0	32.4	12.3
CD214A-T22	IW	CD214A-T22C	UW	24.4	29.8	1.0	22	5.0	39.4	10.1
CD214A-T22A	IX	CD214A-T22CA	UX	24.4	26.9	1.0	22	5.0	35.5	11.2
CD214A-T24	IY	CD214A-T24C	UY	26.7	32.6	1.0	24	5.0	43.0	9.3
CD214A-T24A	IZ	CD214A-T24CA	UZ	26.7	29.5	1.0	24	5.0	38.9	10.3
CD214A-T26	JD	CD214A-T26C	VD	28.9	35.3	1.0	26	5.0	46.6	8.6
CD214A-T26A	JE	CD214A-T26CA	VE	28.9	31.9	1.0	26	5.0	42.1	9.5
CD214A-T28	JF	CD214A-T28C	VF	31.1	38	1.0	28	5.0	50.0	8.0
CD214A-T28A	JG	CD214A-T28CA	VG	31.1	34.4	1.0	28	5.0	45.4	8.8
CD214A-T30	JH	CD214A-T30C	VH	33.3	40.7	1.0	30	5.0	53.5	7.5
CD214A-T30A	JK	CD214A-T30CA	VK	33.3	36.8	1.0	30	5.0	48.4	8.3
CD214A-T33	JL	CD214A-T33C	VL	36.7	44.9	1.0	33	5.0	59.0	6.8
CD214A-T33A	JM	CD214A-T33CA	VM	36.7	40.6	1.0	33	5.0	53.3	7.5

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_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.

CD214A 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 V _{RWM} (Volts)	Maximum Reverse Leakage @ V _{RWM} I _R (uA)	Maximum Reverse Voltage @ I _{RSM} V _{RSM} (Volts)	Maximum Reverse Surge Current I _{RSM} (Amps)
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I _T (mA)				
CD214A-T36	JN	CD214A-T36C	VN	40	48.9	1.0	36	5.0	64.3	6.2
CD214A-T36A	JP	CD214A-T36CA	VP	40	44.2	1.0	36	5.0	58.1	6.9
CD214A-T40	JQ	CD214A-T40C	VQ	44.4	54.3	1.0	40	5.0	71.4	5.6
CD214A-T40A	JR	CD214A-T40CA	VR	44.4	49.1	1.0	40	5.0	64.5	6.2
CD214A-T43	JS	CD214A-T43C	VS	47.8	58.4	1.0	43	5.0	76.7	5.2
CD214A-T43A	JT	CD214A-T43CA	VT	47.8	52.8	1.0	43	5.0	69.4	5.7
CD214A-T45	JU	CD214A-T45C	VU	50	61.1	1.0	45	5.0	80.3	5.0
CD214A-T45A	JV	CD214A-T45CA	VV	50	55.3	1.0	45	5.0	72.7	5.5
CD214A-T48	JW	CD214A-T48C	VW	53.3	65.1	1.0	48	5.0	85.5	4.7
CD214A-T48A	JX	CD214A-T48CA	VX	53.3	58.9	1.0	48	5.0	77.4	5.2
CD214A-T51	JY	CD214A-T51C	VY	56.7	69.3	1.0	51	5.0	91.1	4.4
CD214A-T51A	JZ	CD214A-T51CA	VZ	56.7	62.7	1.0	51	5.0	82.4	4.9
CD214A-T54	RD	CD214A-T54C	WD	60	73.3	1.0	54	5.0	96.3	4.2
CD214A-T54A	RE	CD214A-T54CA	WE	60	66.3	1.0	54	5.0	87.1	4.6
CD214A-T58	RF	CD214A-T58C	WF	64.4	78.7	1.0	58	5.0	103	3.9
CD214A-T58A	RG	CD214A-T58CA	WG	64.4	71.2	1.0	58	5.0	93.6	4.3
CD214A-T60	RH	CD214A-T60C	WH	66.7	81.5	1.0	60	5.0	107	3.7
CD214A-T60A	RK	CD214A-T60CA	WK	66.7	73.7	1.0	60	5.0	96.8	4.1
CD214A-T64	RL	CD214A-T64C	WL	71.1	86.4	1.0	64	5.0	114	3.5
CD214A-T64A	RM	CD214A-T64CA	WM	71.1	78.6	1.0	64	5.0	103	3.9
CD214A-T70	RN	CD214A-T70C	WN	77.8	95.1	1.0	70	5.0	125	3.2
CD214A-T70A	RP	CD214A-T70CA	WP	77.8	86.0	1.0	70	5.0	113	3.5
CD214A-T75	RQ	CD214A-T75C	WQ	83.3	102	1.0	75	5.0	134	3.0
CD214A-T75A	RR	CD214A-T75CA	WR	83.3	92.1	1.0	75	5.0	121	3.3
CD214A-T78	RS	CD214A-T78C	WS	86.7	106	1.0	78	5.0	139	2.9
CD214A-T78A	RT	CD214A-T78CA	WT	86.7	95.8	1.0	78	5.0	126	3.2
CD214A-T85	RU	CD214A-T85C	WU	94.4	115	1.0	85	5.0	151	2.6
CD214A-T85A	RV	CD214A-T85CA	WV	94.4	104	1.0	85	5.0	137	2.9
CD214A-T90	RW	CD214A-T90C	WW	100	122	1.0	90	5.0	160	2.5
CD214A-T90A	RX	CD214A-T90CA	WX	100	111	1.0	90	5.0	146	2.7
CD214A-T100	RY	CD214A-T100C	WY	111	136	1.0	100	5.0	179	2.2
CD214A-T100A	RZ	CD214A-T100CA	WZ	111	123	1.0	100	5.0	162	2.5
CD214A-T110	SD	CD214A-T110C	XD	122	149	1.0	110	5.0	196	2.0
CD214A-T110A	SE	CD214A-T110CA	XE	122	135	1.0	110	5.0	177	2.3
CD214A-T120	SF	CD214A-T120C	XF	133	163	1.0	120	5.0	214	1.9
CD214A-T120A	SG	CD214A-T120CA	XG	133	147	1.0	120	5.0	193	2.0
CD214A-T130	SH	CD214A-T130C	XH	144	176	1.0	130	5.0	231	1.7
CD214A-T130A	SK	CD214A-T130CA	XK	144	159	1.0	130	5.0	209	1.9
CD214A-T150	SL	CD214A-T150C	XL	167	204	1.0	150	5.0	268	1.5
CD214A-T150A	SM	CD214A-T150CA	XM	167	185	1.0	150	5.0	243	1.6
CD214A-T160	SN	CD214A-T160C	XN	178	218	1.0	160	5.0	287	1.4
CD214A-T160A	SP	CD214A-T160CA	XP	178	197	1.0	160	5.0	259	1.5
CD214A-T170	SQ	CD214A-T170C	XQ	189	231	1.0	170	5.0	304	1.3
CD214A-T170A	SR	CD214A-T170CA	XR	189	209	1.0	170	5.0	275	1.4

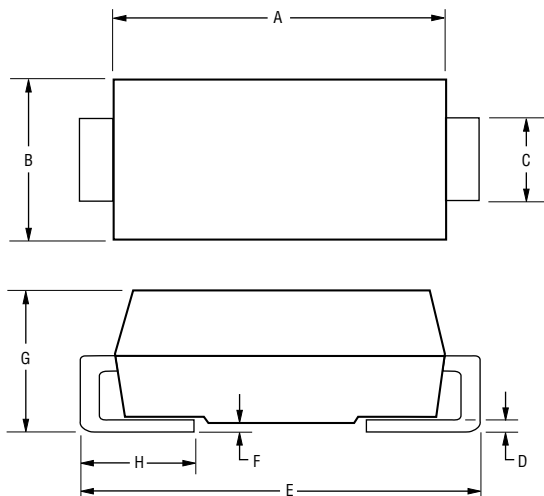
Notes:

1. Suffix 'A' denotes a 5 % tolerance device.
2. Suffix 'C' denotes a bidirectional device.
3. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
4. No suffix denotes a 10 % tolerance unidirectional device.
5. For bidirectional devices with a V_P of 10 volts or less, the I_P limit is double.
6. 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.

CD214A Transient Voltage Suppressor Diode Series

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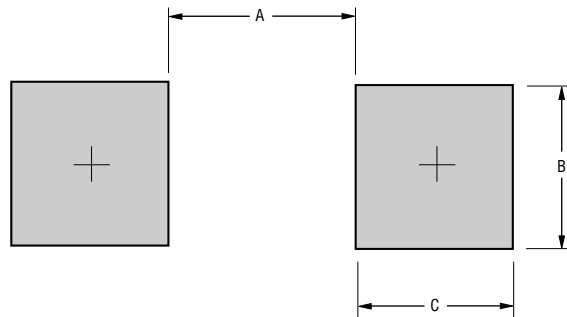
Product Dimensions



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

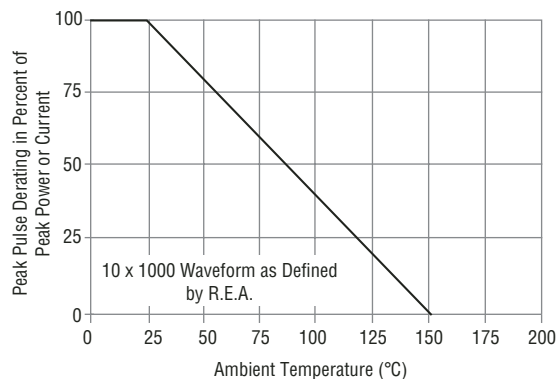
CaseMolded plastic per UL Class 94V-0
 PolarityCathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.002 ounces / 0.064 grams

CD214A Transient Voltage Suppressor Diode Series

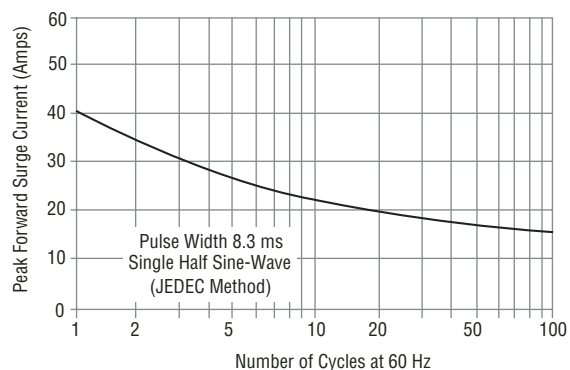
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Rating and Characteristic Curves

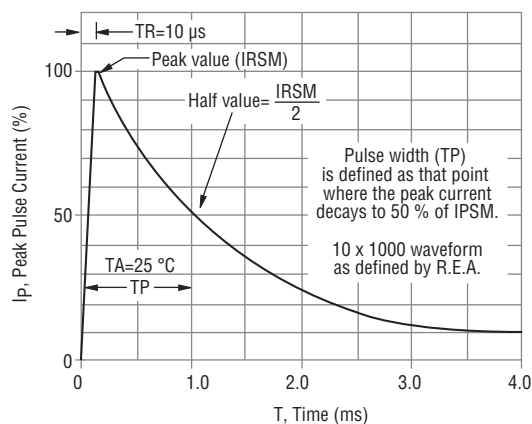
Pulse Derating Curve



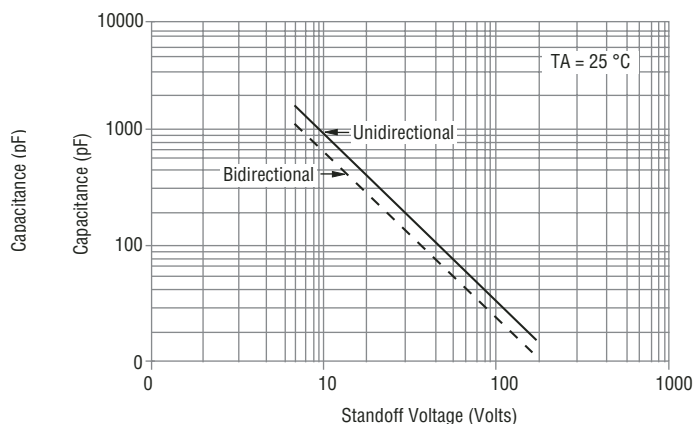
Maximum Non-Repetitive Surge Current



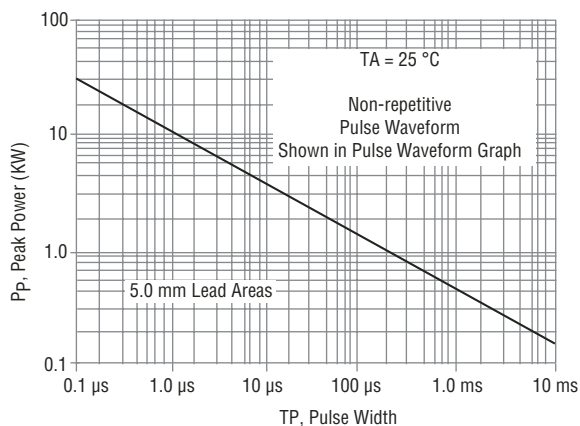
Pulse Waveform



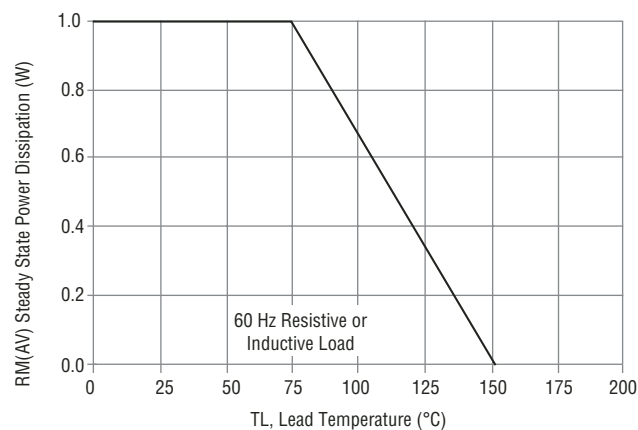
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve

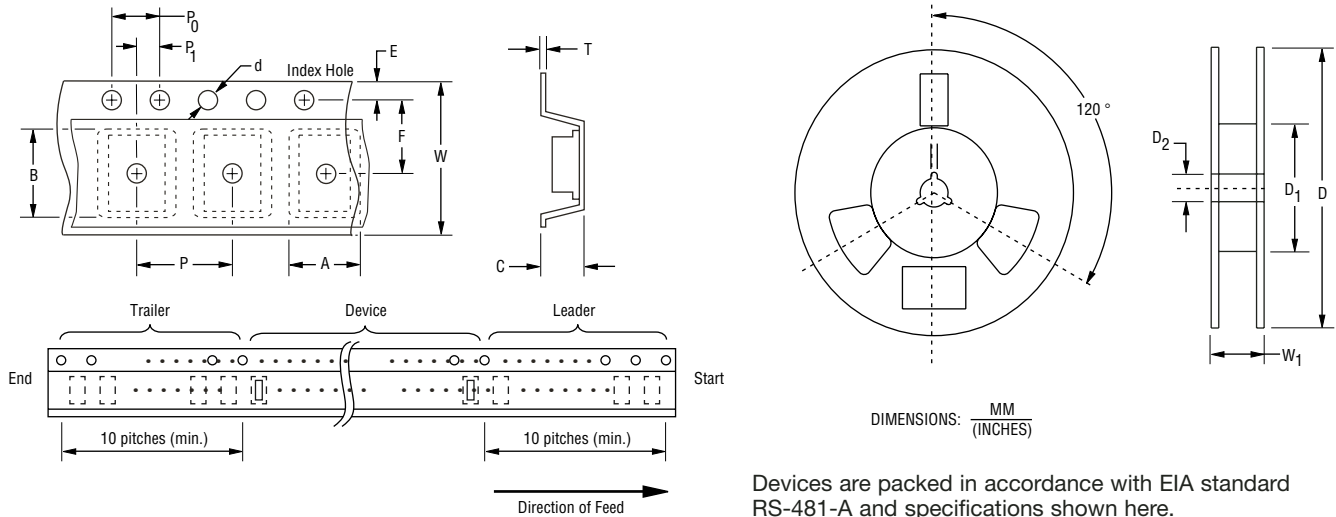


CD214A Transient Voltage Suppressor Diode Series

BOURNS®

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