

*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)



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

*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

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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) |
| 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.

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CD214B Transient Voltage Suppressor Diode Series

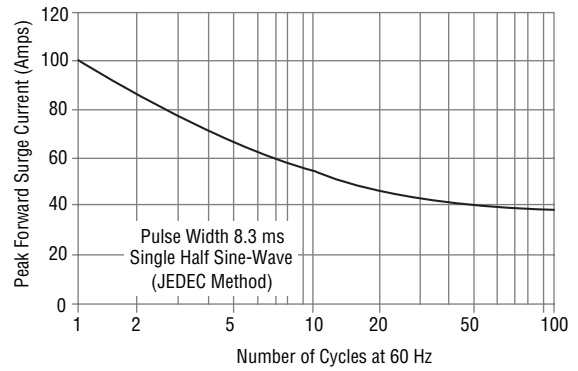


Rating and Characteristic Curves

Pulse Derating Curve



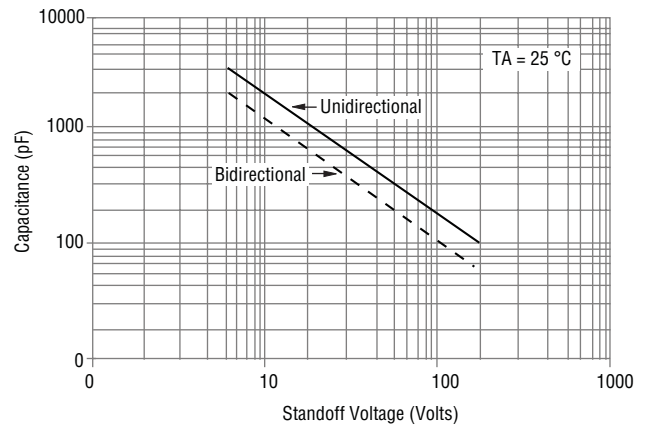
Maximum Non-Repetitive Surge Current



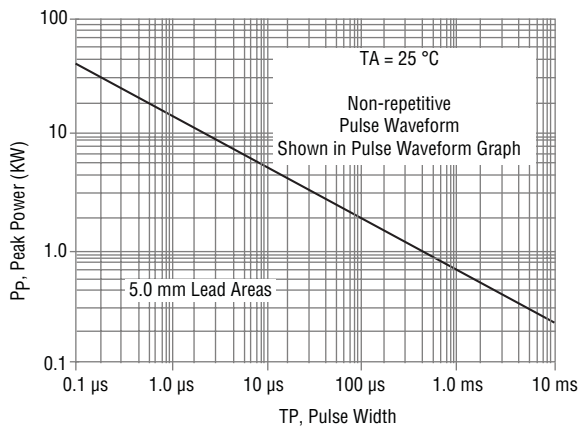
Pulse Waveform



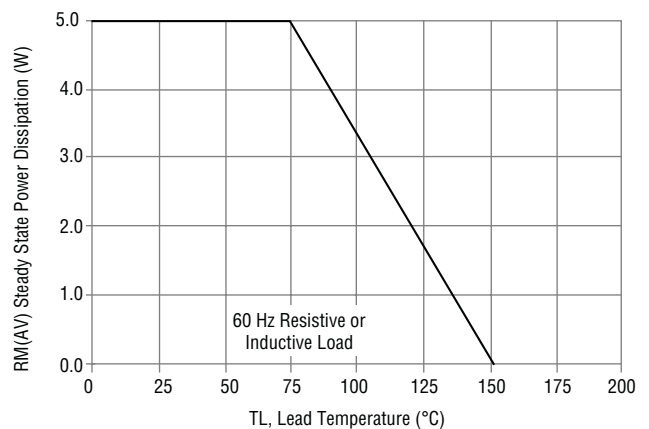
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



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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 |

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- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
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- Экспресс доставка в любую точку России;
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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

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ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А