CD214A-FS1x Series Fast Response Rectifier Chip Diode

General Information

Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Glass Passivated Rectifiers for rectification applications, in a compact chip package compatible with DO-214AC (SMA) size format. The Glass Passivated Rectifiers offer a forward current of 1 A with a choice of repetitive peak reverse voltage of 200 V up to 800 V.

Absolute Maximum Ratings (@ $T_A = 25 \, ^\circ C$ Unless Otherwise Noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>CD214A-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Repetitive Peak Reverse Voltage</td>
<td>$V_{RRM}$</td>
<td>FS1D</td>
</tr>
<tr>
<td>Maximum Average Forward Current</td>
<td>$I_{F(\text{AV})}$</td>
<td>200</td>
</tr>
<tr>
<td>Maximum Peak Forward Surge Current (8.3 ms Single Half Sine-Wave)</td>
<td>$I_{FSM}$</td>
<td>30</td>
</tr>
<tr>
<td>Operating Junction Temperature Range</td>
<td>$T_{OPR}$</td>
<td>-65 to +175</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>$T_{STG}$</td>
<td>-65 to +175</td>
</tr>
</tbody>
</table>

Electrical Characteristics (@ $T_A = 25 \, ^\circ C$ Unless Otherwise Noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition or Model</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Instantaneous Forward Voltage (NOTE 1)</td>
<td>$V_F$</td>
<td>$I_F = 1 , A$</td>
<td>CD214A-FS1D</td>
<td>0.94</td>
<td>0.95</td>
<td>V</td>
</tr>
<tr>
<td>DC Reverse Current</td>
<td>$I_R$</td>
<td>$V_R = V_{RRM}$</td>
<td>0.20</td>
<td>5</td>
<td></td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$T_{rr}$</td>
<td>$I_R = 0.5 , A$</td>
<td></td>
<td>35</td>
<td></td>
<td>nS</td>
</tr>
<tr>
<td>Typical Junction Capacitance</td>
<td>$C_J$</td>
<td>$V_R = 4 , V,$</td>
<td>8.0</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Typical Thermal Resistance (NOTE 2)</td>
<td></td>
<td>Junction to Ambient</td>
<td>$R_{JA}$</td>
<td>70</td>
<td></td>
<td>$^\circ C/W$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junction to Lead</td>
<td>$R_{JL}$</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:  
(1) Pulse width 300 microsecond, 1 % duty cycle.
(2) Mounted on PCB with 5.0 x 5.0 mm (0.2 x 0.2 inch) copper pad areas.

WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.
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Users should verify actual device performance in their specific applications.
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Performance Graphs

**Forward Current Derating Curve**

Average Forward Rectified Current (Amps)

![Graph showing the derating curve for forward current with lead temperature as the x-axis and current as the y-axis.]

**Maximum Peak Forward Surge Current**

Peak Forward Surge Current (Amps)

![Graph showing the peak forward surge current with number of cycles as the x-axis and current as the y-axis.]

**Typical Instantaneous Forward Characteristics**

Instantaneous Forward Current (A)

![Graph showing the instantaneous forward current with instantaneous forward voltage as the x-axis and current as the y-axis.]

**Typical Reverse Characteristics**

Instantaneous Reverse Current (µA)

![Graph showing the instantaneous reverse current with percent of rated peak reverse voltage as the x-axis and current as the y-axis.]

**Typical Junction Capacitance**

Junction Capacitance (pF)

![Graph showing the junction capacitance with reverse voltage as the x-axis and capacitance as the y-axis.]

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**CD214A-FS1x Series Fast Response Rectifier Chip Diode**

**Product Dimensions**

<table>
<thead>
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<th>Dimension</th>
<th>CD214A-FS1 Series</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>4.5 ± 0.10 (0.177 ± 0.004)</td>
</tr>
<tr>
<td>B</td>
<td>2.20 ± 0.10 (0.087 ± 0.004)</td>
</tr>
<tr>
<td>C (Dia.)</td>
<td>0.50 (0.020)</td>
</tr>
<tr>
<td>D</td>
<td>0.95 ± 0.20 (0.037 ± 0.008)</td>
</tr>
<tr>
<td>E</td>
<td>0.96 +0.20/-0.10 (0.038 ±0.008/-0.004)</td>
</tr>
</tbody>
</table>

**Recommended Pad Layout**

**Environmental Specifications**

- Moisture Sensitivity Level: 1
- ESD Classification (HBM): 1C

**How to Order**

<table>
<thead>
<tr>
<th>Common Code</th>
<th>CD = Chip Diode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package</td>
<td>214A = SMA/DO-214AC Compatible</td>
</tr>
<tr>
<td>Model</td>
<td>FS = Fast Response Rectifier Series</td>
</tr>
<tr>
<td>Maximum Average Forward Rectified Current</td>
<td>1 = 1 A</td>
</tr>
<tr>
<td>Maximum Repetitive Peak Reverse Voltage</td>
<td>D = 200 V, G = 400 V, J = 600 V, K = 800 V</td>
</tr>
</tbody>
</table>

| CD214A - FS 1 D |

**Device Code:**
- FS1D = CD214A-FS1D
- FS1G = CD214A-FS1G
- FS1J = CD214A-FS1J
- FS1K = CD214A-FS1K

**Typical Part Marking**

- **DATE CODE:** Y = LAST DIGIT OF YEAR, WW = WEEK NUMBER
- **DEVICE CODE:** FS1D = CD214A-FS1D, FS1G = CD214A-FS1G, FS1J = CD214A-FS1J, FS1K = CD214A-FS1K

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**Packaging Information**

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

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### Item | Symbol | CD214A-FS1 Series |
---|---|---|
Carrier Width | A | 2.45 ± 0.10 (0.096 ± 0.004) |
Carrier Length | B | 4.75 ± 0.10 (1.87 ± 0.004) |
Carrier Depth | C | 1.51 ± 0.10 (0.059 ± 0.004) |
Sprocket Hole | d | 1.50 ± 0.10 (0.059 ± 0.004) |
Reel Outside Diameter | D | 178 ± 2.0 (7.008 ± 0.079) |
Reel Inner Diameter | D1 | 50.0 (1.969) MIN. |
Feed Hole Diameter | D2 | 13.0 ± 0.50 (0.512 ± 0.020) |
Sprocket Hole Position | E | 1.75 ± 0.10 (0.069 ± 0.004) |
Punch Hole Position | F | 5.50 ± 0.05 (0.217 ± 0.002) |
Punch Hole Pitch | P | 4.00 ± 0.10 (0.157 ± 0.004) |
Sprocket Hole Pitch | P0 | 4.00 ± 0.10 (0.157 ± 0.004) |
Embossment Center | P1 | 2.00 ± 0.10 (0.079 ± 0.004) |
Overall Tape Thickness | T | 0.40 (0.016) MAX. |
Tape Width | W | 12.00 ± 0.30 (0.472 ± 0.012) |
Reel Width | W1 | 18.7 (0.736) MAX. |
Quantity per Reel | -- | 3,000 |
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