**Features**
- RoHS compliant*
- Low capacitance - 0.5 pF
- ESD protection >15 kV

**Applications**
- HDMI 1.4
- Digital Visual Interface (DVI)
- USB 3.0 / USB OTG
- Memory protection
- SIM card ports

---

**General Information**

The CDDFN10-0524P device provides ESD, EFT and Surge protection for high-speed data ports meeting IEC 61000-4-2 (ESD) requirements. The Transient Voltage Suppressor array, protecting up to 4 data lines, offers a Working Peak Reverse Voltage of 5 V and Minimum Breakdown Voltage of 6 V.

The DFN10 packaged device will mount directly onto the industry standard DFN10 footprint. Bourns® Chip Diodes conform to JEDEC standards, are easy to handle with standard pick and place equipment and their flat configuration minimizes roll away.

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**Absolute Maximum Ratings (@ TA = 25 °C Unless Otherwise Noted)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>CDDFN10-0524P</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Pulse Power (Ipp = 8/20 μS)</td>
<td>Ppp</td>
<td>30</td>
<td>W</td>
</tr>
<tr>
<td>Peak Pulse Current (Ipp = 8/20 μS)</td>
<td>Ipp</td>
<td>3.8</td>
<td>A</td>
</tr>
<tr>
<td>Operating Voltage (I/O pin - GND)</td>
<td>VDC</td>
<td>6</td>
<td>V</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>TSTG</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>TOPR</td>
<td>-55 to +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

---

**Electrical Characteristics (@ TA = 25 °C Unless Otherwise Noted)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage @ 1 mA</td>
<td>VBR</td>
<td>6</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Reverse Standoff Voltage</td>
<td>VRWM</td>
<td>5</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Forward Voltage If =15 mA (Gnd to I/O Pin)</td>
<td>VF</td>
<td>0.9</td>
<td>1.1</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Channel Leakage Current VRWM = 5 V, (I/O Pin to Gnd)</td>
<td>ID</td>
<td>1.5</td>
<td></td>
<td>μA</td>
<td></td>
</tr>
<tr>
<td>Clamping Voltage IEC 61000-4-2 +6 kV, Contact mode (I/O Pin to Gnd)</td>
<td>VC</td>
<td>12</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Channel Input Capacitance Vpin3,8=0 V, Vin=2.5 V, f=1 MHZ (I/O Pin to Gnd)</td>
<td>CIN</td>
<td>0.5</td>
<td>0.65</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Channel to Channel Input Capacitance Vpin3,8=0 V, Vin=2.5 V, f=1 MHZ (Between I/O pins)</td>
<td>CCROSS</td>
<td>0.04</td>
<td>0.08</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>ESD Protection per IEC 6-1000-4-2 Contact Discharge Air Discharge</td>
<td>8</td>
<td>15</td>
<td>10</td>
<td>15</td>
<td>kV</td>
</tr>
<tr>
<td>ESD Dynamic Turn-on Resistance (any I/O Pin to Gnd)</td>
<td>Rdynamic</td>
<td>0.3</td>
<td></td>
<td></td>
<td>Ω</td>
</tr>
<tr>
<td>EFT Protection per IEC 61000-4-4 @ 5/50 ns</td>
<td>40</td>
<td></td>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Surge Protection per IEC 61000-4-5 @ 8/20 μs</td>
<td></td>
<td></td>
<td>3.8</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

---

**WARNING** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

Specifications are subject to change without notice.
Users should verify actual device performance in their specific applications.
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**Product Dimensions**

**Recommended Footprint**

**Typical Part Marking**
CDDFN10-0524P .......................................................... 524

**Environmental Specifications**

- Moisture Sensitivity Level: 3
- ESD Classification (HBM): 3B

**How to Order**

- Common Diode
- Chip Diode
- Package: DFN10 = DFN-10 Package
- Working Peak Reverse Voltage: 05 = 5 VRWM (Volts)
- Number of Lines: 24 = 2 Ground / 4 Data Lines
- Suffix: P = Ultra-low Capacitance

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CDDFN10-0524P - Surface Mount TVS Diode Array

Rating & Characteristic Curves

Typical Variation C_{IN} vs V_{IN}

Typical Variation of C_{IO-to-IO} vs V_{IN}

Insertion Loss S21 (I/O-to-GND)

Analog Cross Talk

Transmission Line Pulsing (TLP)

Data Lines Connection

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The Bourns® Model CDDFN10-0524P is designed to protect high-speed data ports from ESD transients. For high-speed ports such as HDMI 1.4 and USB 3.0, maintaining signal line impedance is a critical requirement. The use of a DFN10 package using a “feed-through” layout provides minimal impedance change on the high-speed data line, while the ultra-low capacitance performance of the device limits signal degradation on each channel.

Feed-Through Layout - Model CDDFN10-0524P in HDMI Application
The product is packaged in an 8 mm x 4 mm tape and reel format per EIA-481-A standard.

**Item** | **Symbol** | **DFN-10** |
--- | --- | --- |
Carrier Width | A | 1.45 ± 0.05 (0.057 ± 0.002) |
Carrier Length | B | 2.95 ± 0.05 (0.116 ± 0.002) |
Carrier Depth | C | 0.90 ± 0.05 (0.035 ± 0.002) |
Sprocket Hole | d | 1.55 ± 0.05 (0.061 ± 0.002) |
Reel Outside Diameter | D | 178 (7.008) |
Reel Inner Diameter | D1 | 60.0 MIN. (2.363) |
Feed Hole Diameter | D2 | 13.0 ± 0.20 (0.512 ± 0.008) |
Sprocket Hole Position | E | 1.75 ± 0.10 (0.069 ± 0.004) |
Punch Hole Position | F | 3.50 ± 0.05 (0.138 ± 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 ± 0.05 (0.079 ± 0.002) |
Overall Tape Thickness | T | 0.20 ± 0.10 (0.008 ± 0.004) |
Tape Width | W | 8.00 ± 0.20 (0.315 ± 0.008) |
Reel Width | W1 | 14.4 MAX. (0.567) |
Quantity per Reel | -- | 3000 |

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