

Features

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

Applications

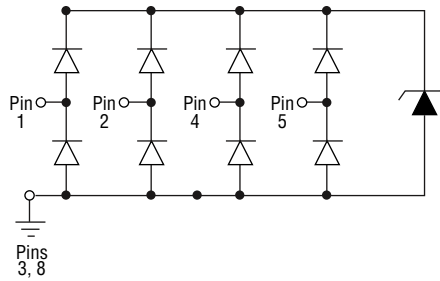
- HDMI 1.4
- Digital Visual Interface (DVI)
- USB 3.0 / USB OTG
- Memory protection
- SIM card ports

CDDFN10-0524P - Surface Mount TVS Diode Array

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.



Additional Information

Click these links for more information:



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

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

Parameter	Symbol	CDDFN10-0524P	Unit
Peak Pulse Power (t _p = 8/20 μS)	P _{pp}	30	W
Peak Pulse Current (t _p = 8/20 μS)	I _{pp}	3.8	A
Operating Voltage (I/O pin - GND)	V _{DC}	6	V
Storage Temperature	T _{STG}	-55 to +150	°C
Operating Temperature	T _{OPR}	-55 to +85	°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
Breakdown Voltage @ 1 mA	V _{BR}	6			V
Reverse Standoff Voltage	V _{RWM}			5	V
Forward Voltage I _f =15 mA (Gnd to I/O Pin)	V _F		0.9	1.1	V
Channel Leakage Current V _{RWM} = 5 V, (I/O Pin to Gnd)	I _D			1.5	μA
Clamping Voltage IEC 61000-4-2 +6 kV, Contact mode (I/O Pin to Gnd)	V _C		12		V
Channel Input Capacitance V _{pin3,8} =0 V, V _{in} =2.5 V, f=1 MHZ (I/O Pin to Gnd)	C _{IN}		0.5	0.65	pF
Channel to Channel Input Capacitance V _{pin3,8} =0 V, V _{in} =2.5 V, f=1 MHZ (Between I/O pins)	C _{CROSS}		0.04	0.08	pF
ESD Protection per IEC 6-1000-4-2 Contact Discharge		8		10	kV
Air Discharge		15		15	kV
ESD Dynamic Turn-on Resistance (any I/O Pin to Gnd)	R _{dynamic}		0.3		Ω
EFT Protection per IEC 61000-4-4 @ 5/50 ns		40			A
Surge Protection per IEC 61000-4-5 @ 8/20 μs				3.8	A

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

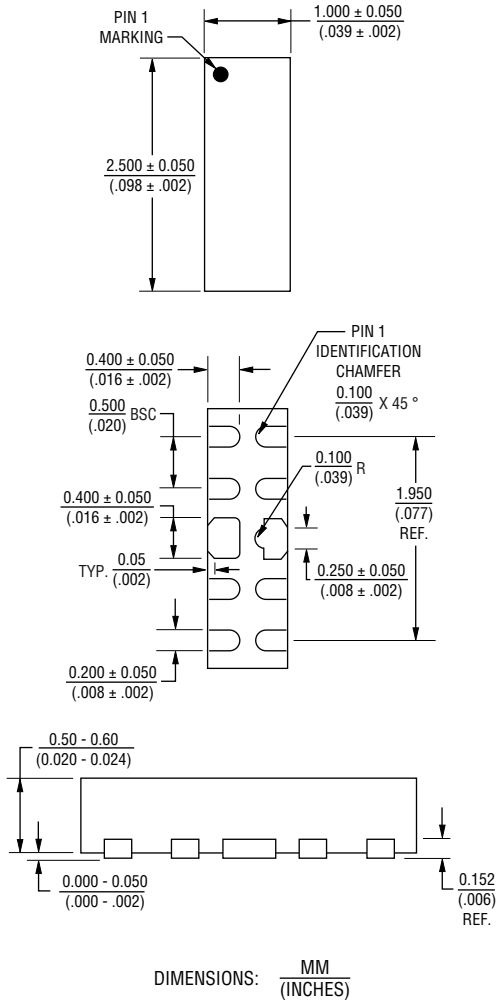
Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

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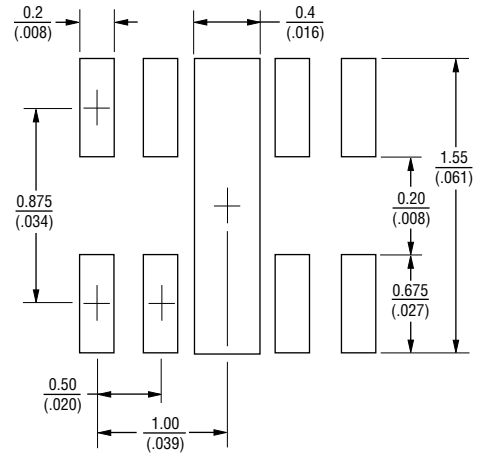
CDDFN10-0524P - Surface Mount TVS Diode Array

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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

CD DFN10 - 05 24 P

Common Diode _____
Chip Diode _____

Package _____
DFN10 = DFN-10 Package

Working Peak Reverse Voltage _____
05 = 5 V_{RWM} (Volts)

Number of Lines _____
24 = 2 Ground / 4 Data Lines

Suffix _____
P = Ultra-low Capacitance

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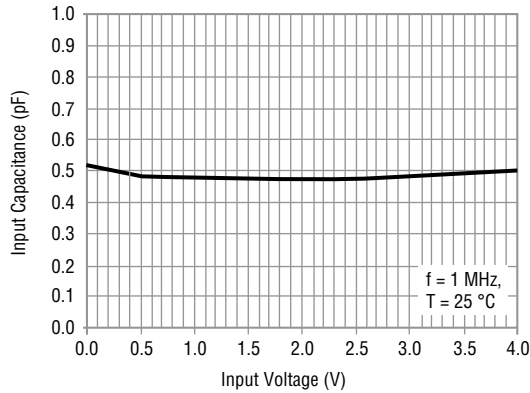
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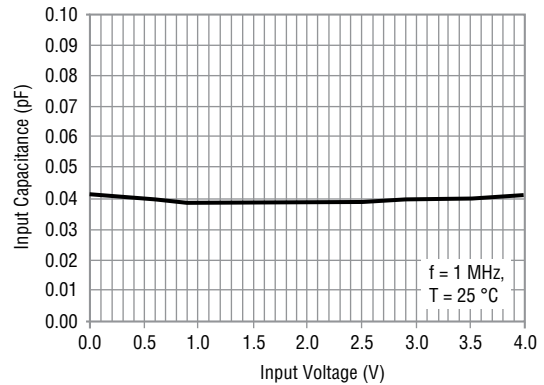
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Rating & Characteristic Curves

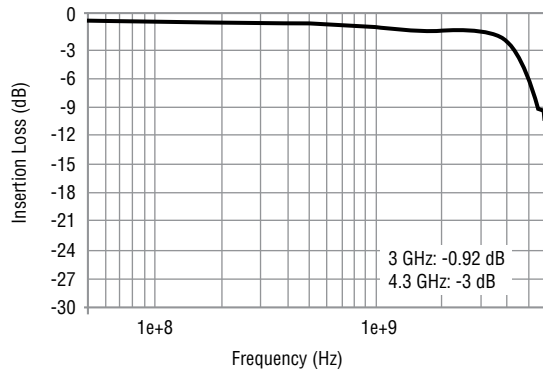
Typical Variation C_{IN} vs V_{IN}



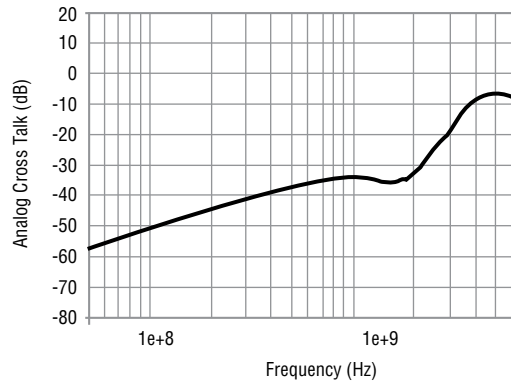
Typical Variation of $C_{IO-to-IO}$ vs V_{IN}



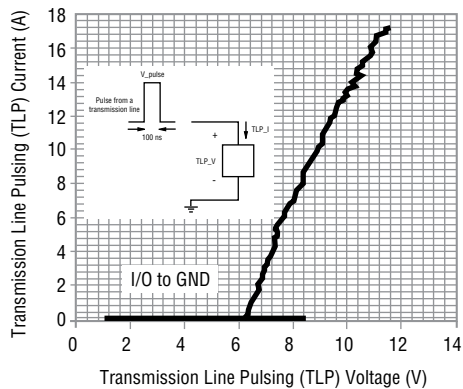
Insertion Loss S_{21} (I/O-to-GND)



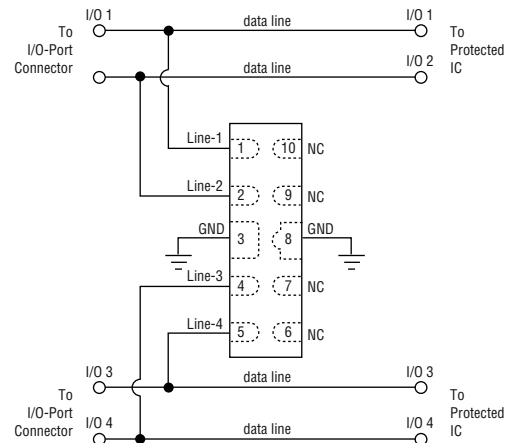
Analog Cross Talk



Transmission Line Pulsing (TLP)



Data Lines Connection



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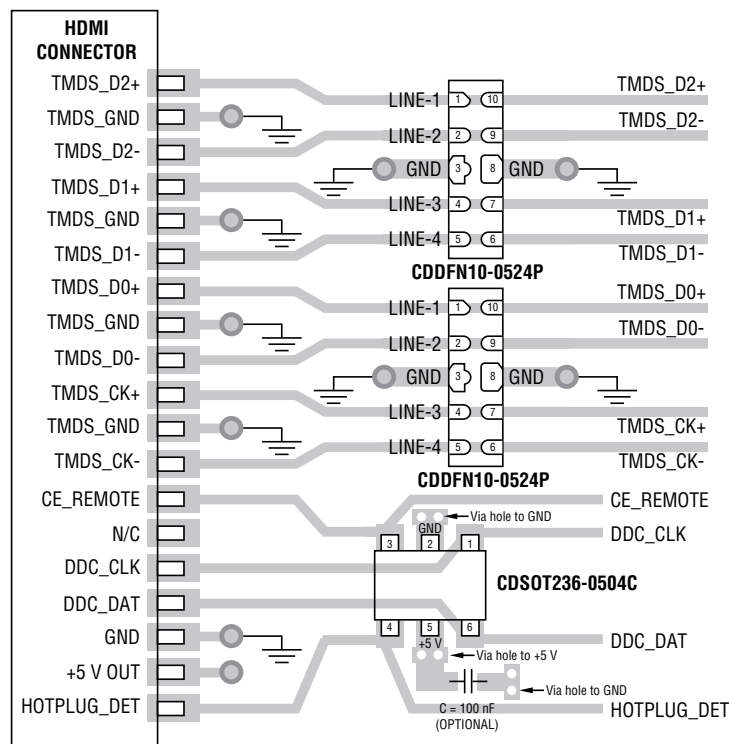
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CDDFN10-0524P - Surface Mount TVS Diode Array

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Reference Application

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 “feedthrough” 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*

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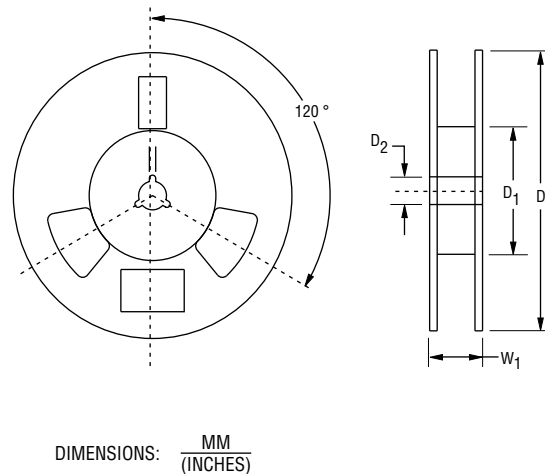
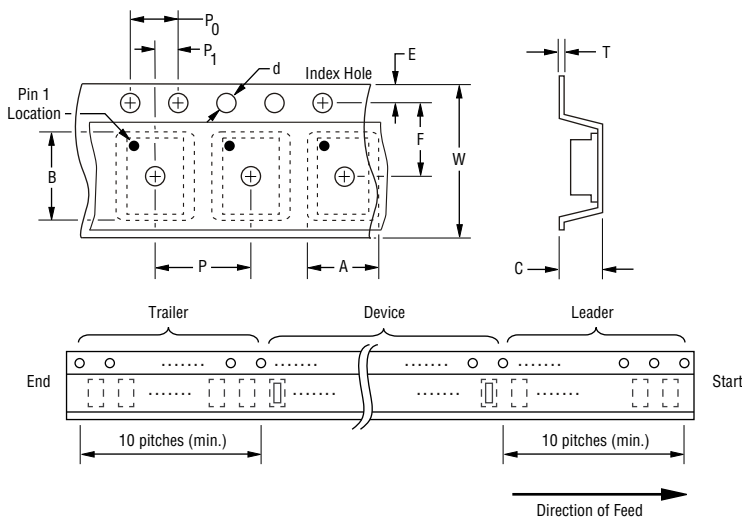
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CDDFN10-0524P - Surface Mount TVS Diode Array

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Packaging Information

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	$\frac{1.45 \pm 0.05}{(0.057 \pm 0.002)}$
Carrier Length	B	$\frac{2.95 \pm 0.05}{(0.116 \pm 0.002)}$
Carrier Depth	C	$\frac{0.90 \pm 0.05}{(0.035 \pm 0.002)}$
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{178}{(7.008)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$
Tape Width	W	$\frac{8.00 \pm 0.20}{(0.315 \pm 0.008)}$
Reel Width	W ₁	$\frac{14.4}{(0.567)}$ MAX.
Quantity per Reel	--	3000

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