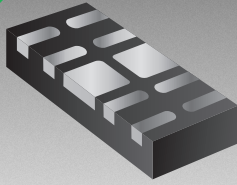




**THE DATASHEET OF
CDDFN10-0524P**



*RoHS COMPLIANT



BOURNS®

Features

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

Applications

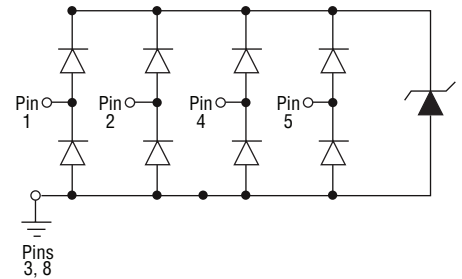
- HDMI 1.4
- Digital Visual Interface (DVI)
- USB 3.0 / USB OTG
- Memory protection
- SIM card ports

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.



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 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011. Specifications are subject to change without notice.

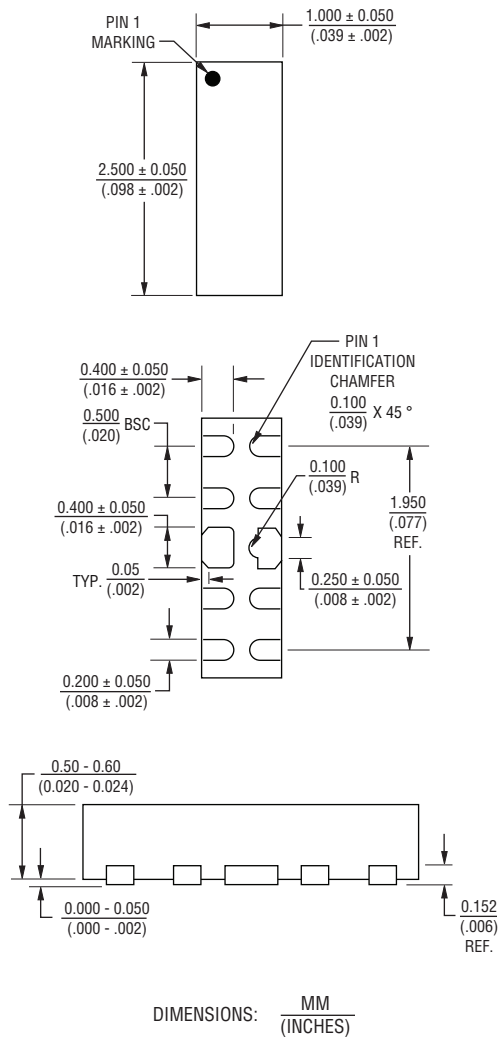
Users should verify actual device performance in their specific applications.

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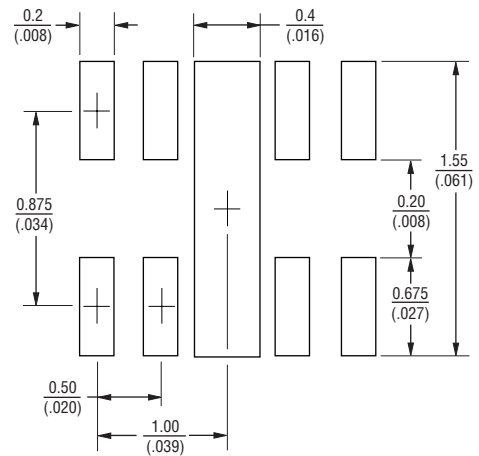
CDDFN10-0524P - Surface Mount TVS Diode Array



Product Dimensions



Recommended Footprint



Typical Part Marking

CDDFN10-0524P524

Environmental Specifications

Moisture Sensitivity Level3
 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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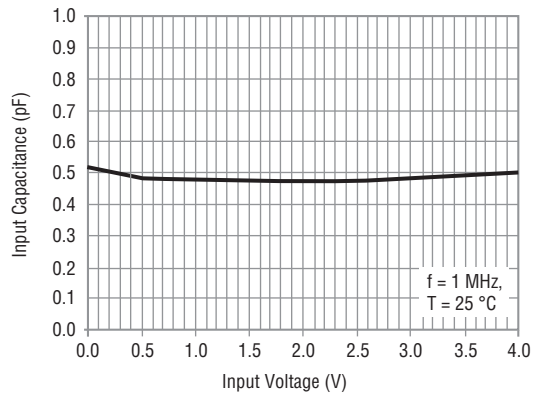
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CDDFN10-0524P - Surface Mount TVS Diode Array

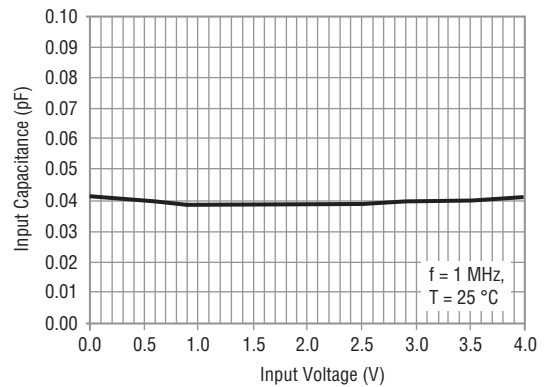
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Rating & Characteristic Curves

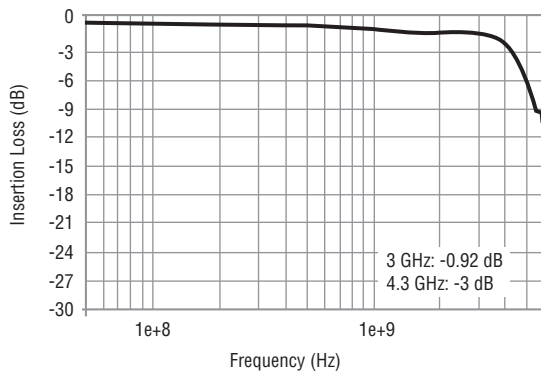
Typical Variation C_{IN} vs V_{IN}



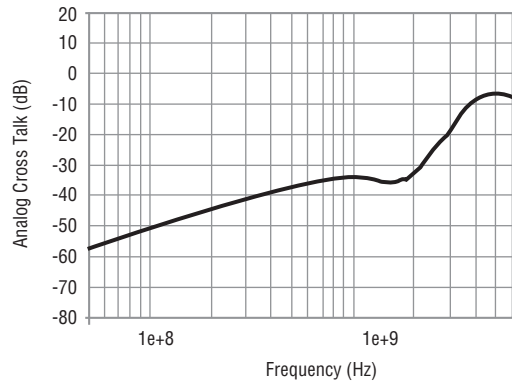
Typical Variation of $C_{IO-to-IO}$ vs V_{IN}



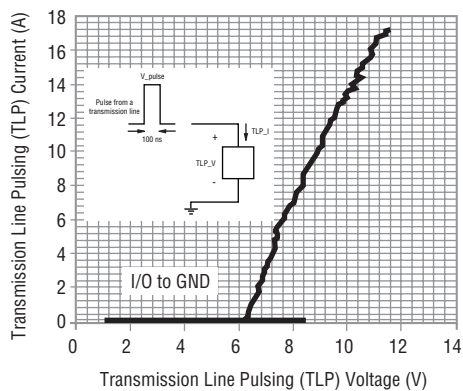
Insertion Loss S21 (I/O-to-GND)



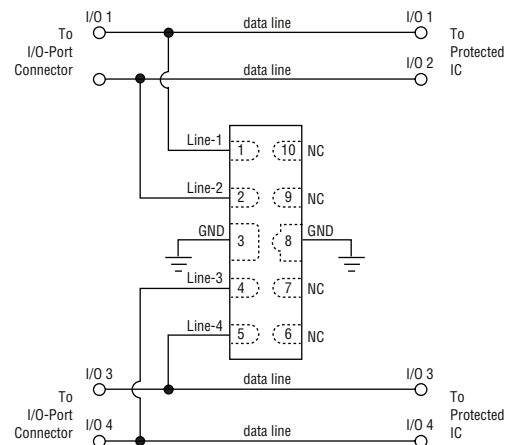
Analog Cross Talk



Transmission Line Pulsing (TLP)



Data Lines Connection



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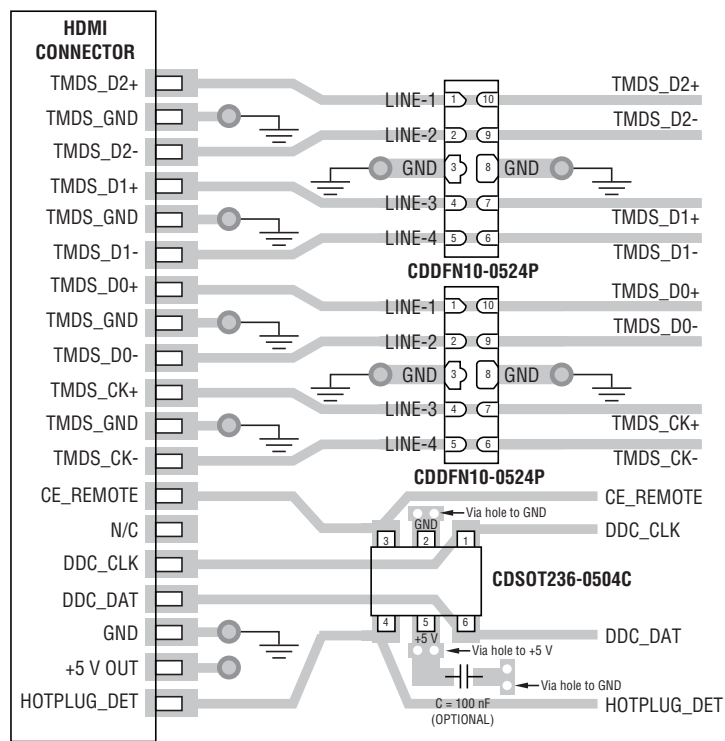
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CDDFN10-0524P - Surface Mount TVS Diode Array

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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 “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*

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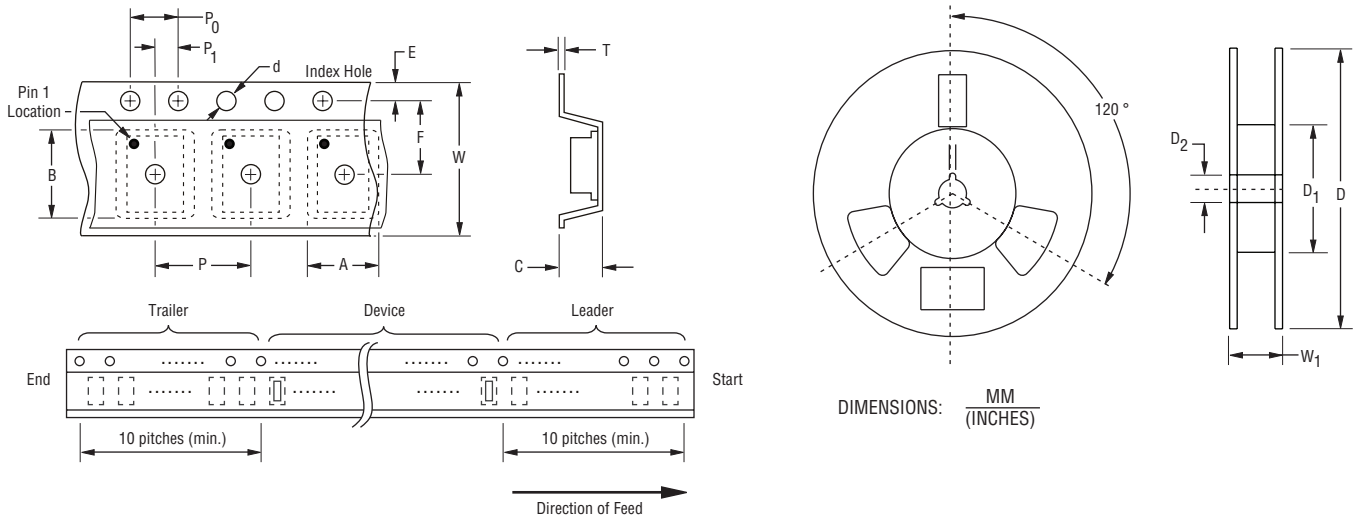
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CDDFN10-0524P - Surface Mount TVS Diode Array

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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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-  Shortage Management
-  Alternative Solution
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