

Applications

- High Definition Multimedia Interface (HDMI)
- Digital Visual Interface (DVI)
- Ethernet 10/100/1000 Mb/s
- SATA interface
- Portable electronics

CDMSP10-0504M – Surface Mount TVS Diode Array

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

Parameter	Symbol	Minimum	Nominal	Maximum	Unit
Reverse Standoff Voltage ¹	V_{RWM}			5	V
Leakage Current ¹ @ V_{RWM}	I_D			5	μA
Channel Leakage Current @ V_{RWM}	I_{CD}			1	μA
Reverse Breakdown Voltage @ V_{RWM}	V_{BR}	6		9	V
Forward Voltage ³ @ $I_F = 15\text{ mA}$	V_F		0.8	1	V
ESD Clamping Voltage ² @ IEC 61000-4-2 +6 kV, Contact Mode	V_C		12.5		V
ESD Clamping Voltage ¹ @ IEC 61000-4-2 +6 kV, Contact Mode	V_C		9.5		V
ESD Dynamic Turn-On Resistance - I/O^2	R_{dyn_io}		0.33		Ohms
ESD Dynamic Turn-On Resistance - V_{DD}^1	R_{dyn_VDD}		0.16		Ohms
Channel Input Capacitance ² - 1 @ $V_{PIN3}=5\text{ V}$, $V_{IN}=2.5\text{ V}$, $f = 1\text{ MHz}$	C_{IN-1}		0.55	0.65	pF
Channel Input Capacitance ² - 2 @ $V_{PIN3}=N/C$, $V_{IN}=2.5\text{ V}$, $f = 1\text{ MHz}$	C_{IN-2}		0.70	0.80	pF
Channel to Channel Input Capacitance - 1 @ $V_{PIN3}=5\text{ V}$, $V_{IN}=2.5\text{ V}$, $f = 1\text{ MHz}$ (Between channel pins)	$C_{CROSS-1}$		0.08	0.09	pF
Channel to Channel Input Capacitance - 2 @ $V_{PIN3}=N/C$, $V_{IN}=2.5\text{ V}$, $f = 1\text{ MHz}$ (Between channel pins)	$C_{CROSS-2}$		0.10	0.11	pF
Variation of Channel Input Capacitance - 1 @ $V_{PIN3}=5\text{ V}$, $V_{IN}=2.5\text{ V}$, $f = 1\text{ MHz}$ (Channel x Pin to GND, Channel y Pin to GND)	ΔC_{IN-1}		0.04	0.06	pF
Variation of Channel Input Capacitance - 2 @ $V_{PIN3}=N/C$, $V_{IN}=2.5\text{ V}$, $f = 1\text{ MHz}$ (Channel x Pin to GND, Channel y Pin to GND)	ΔC_{IN-2}		0.05	0.08	pF

Notes:

1. Test from V_{dd} Pin 3 to Gnd Pin 8
2. Test from Pin 1,2,4 or 5 to Gnd Pin 8
3. Test from Gnd Pin 8 to V_{dd} Pin 3

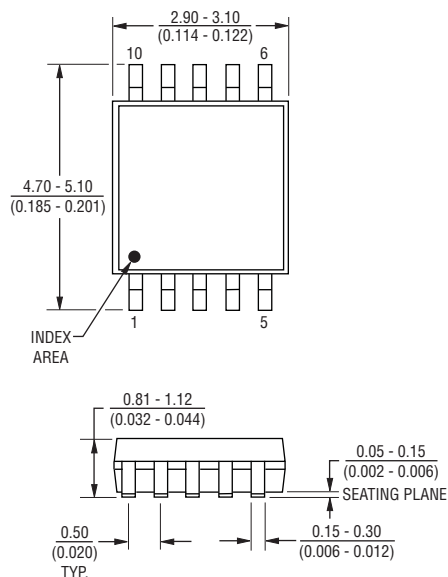
Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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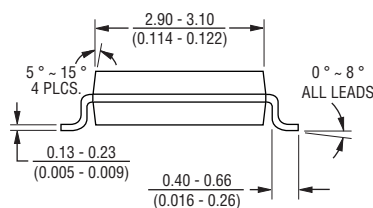
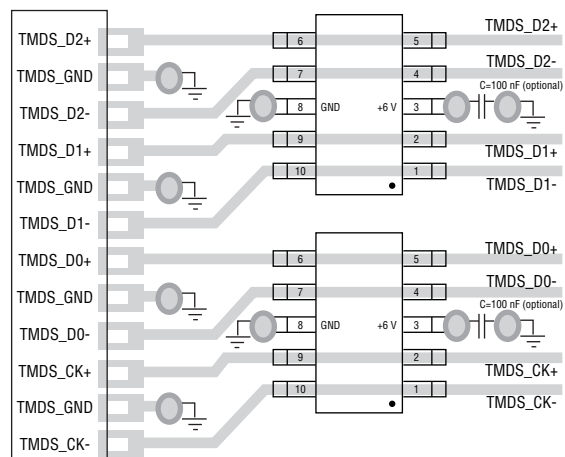
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Recommended Footprint



Typical Application

This ESD protection device is ideal in high speed data port protection such as HDMI where capacitance per line is critical parameter. See example connection below.


$$\text{DIMENSIONS} = \frac{\text{MILLIMETERS}}{(\text{INCHES})}$$


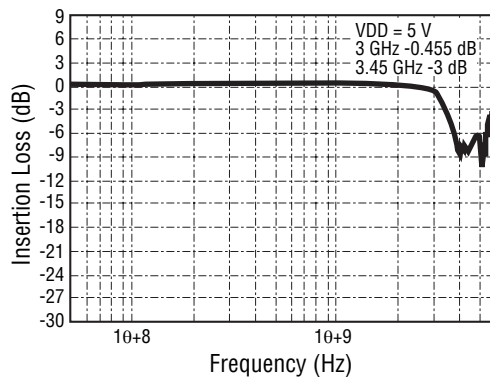
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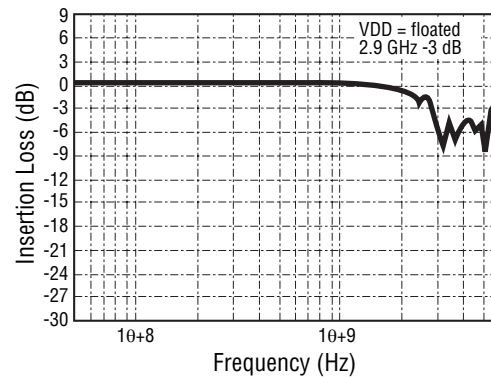
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Characteristic Curves

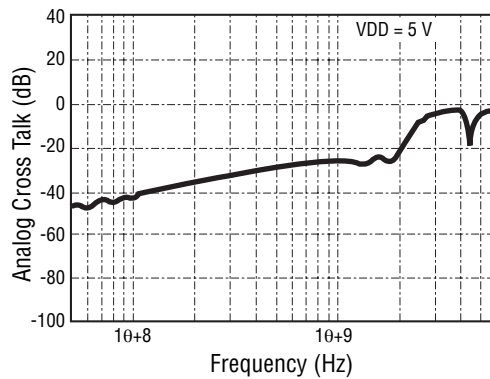
Insertion Loss S21 (I/O-to-GND)



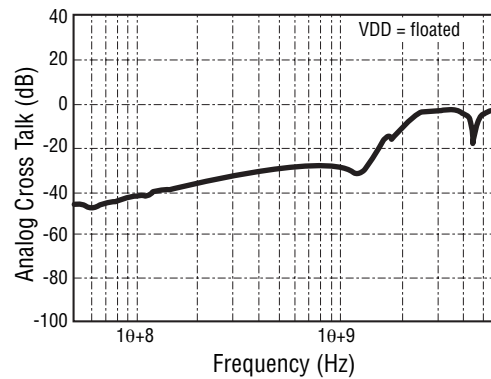
Insertion Loss S21 (I/O-to-GND)



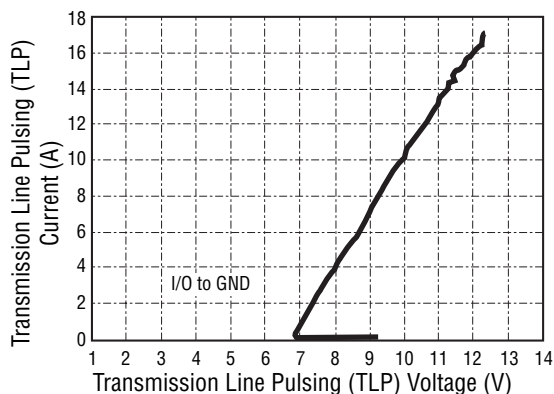
Analog Cross Talk



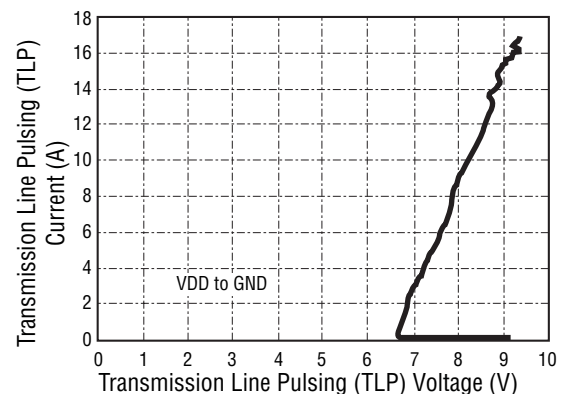
Analog Cross Talk



Transmission Line Pulsing (TLP) Measurement



Transmission Line Pulsing (TLP) Measurement



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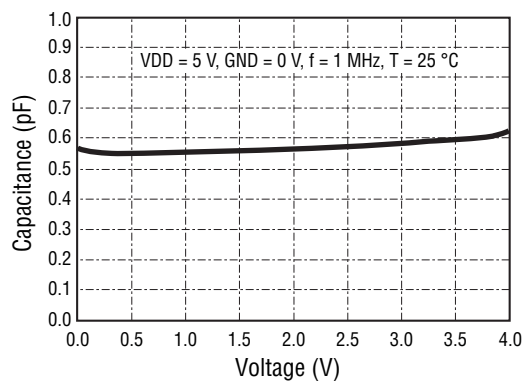
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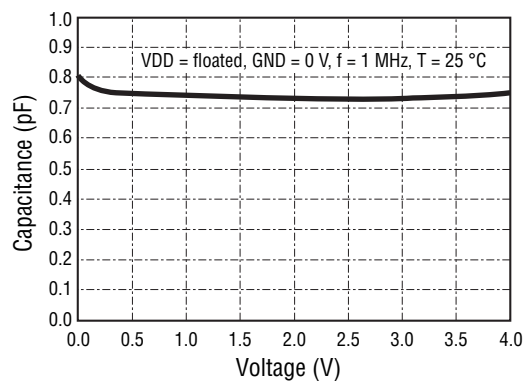
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Characteristic Curves

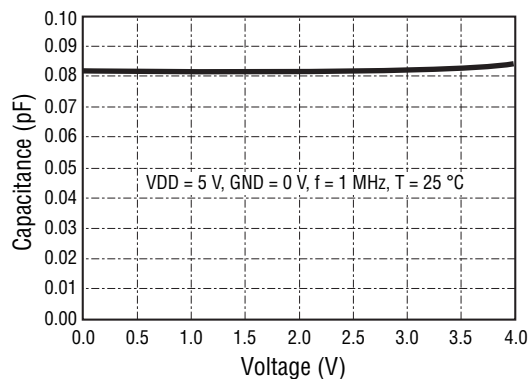
Typical Variation of C_{IN} vs. V_{IN}



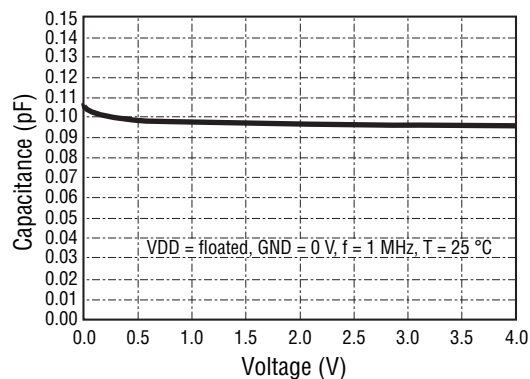
Typical Variation of C_{IN} vs. V_{IN}



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



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



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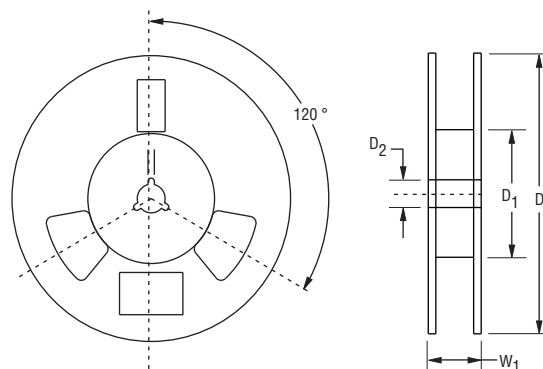
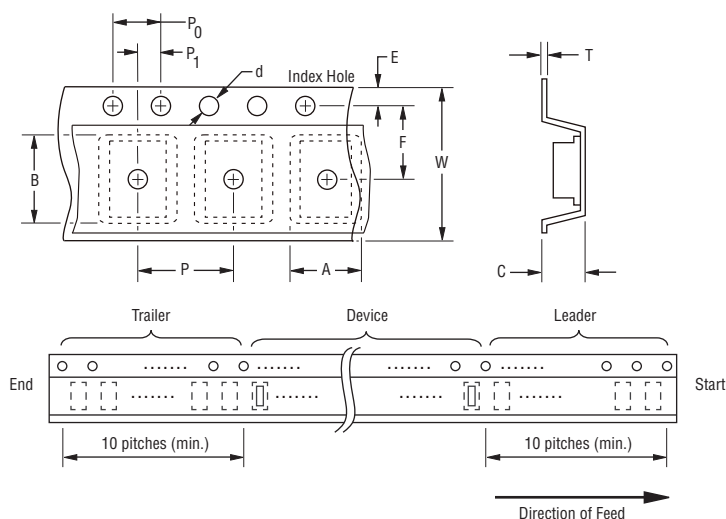
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Packaging Information

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



Devices are packed in accordance with EIA standard RS-481-A.

DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Item	Symbol	MSOP-10L
Carrier Width	A	$\frac{5.5 \pm 0.10}{(0.216 \pm 0.004)}$
Carrier Length	B	$\frac{3.5 \pm 0.10}{(0.138 \pm 0.004)}$
Carrier Depth	C	$\frac{1.5 \pm 0.10}{(0.059 \pm 0.004)}$
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	$\frac{50.0}{(1.969)} \text{ MIN.}$
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	$\frac{8.00 \pm 0.10}{(0.314 \pm 0.004)}$
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	$\frac{12.0 \pm 0.20}{(0.470 \pm 0.008)}$
Reel Width	W ₁	$\frac{14.4}{(0.567)}$
Quantity per Reel	--	3000

BOURNS®

Asia-Pacific:

Tel: +886-2 2562-4117

Email: asiacus@bourns.com

Europe:

Tel: +36 88 885 877

Email: eurocus@bourns.com

The Americas:

Tel: +1-951 781-5500

Email: americus@bourns.com

www.bourns.com

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