

Features

- Lead free as standard
- RoHS compliant*
- Low capacitance - 1.2 pF
- No insertion loss to 2 GHz
- ESD, EFT, surge protection

Applications

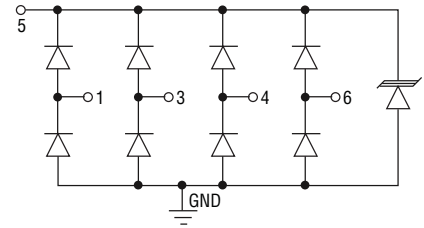
- USB 2.0 & USB OTG
- Multimedia card interface
- SD card interface
- SIM ports
- Gigabit Ethernet

CDDFN6-0504P - TVS/Steering Diode Array

General Information

The CDDFN6-0504P device provides ESD, EFT and surge protection for high speed data ports meeting IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) 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 molded packaged device will mount directly onto the industry standard DFN6 or QFN6 footprint. Bourns® Chip Diodes are easy to handle with standard pick and place equipment and their flat configuration minimizes roll away.



Absolute Maximum Ratings

Parameter	Symbol	CDDFN6-0504P	Unit
Peak Pulse Power ($t_p = 8/20 \mu s$) (NOTE 1)	P_{pk}	150	W
Peak Pulse Current ($t_p = 8/20 \mu s$) (NOTE 1)	I_{pp}	6.5	A
Storage Temperature	T_{STG}	-55 to +150	°C
Operating Temperature	T_{OPR}	-55 to +125	°C
Operating Supply Voltage	VDC	6	V
ESD per IEC 61000-4-2 (Air)(I/O to GND) ESD per IEC 61000-4-2 (Contact) (I/O to GND)	V_{ESD_IO}	18 14	kV
ESD per IEC 61000-4-2 (Air)(V _{CC} to GND) ESD per IEC 61000-4-2 (Contact)(V _{CC} to GND)	V_{ESD_VCC}	30 30	kV
DC Voltage at any I/O Pin	V_{IO}	(GND-0.5) to (V _{CC} +0.5)	V

Note 1. See Power Derating Curve.

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

Parameter	Symbol	CDDFN6-0504P	Unit
Maximum Reverse Standoff Voltage ¹	V_{RWM}	5.0	V
Maximum Leakage Current ¹ @ V_{RWM}	I_D	5.0	μA
Maximum Channel Leakage Current @ V_{RWM}	I_{CD}	1.0	μA
Minimum Reverse Breakdown Voltage ¹ @ $I_{BV}=1 \text{ mA}$	V_{BR}	6.0	V
Maximum Forward Voltage ⁴ @ $I_F = 15 \text{ mA}$	V_F	1.0	V
Typical Clamping Voltage ²	V_C	8.1	V
Typical ESD Clamping Voltage - I/O per IEC 61000-4-2 +6 kV, Contact ²	V_{clamp_io}	12.5	V
Typical ESD Clamping Voltage-V _{CC} ¹	V_{clamp_VCC}	9.0	V
Maximum Channel Input Capacitance ² @ $V_{PIN5}=5 \text{ V}$, $V_{PIN2}=0 \text{ V}$, $V_{IN}=2.5 \text{ V}$, $f=1 \text{ MHz}$	C_{IN}	1.6	pF
Maximum Channel to Channel Input Capacitance ³ @ $V_{PIN5}=5 \text{ V}$, $V_{PIN2}=0 \text{ V}$, $V_{IN}=2.5 \text{ V}$, $f=1 \text{ MHz}$	C_{CROSS}	0.14	pF
Maximum Variation of Channel Input Capacitance @ $V_{PIN5}=5 \text{ V}$, $V_{PIN2}=0 \text{ V}$, $V_{IN}=2.5 \text{ V}$, $f=1 \text{ MHz}$. (I/O Pin to GND)	ΔC_{IN}	0.06	pF

Note 1. Pin 5 to Pin 2 (ground).

Note 2. Pin 1, 3, 4 or 6 to Pin 2 (ground).

Note 3. Between any two of pins 1, 3, 4, 6.

Note 4. Pin 2 (ground) to Pin 5.



WARNING
Cancer and
Reproductive Harm

www.DSEWarnings.com

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

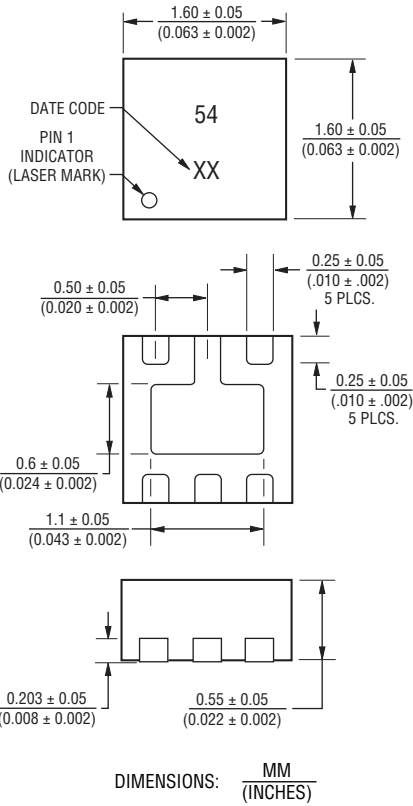
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CDDFN6-0504P - TVS/Steering Diode Array

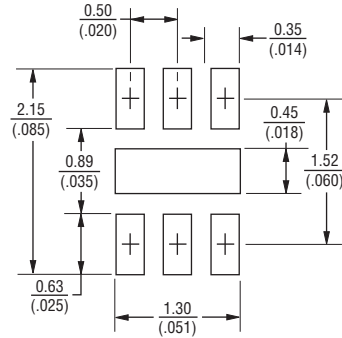
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Product Dimensions

This is a molded DFN6 package with lead free Nickel-Paladium-Gold (Ni/Pd/Au) on the lead frame. It has a flammability rating of UL 94V-0.



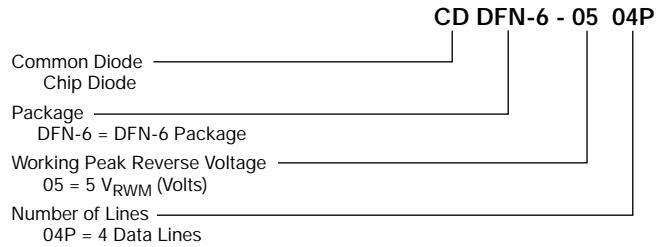
Recommended Footprint



Typical Part Marking

CDDFN6-0504P 54

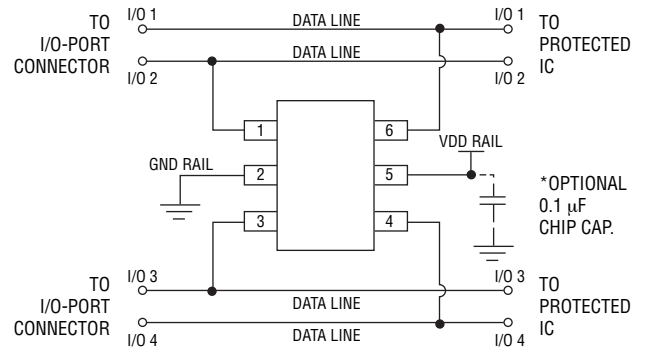
How to Order



Pin Out

Pin	Function
1	I/O
2	GND
3	I/O
4	I/O
5	V_{CC}
6	I/O
Center Tab	GND

Typical Application



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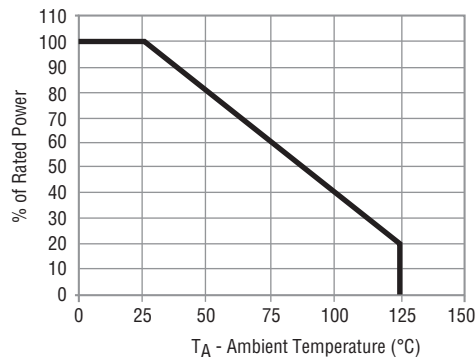
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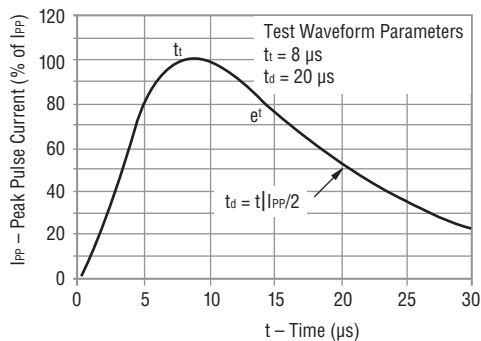
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Rating & Characteristic Curves

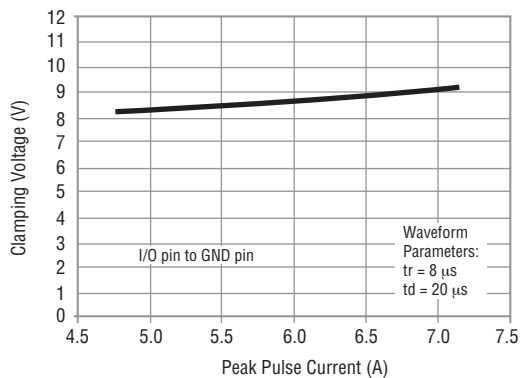
Power Derating Curve



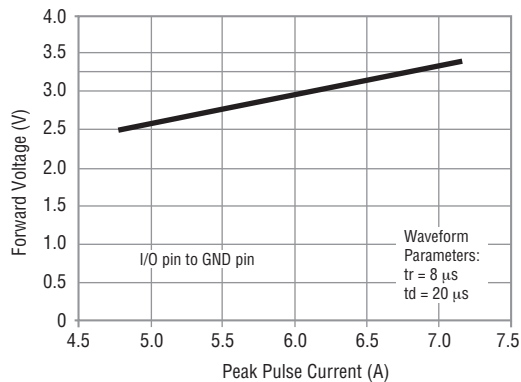
Pulse Waveform



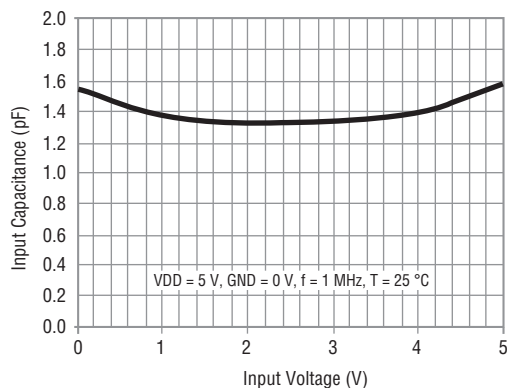
Clamping Voltage vs. Peak Pulse Current



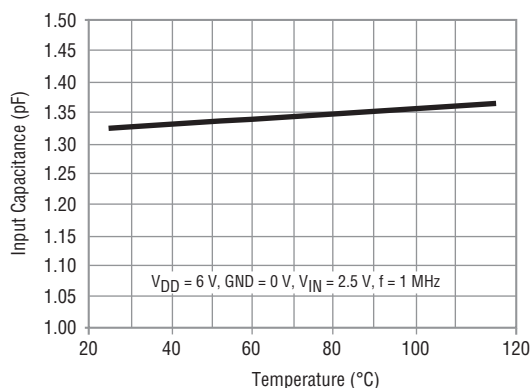
Forward Voltage vs. Forward Current



Capacitance vs. Line Voltage



Capacitance vs. Temperature



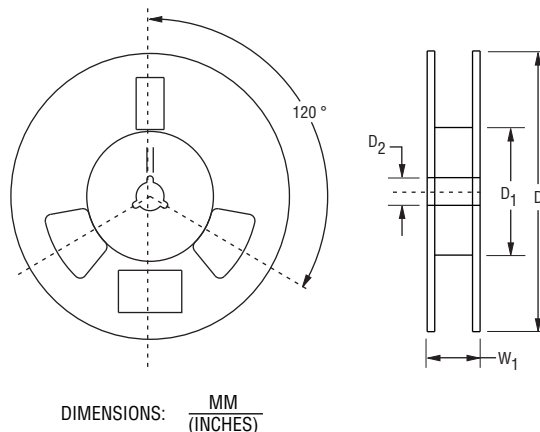
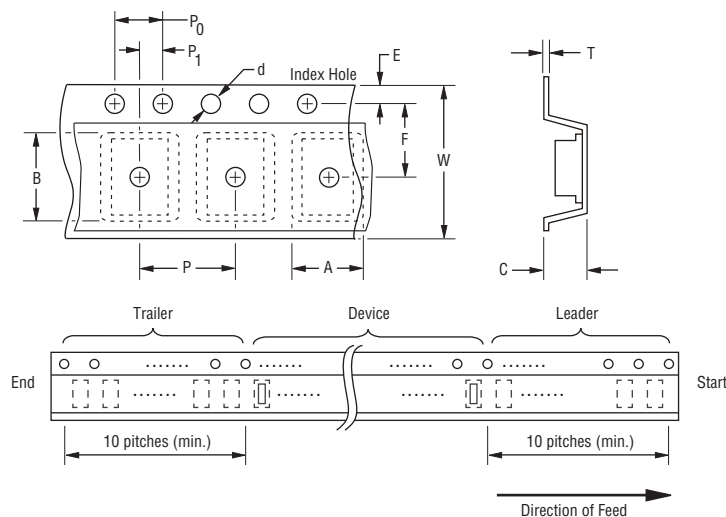
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Packaging Information

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



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

Item	Symbol	DFN-6
Carrier Width	A	$\frac{1.78 \pm 0.05}{(0.070 \pm 0.002)}$
Carrier Length	B	$\frac{1.78 \pm 0.05}{(0.070 \pm 0.002)}$
Carrier Depth	C	$\frac{0.69 \pm 0.05}{(0.027 \pm 0.002)}$
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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