

Features

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

Applications

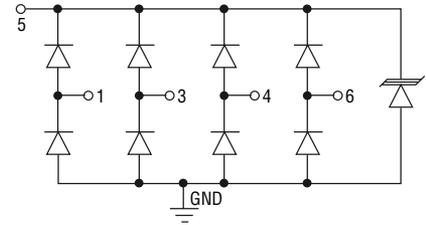
- USB 2.0 & USB OTG
- Multimedia card interface
- SD card interface
- SIM ports
- Gigabit Ethernet

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.

*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.
Specifications are subject to change without notice.

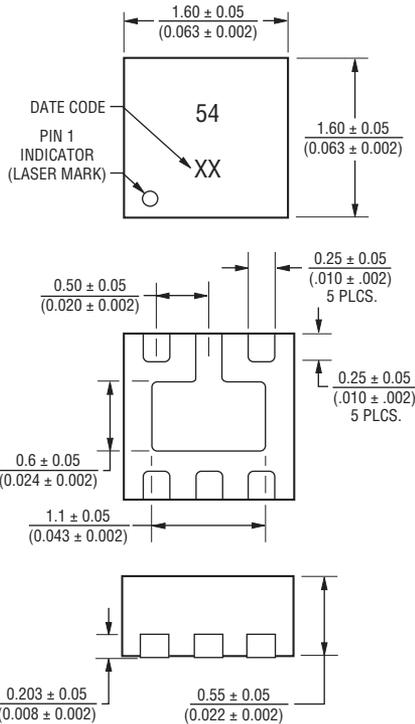
Customers should verify actual device performance in their specific applications.

CDDFN6-0504P - TVS/Steering Diode Array



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.

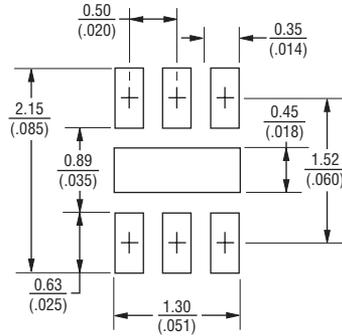


DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Pin Out

| Pin | Function |
|------------|-----------------|
| 1 | I/O |
| 2 | GND |
| 3 | I/O |
| 4 | I/O |
| 5 | V _{CC} |
| 6 | I/O |
| Center Tab | GND |

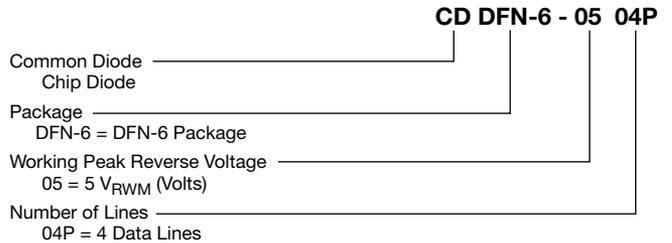
Recommended Footprint



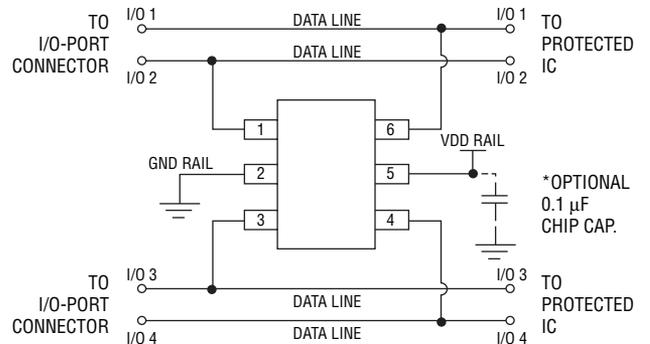
Typical Part Marking

CDDFN6-0504P54

How to Order



Typical Application

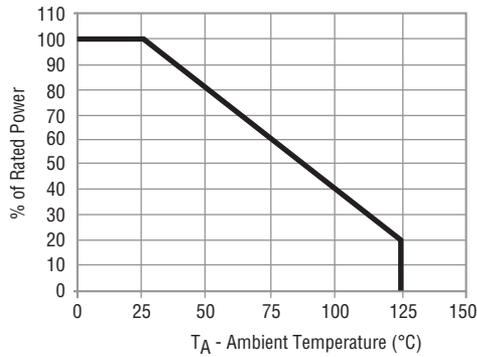


CDDFN6-0504P - TVS/Steering Diode Array

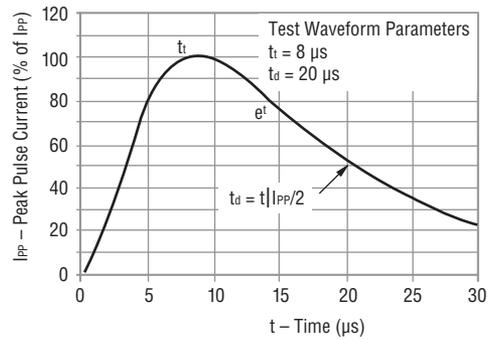
BOURNS®

Rating & Characteristic Curves

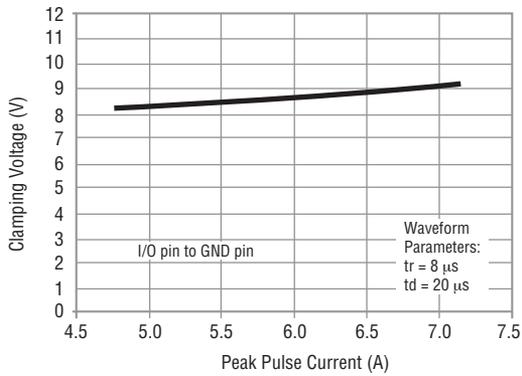
Power Derating Curve



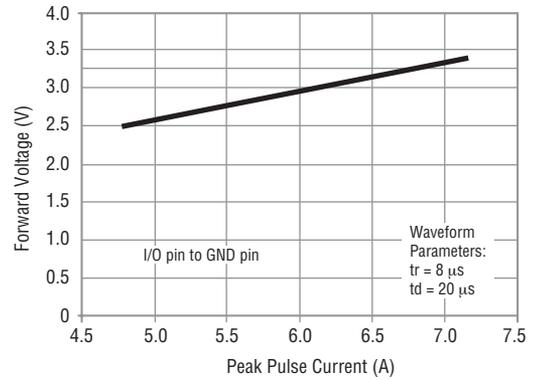
Pulse Waveform



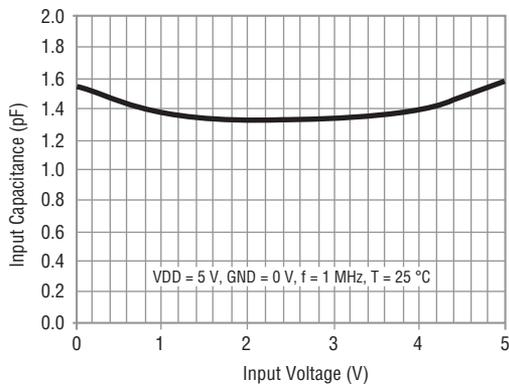
Clamping Voltage vs. Peak Pulse Current



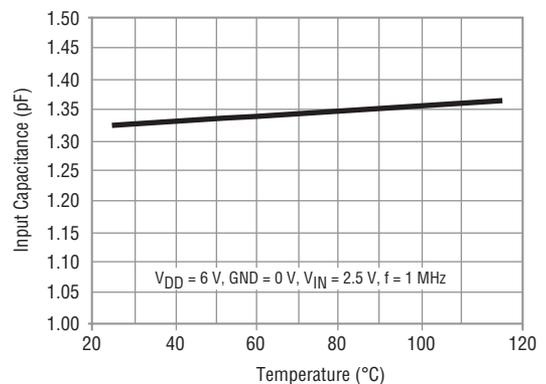
Forward Voltage vs. Forward Current



Capacitance vs. Line Voltage



Capacitance vs. Temperature

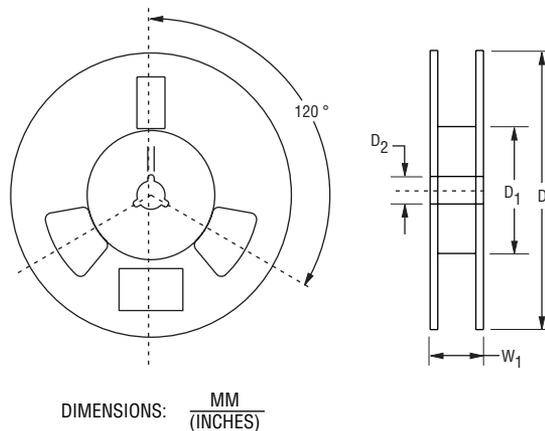
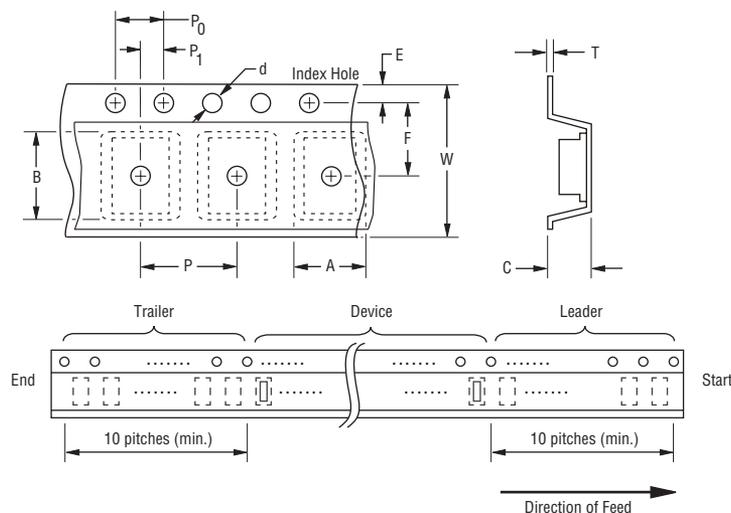


CDDFN6-0504P - TVS/Steering Diode Array

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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 |

REV. 01/11

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AMEYA360

Components Supply Platform

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