

### Features

- Low operating voltage: 5.0V
- Low clamping voltage
- Low capacitance: 0.6pF typical
- Protects four I/O lines
- Small package saves board space
- Totally Lead-Free & Fully RoHS Compliant
- Halogen and Antimony Free. "Green" Device
- Array of surge rated diodes with internal TVS Diode
- ESD protection for high-speed data lines to IEC 61000-4-2 (ESD)  $\pm 20\text{kV}$  (air),  $\pm 15\text{kV}$  (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 5A (8/20 $\mu\text{s}$ )

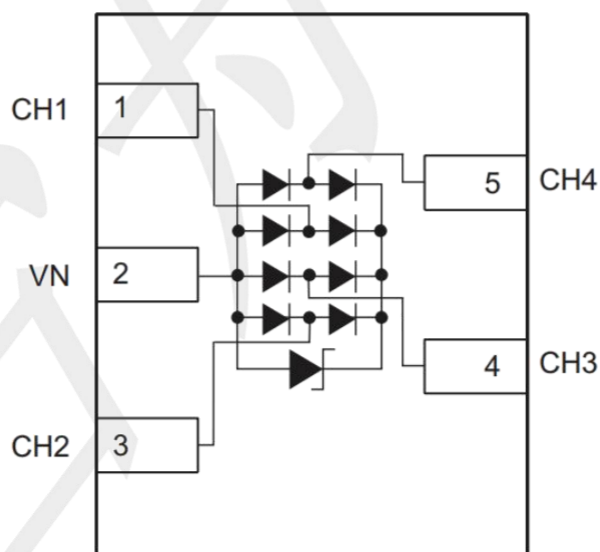
### Mechanical Characteristics

- Package: DFN1308-5
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound
- Terminal Connections: See Diagram Below
- -IEC 61000-4-2 (ESD) immunity test

### Applications

- HDMI, USB 3.0, MDDI, SATA ports
- Portable Electronics
- Computers and Peripheral
- Digital visual interface
- Microcontroller Input Protection

### Dimensions and Pin Configuration



DFN1308-5

(Top View)

# TPESD05K4P5

## Ultra-Low Capacitance TVS Diode

[WWW.TECHPUBLIC.COM](http://WWW.TECHPUBLIC.COM)

### Absolute Maximum Ratings (T<sub>amb</sub>=25°C unless otherwise specified)

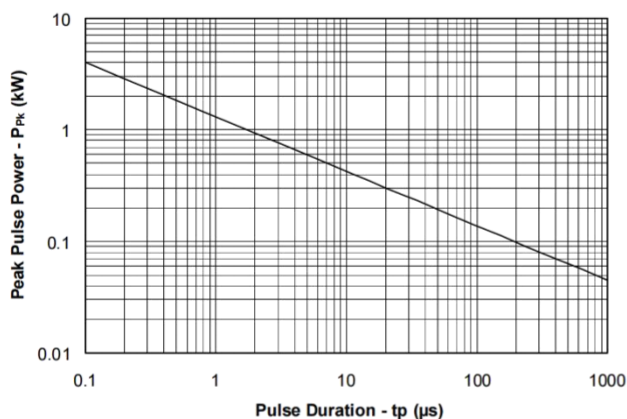
| Parameter                                                      | Symbol | Value       | Unit |
|----------------------------------------------------------------|--------|-------------|------|
| Peak Pulse Power (8/20μs)                                      | Ppk    | 60          | W    |
| Peak Pulse Current (8/20μs)                                    | Ipp    | 5           | A    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | VESD   | ±20<br>±15  | KV   |
| Operating Temperature Range                                    | TJ     | -55 to +125 | °C   |
| Storage Temperature Range                                      | Tstg   | -55 to +150 | °C   |

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

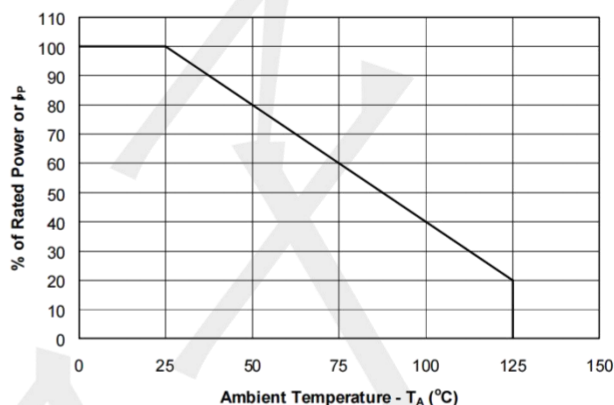
| Parameter               | Symbol    | Min | Typ | Max  | Unit | Test Condition                                  |
|-------------------------|-----------|-----|-----|------|------|-------------------------------------------------|
| Reverse Working Voltage | VRWM      | --  | --  | 5    | V    | Any I/O pin to ground                           |
| Breakdown Voltage       | VBR       | 6.5 | --  | 9.0  | V    | IT= 1mA, Any I/O pin to ground                  |
| Reverse Leakage Current | IR        | --  | --  | 0.08 | uA   | VRWM=5V, Any I/O pin to ground                  |
| Forward Voltage         | VF        | --  | 0.8 | 1.2  | V    | IF = 10mA                                       |
| Clamping Voltage        | VC        | --  | --  | 9    | V    | Ipp=1A(8x 20us pulse),<br>Any I/O pin to ground |
| Clamping Voltage        | VC        | --  | --  | 12   | V    | Ipp=5A(8x 20us pulse),<br>VCC pin to ground     |
| Junction Capacitance    | Cvo-GND   | --  | 0.6 | --   | pF   | VR=0V, f=1MHz,<br>Any I/O to GND                |
|                         | Ci/o- I/O | --  | 0.3 | --   | pF   | VR=0V, f=1MHz,<br>between I/O pins              |

### Characteristic Curves

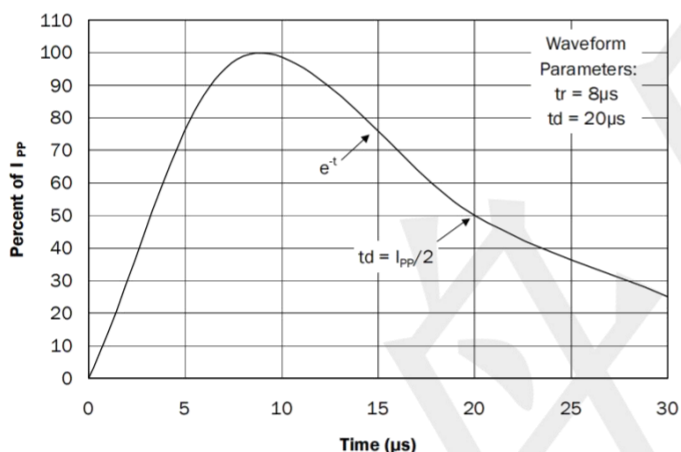
Non-Repetitive Peak Pulse Power vs. Pulse Time



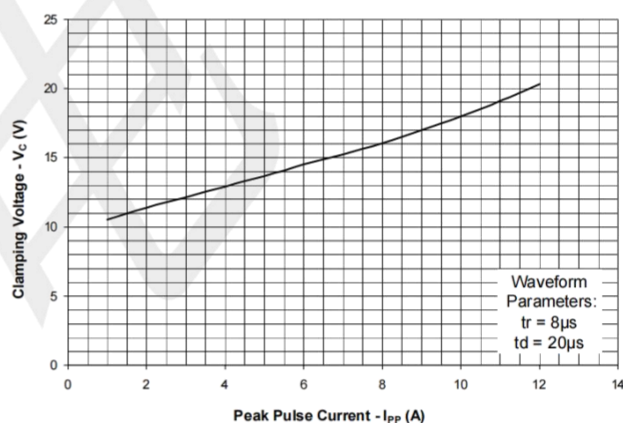
Power Derating Curve



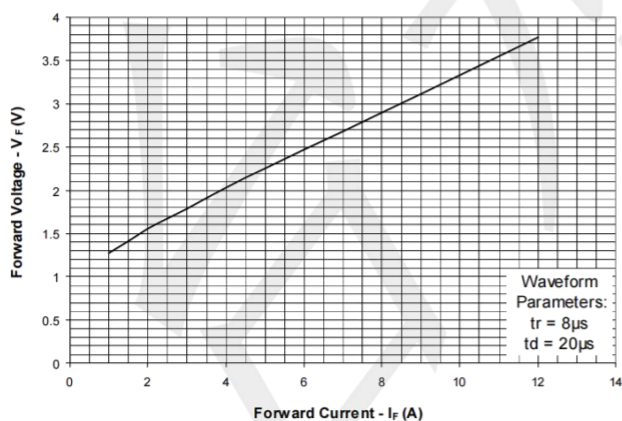
Pulse Waveform



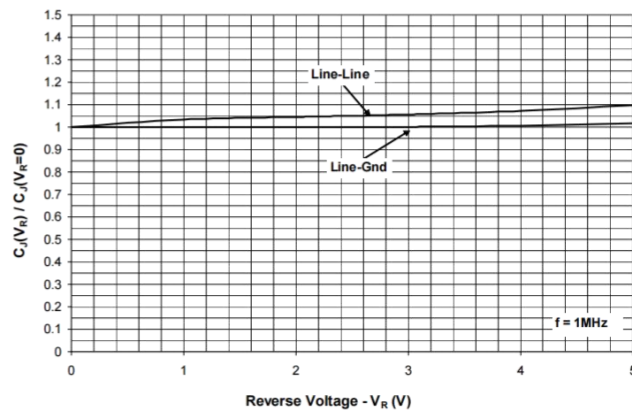
Clamping Voltage vs. Peak Pulse Current



Forward Voltage vs. Forward Current

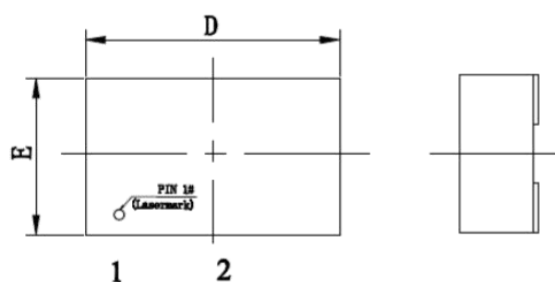


Normalized Capacitance vs. Reverse Voltage

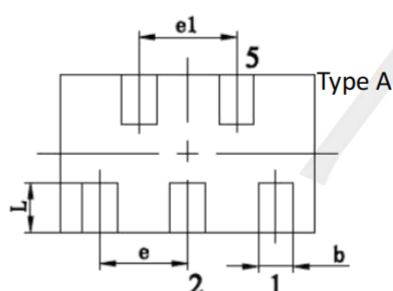


## Package Outline & Dimensions

DFN1308-5

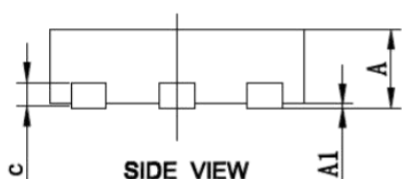


TOP VIEW

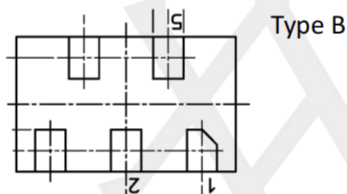


BOTTOM VIEW

| Dim | Millimeters |      |      |
|-----|-------------|------|------|
|     | Min         | Nom  | Max  |
| A   | 0.37        | 0.40 | 0.43 |
| A1  | 0.00        | 0.02 | 0.05 |
| b   | 0.13        | 0.18 | 0.23 |
| c   | 0.08        | 0.13 | 0.18 |
| D   | 1.20        | 1.30 | 1.40 |
| e   | 0.45 BSC    |      |      |
| e1  | 0.50 BSC    |      |      |
| E   | 0.70        | 0.80 | 0.90 |
| L   | 0.20        | 0.25 | 0.30 |

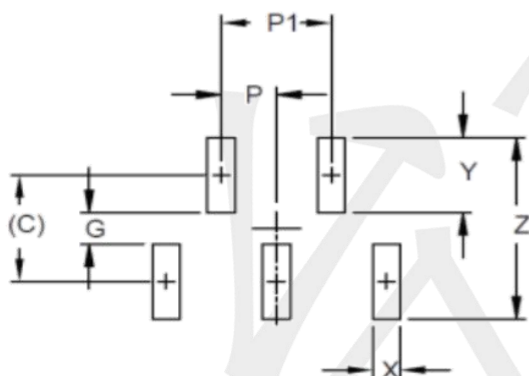


SIDE VIEW



Type B is equivalent to Type A

## Suggested Pad Layout



| DIMENSIONS |         |             |
|------------|---------|-------------|
| DIM        | INCHES  | MILLIMETERS |
| C          | (0.026) | (0.65)      |
| G          | 0.010   | 0.25        |
| P          | 0.010   | 0.25        |
| P1         | 0.018   | 0.45        |
| X          | 0.007   | 0.18        |
| Y          | 0.016   | 0.40        |
| Z          | 0.041   | 1.05        |