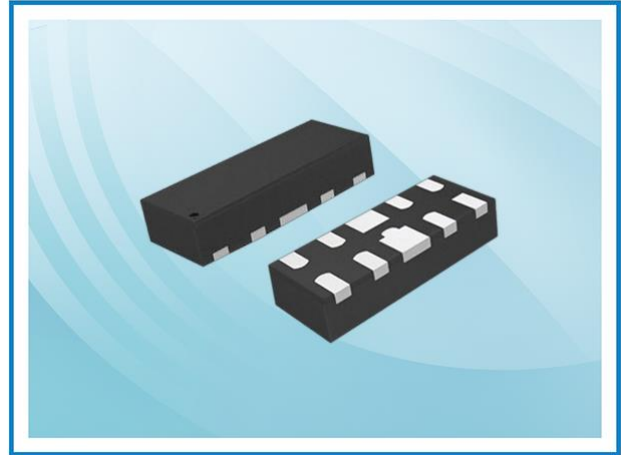


## PTLC0524P – ESD Protection Diode

### Feature

- 80 Watts peak pulse power (8/20 $\mu$ s)
- Bidirectional configurations
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low Capacitance: 0.3 pF Typical
- IEC61000-4-2 (ESD)  $\pm$ 15kV (Air),  $\pm$ 10kV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning): 6A (8/20 $\mu$ s)



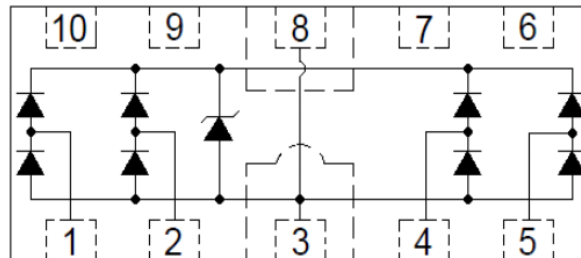
### Applications

- USB3.0, USB2.0, Ethernet
- HDMI 2.0, Displayport 1.3, eSATA
- Unified Display Interface
- Digital Video Interface (DVI)
- High Speed Serial Interface

### Mechanical Data

- Tiny DFN10L(2.5mmx1.0mm) package
- Molding compound flammability rating: UL94 V-0
- Tape and Reel Packaging
- RoHS/WEEE Compliant

### Schematic and PIN Configuration



### Maximum Rating

| Parameter   | Symbol          | Limit    | Unit         |
|---|-----------------|----------|--------------|
| IEC61000-4-2 ESD Voltage – Air Mode                   | $V_{ESD}^{(1)}$ | $\pm$ 15 | kV           |
| IEC61000-4-2 ESD Voltage – Contact Mode               |                 | $\pm$ 10 |              |
| Peak Pulse Power                                      | $P_{PP}^{(2)}$  | 80       | W            |
| Peak Pulse Current                                    | $I_{PP}^{(2)}$  | 6        | A            |
| Maximum Lead Solder Temperature (10 seconds duration) | $T_L$           | 260      | $^{\circ}$ C |
| Junction Temperature                                  | $T_J$           | -55~125  | $^{\circ}$ C |
| Storage Temperature Range                             | $T_{stg}$       | -55~125  | $^{\circ}$ C |

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 $\mu$ s exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25^{\circ}$ C unless otherwise noted.

## PTLC0524P – ESD Protection Diode

### Electrical Characteristics

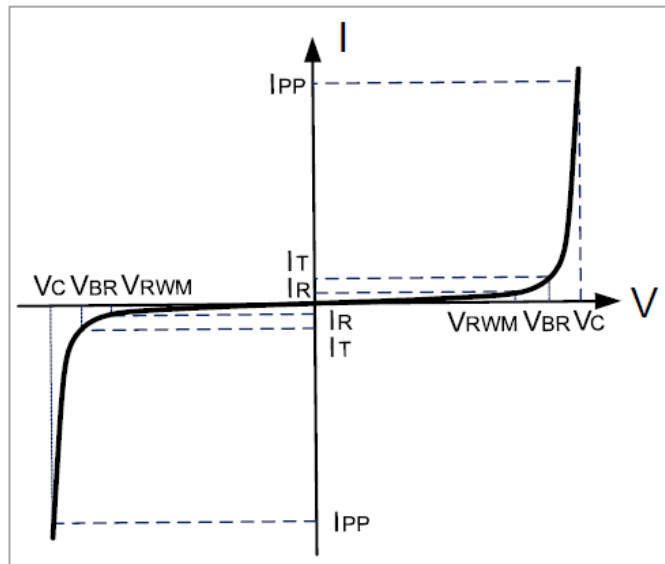
| Parameter                 | Symbol          | Test Conditions  | Min | Typ | Max | Unit          |
|---------------------------|-----------------|--|-----|-----|-----|---------------|
| Reverse Stand-off Voltage | $V_{RWM}^{(1)}$ |  |     |     | 5.0 | V             |
| Reverse Breakdown Voltage | $V_{BR}$        | $I_T = 1\text{mA}$   | 6.0 | 7.0 | 8.5 | V             |
| Reverse Leakage Current   | $I_R$           | $V_{RWM} = 5\text{V}$  |     |     | 0.5 | $\mu\text{A}$ |
| Clamping Voltage          | $V_C^{(2)}$     | $I_{PP} = 6\text{A}$   |     | 14  | 18  | V             |
| Junction Capacitance      | $C_J$           | $V_R = 0\text{V}, f = 1\text{MHz}, I/O \text{ to } I/O$        |     | 0.3 | 0.4 | pF            |
|                           |                 | $V_R = 0\text{V}, f = 1\text{MHz}, I/O \text{ to } \text{GND}$ |     | 0.6 | 0.8 | pF            |

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25^\circ\text{C}$  unless otherwise noted.

### Electrical Parameters

| Symbol    | Parameter                           |
|-----------|-------------------------------------|
| $V_C$     | Clamping Voltage @ $I_{PP}$         |
| $I_{PP}$  | Peak Pulse Current                  |
| $V_{BR}$  | Breakdown Voltage @ $I_T$           |
| $I_T$     | Test Current                        |
| $I_R$     | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{RWM}$ | Reverse Stand-off Voltage           |



## PTLC0524P – ESD Protection Diode

### Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

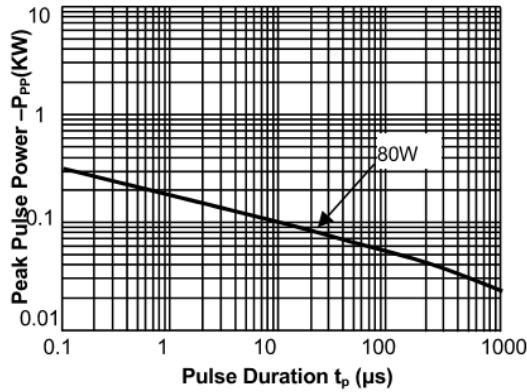


Fig.2 Pulse Derating Curve

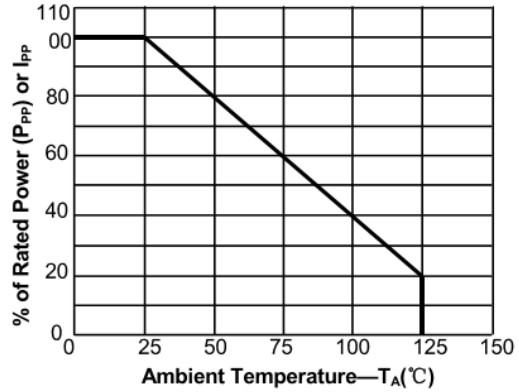


Fig.3 Pulse Waveform-8/20 $\mu s$

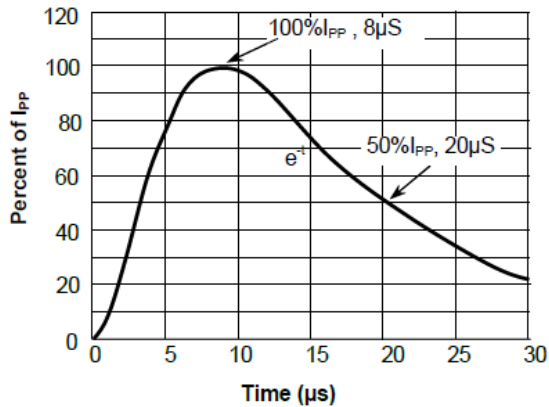


Fig.4 Pulse Waveform-ESD(IEC61000-4-2)

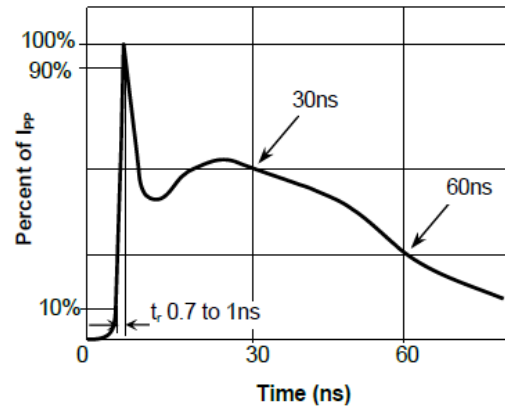


Fig.5 Eye Diagram - HDMI mask at 3.4Gbps per channel (with SESLC5VD2510-10U)

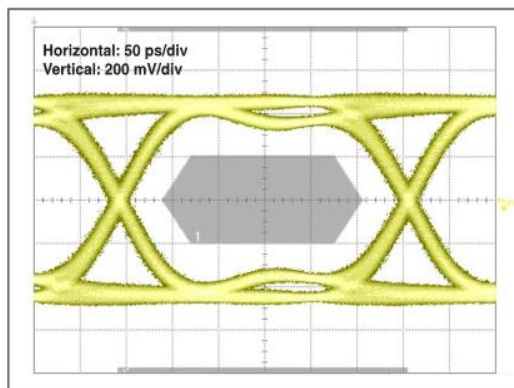
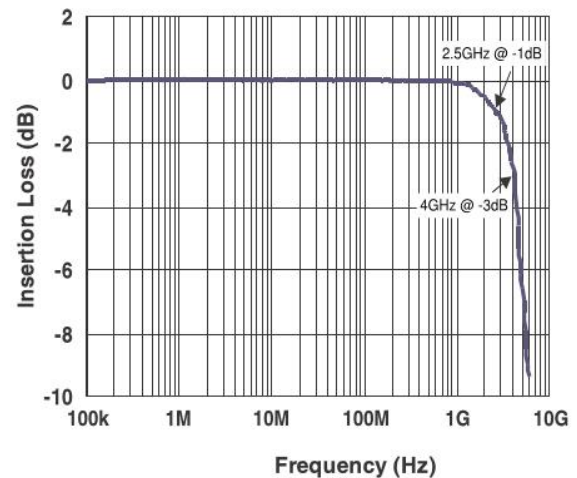
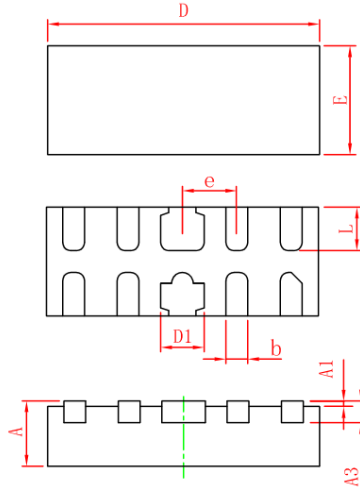


Fig.6 Insertion Loss S21 - I/O to GND



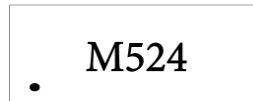
## PTLC0524P – ESD Protection Diode

### DFN10L(2.5mmx1.0mm) Package Outline Dimensions



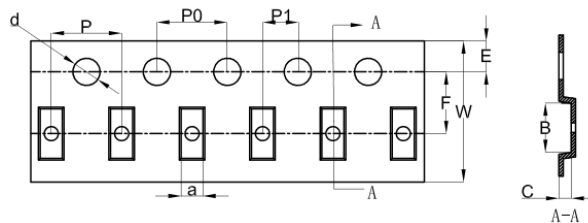
| Symbol | Dimensions (mm) |      |      |
|--------|-----------------|------|------|
|        | Min             | Nom  | Max  |
| A      | 0.45            | 0.50 | 0.60 |
| A1     | -               | 0.02 | 0.05 |
| A3     | 0.10            | 0.15 | 0.20 |
| D      | 2.45            | 2.50 | 2.55 |
| E      | 0.95            | 1.00 | 1.05 |
| D1     | 0.35            | 0.40 | 0.45 |
| b      | 0.15            | 0.20 | 0.25 |
| e      | 0.50BSC         |      |      |
| L      | 0.35            | 0.40 | 0.50 |

### Marking



### Packaging Information

| Order Code | Packaging         | Reel Size | PCS/Reel |
|------------|-------------------|-----------|----------|
| PTLC0524P  | DFN10L(2.5x1.0mm) | 7 inch    | 3,000    |



| Package Type | a    | B    | C   | d     | E    | F    | P0   | P    | P1   | W    |
|--------------|------|------|-----|-------|------|------|------|------|------|------|
| DFN10L       | 1.23 | 2.70 | 0.7 | Φ1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |