

ESD PROTECTION DEVICE

STAND-OFF VOLTAGE - **5.0** Volts
POWER DISSIPATION - **50** WATTS

GENERAL DESCRIPTION

The L05ESDL5V0F6-2 is ultra low capacitance TVS arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

FEATURES

- Protects up to two I/O lines (Data lines) & power line (Vcc pin5)
- Low capacitance: <0.9pF for high-speed interfaces
- Low clamping voltage
- IEC 61000-4-2, level 4 (ESD), > ±15KV (air) ; > ±8KV (contact).

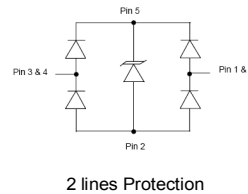
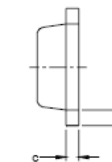
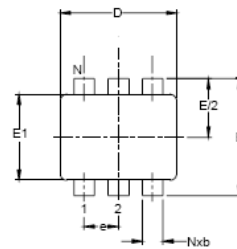
APPLICATION

- High Definition Multimedia Interface (HDMI)
- Digital Visual Interface (DVI)
- 10/100/1000 Ethernet
- USB 2.0 High Speed
- Video Graphics Cards (VGA)
- IEEE 1394 Firewire Ports High Speed

MECHANICAL DATA

- Case Material: "Green" molding compound UL flammability classification 94V-0 (No Br,Sb, Cl)
- Terminals: Lead Free Plating (Matte Tin Finish)
- Component in accordance to RoHs 2002/95/E

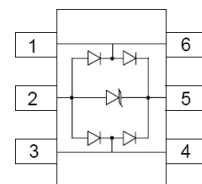
SOT-563



| SOT-563 | | |
|---------|----------|------|
| DIM. | MIN. | MAX. |
| A | 0.50 | 0.60 |
| b | 0.15 | 0.3 |
| c | 0.10 | 0.18 |
| D | 1.50 | 1.70 |
| E | 1.55 | 1.70 |
| E1 | 1.10 | 1.25 |
| e | 0.50 BSC | |
| L | 0.10 | 0.30 |

All Dimensions in millimeter

| PIN ASSIGNMENT | |
|----------------|-----------------|
| 1, 3 | To Protected IC |
| 4, 6 | I/O Lines |
| 5 | V _{CC} |
| 2 | Ground |



MAXIMUM RATINGS (Tj= 25°C unless otherwise noticed)

| Rating | Symbol | Value | Unit |
|--------------------------------------|------------------|--------------|------|
| Peak Pulse Power (tp = 8/20us) | P _{pk} | 50 | W |
| Peak Pulse Current (tp = 8/20us) | I _{pp} | 3.0 | A |
| Operating Junction Temperature Range | T _J | -55 to + 125 | °C |
| Storage Temperature Range | T _{stg} | -55 to + 150 | °C |
| Soldering Temperature, t max = 10s | T _L | 260 | °C |

ELECTRICAL CHARACTERISTICS (Tj= 25°C unless otherwise noticed)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--------------------------|------------------|---|-----|-----|-----|------|
| Reverse standoff voltage | V _{RWM} | Between I/O lines to Gnd or I/O to I/O | --- | --- | 5.0 | V |
| Breakdown voltage | V _{BR} | IR = 1 mA, Between I/O lines to Gnd | 6.0 | --- | --- | V |
| Reverse leakage current | I _{RM} | V _{DRM} = 5V, Between I/O lines to Gnd or I/O to I/O | --- | --- | 1 | uA |
| Clamping Voltage | V _C | I _{PP} = 1A, tp = 8/20μs, Between I/O lines to Gnd | --- | --- | 14 | V |
| Clamping Voltage | V _C | I _{PP} = 3A, tp = 8/20μs, Between I/O to Gnd | --- | --- | 16 | V |
| Junction capacitance | C _J | V _R = 0V, f = 1MHz, Between I/O to I/O | --- | 0.3 | 0.7 | pF |
| Junction capacitance | C _J | V _R = 0V, f = 1MHz, Between I/O to Gnd | --- | 0.7 | 0.9 | pF |

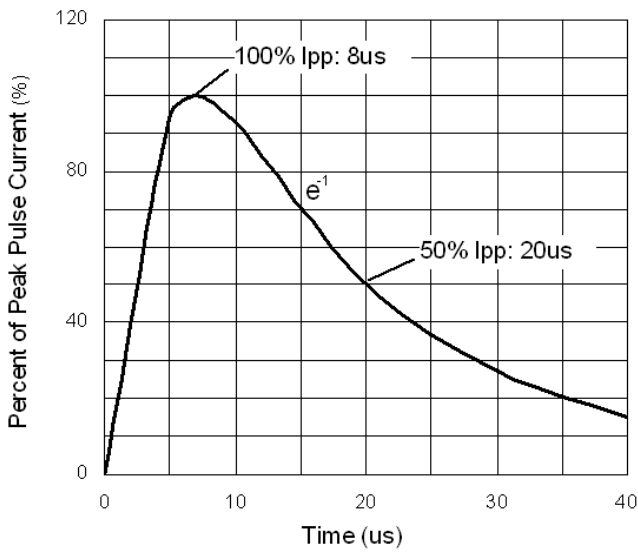


Figure 1. 8/20 us pulse waveform according to IEC 61000-4-5

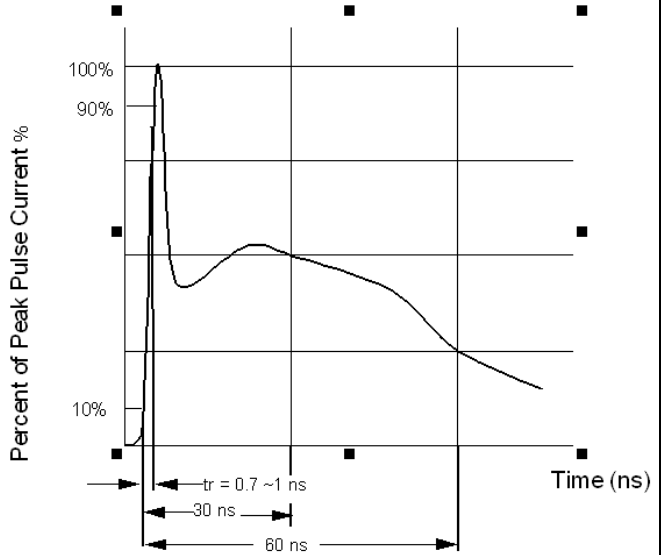


Figure 2. ESD pulse waveform according to IEC 61000-4-2

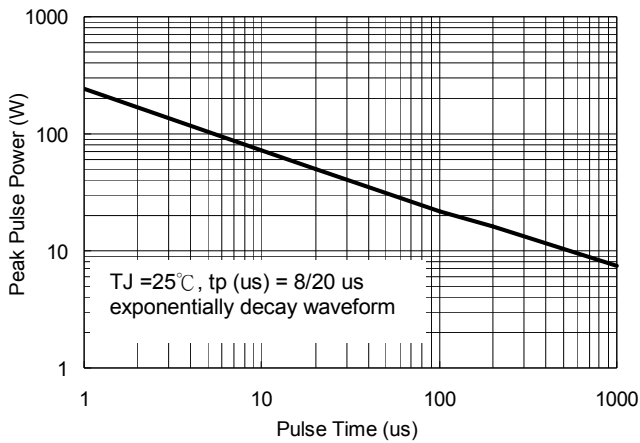


Figure 3. Power Dissipation versus Pulse Time

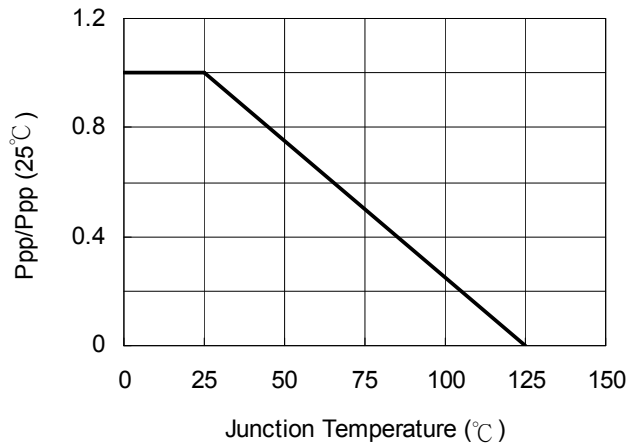


Figure 4. Peak pulse power versus TJ

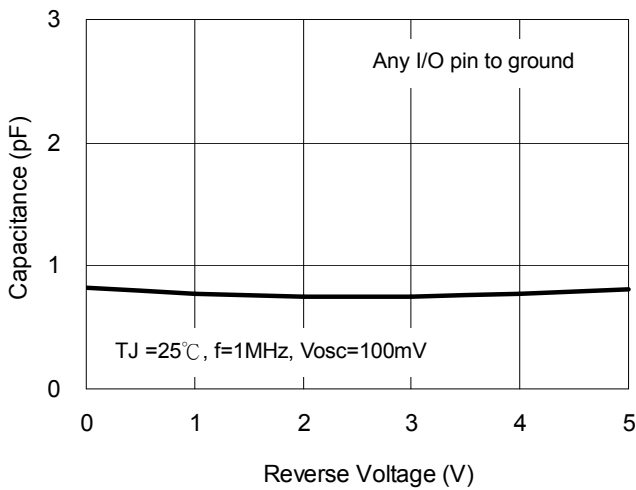


Figure 5. Typical Junction Capacitance

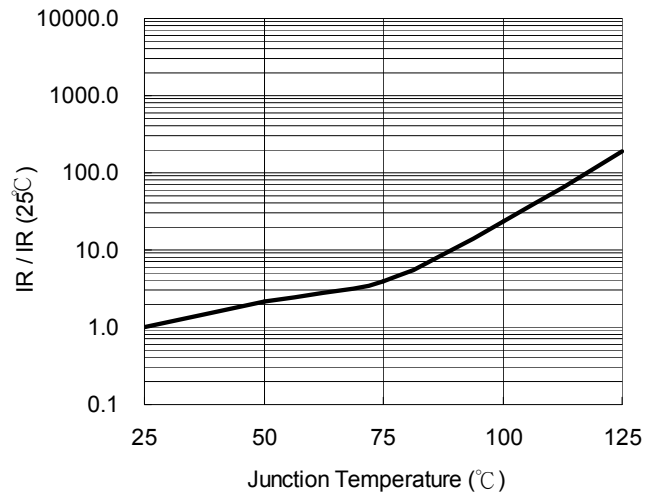


Figure 6. Reverse Leakage Current versus TJ

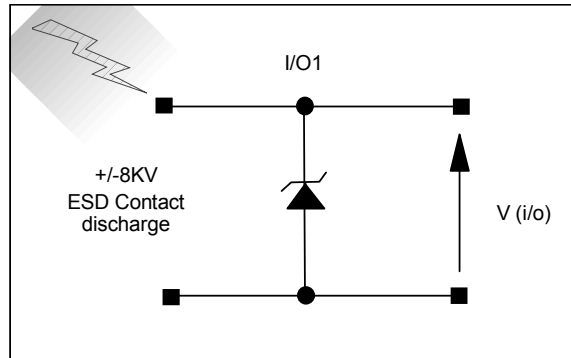


Figure 7. ESD Test Configuration

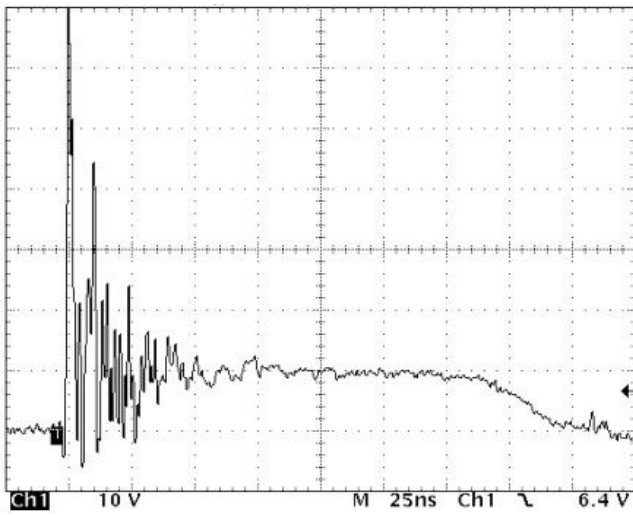


Figure 8. Clamped +8 kV ESD voltage waveform

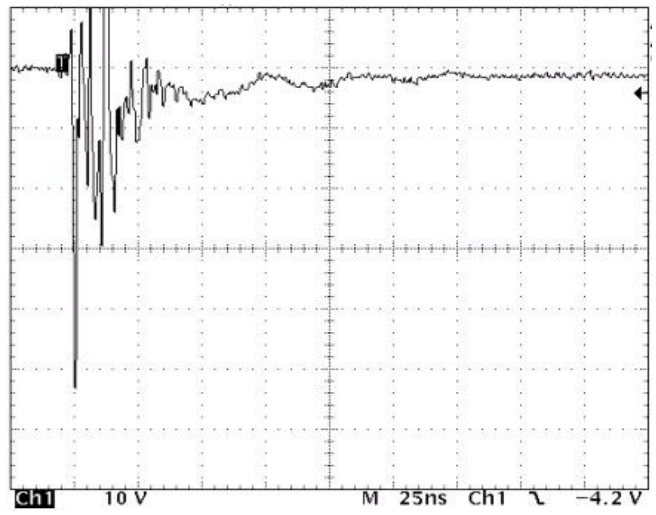


Figure 9. Clamped -8 kV ESD voltage waveform

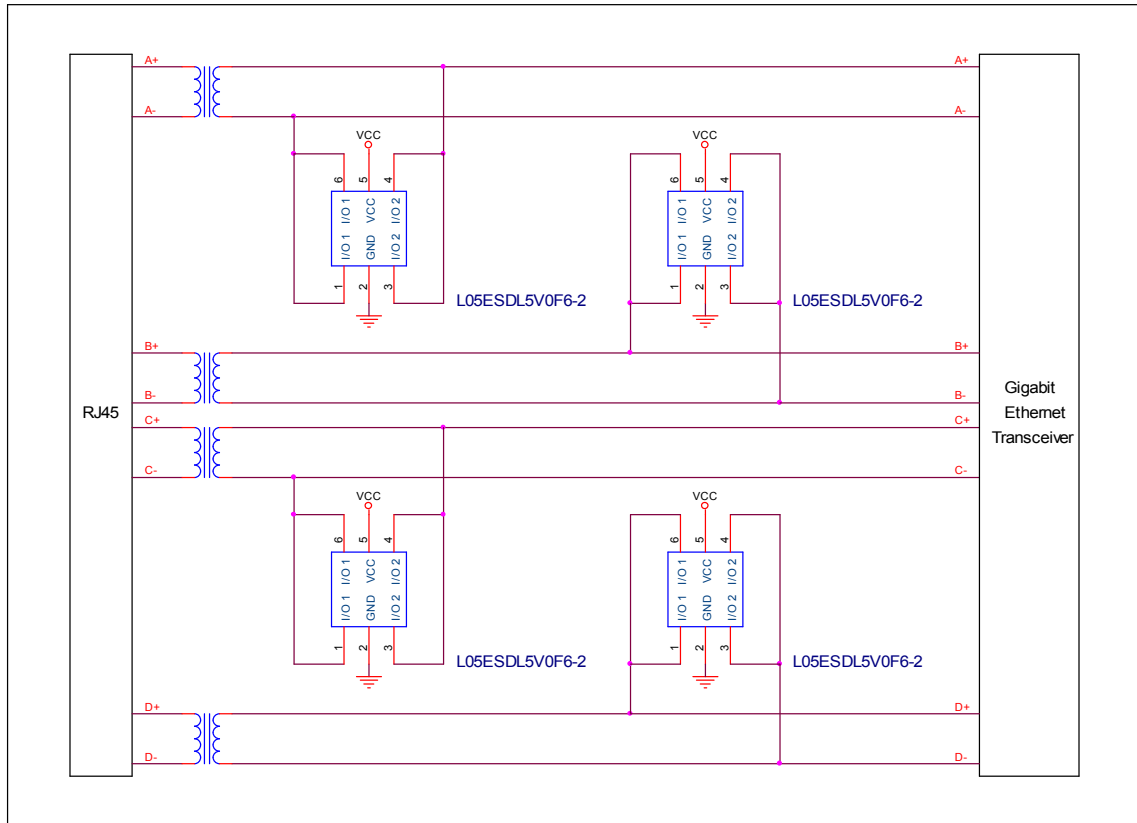


Figure 10. 10/100/1000 Ethernet ESD Protection

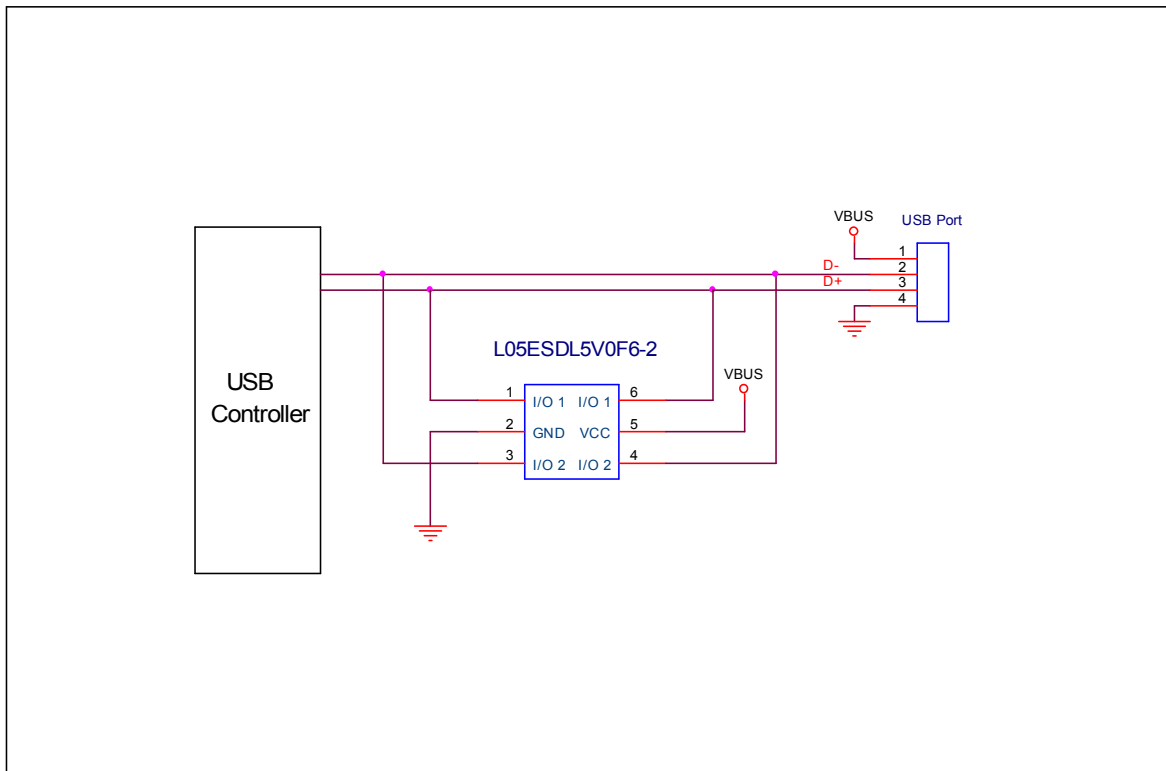


Figure 11. USB2.0 Interface ESD Protection

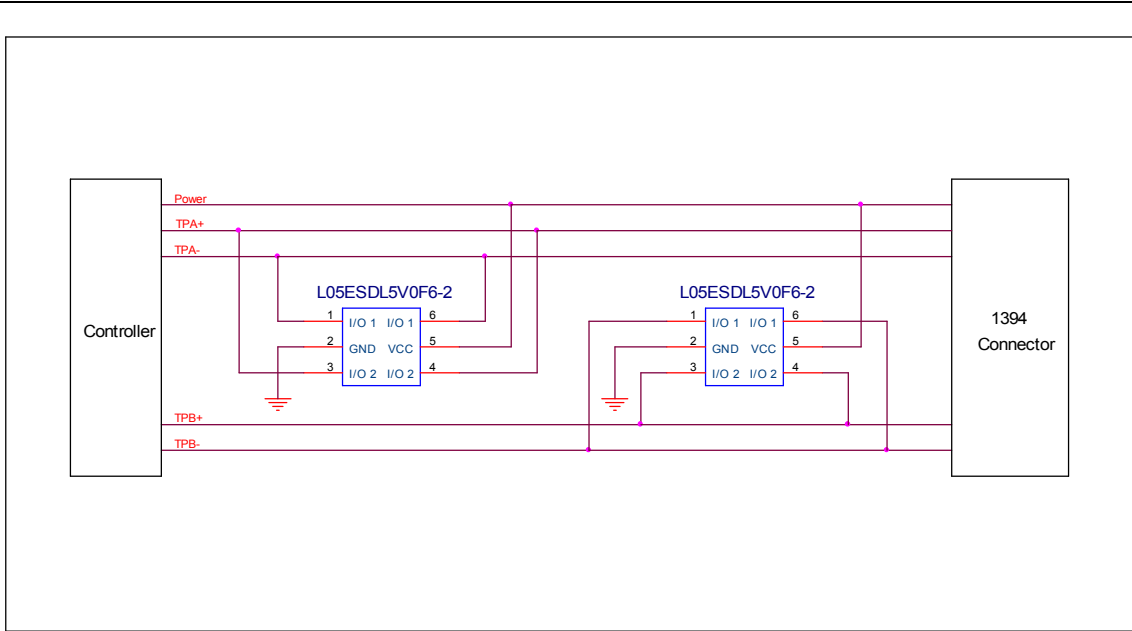
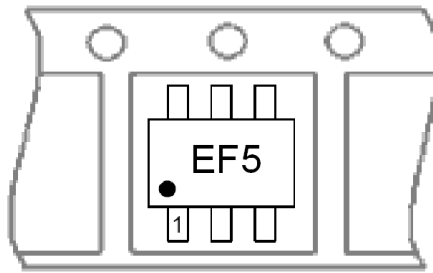


Figure 12. IEEE1394 Interface ESD Protection

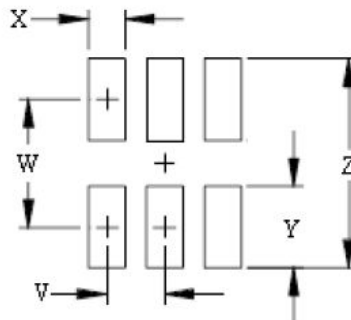
Marking & Orientation



Packaging Information

| DEVICE | Q'TY/REEL (PCS) | REEL DIA. (INCH) | Q'TY/BOX (PCS) | Q'TY/CARTON (PCS) |
|----------------|-----------------|------------------|----------------|-------------------|
| L05ESDL5V0F6-2 | 3000 | 7 | 45000 | 90K/180K |

SOT-563 Soldering Pad Layout



| Dim. | Millimeters | Inches |
|------|-------------|--------|
| Z | 2.30 | 0.090 |
| X | 0.30 | 0.011 |
| W | 1.45 | 0.057 |
| Y | 0.85 | 0.033 |
| V | 0.50 | 0.019 |

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