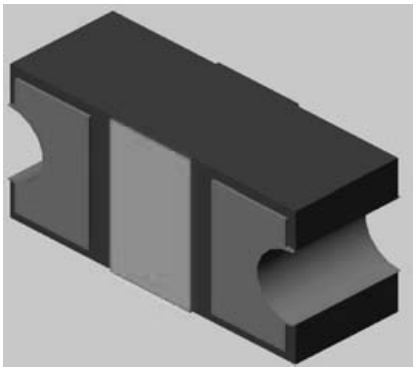
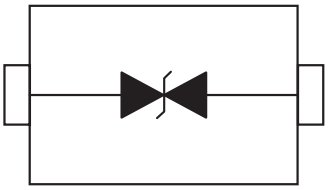
# GSEPN12B0005
# Multilayer Polymer ESD Suppressor

## Description

The GSEPN12B0005 is an ultra low capacitance polymer ESD suppressor designed to protect high speed data interfaces. The device has a typical capacitance of only 0.05pf (I/O to GND) and meets the ESD immunity requirements of IEC61000-4-2 (15KV air, 8KV contact discharge).



**Case: 0603**



**Schematic Diagram**

## Features

- ESD protection for high speed data lines to IEC61000-4-2
- ESD contact discharge typical 8KV, max 15KV
- ESD air discharge typical 15KV, max 25KV
- Multilayer structure
- Surface mount
- Extremely low capacitance
- Very Low leakage current
- Fast response time
- Bi-directional ESD protection
- Lead free solder termination
- The Best ESD protection for high frequency, low voltage applications

## Applications

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Display Port Interface (DP)
- Unified Display Interface (UDI)
- Mobile Display Digital Interface (MDDI)
- Gigabit Ethernet
- USB2.0 and USB3.0
- IEEE1394 Interface

### Absolute Maximum Ratings

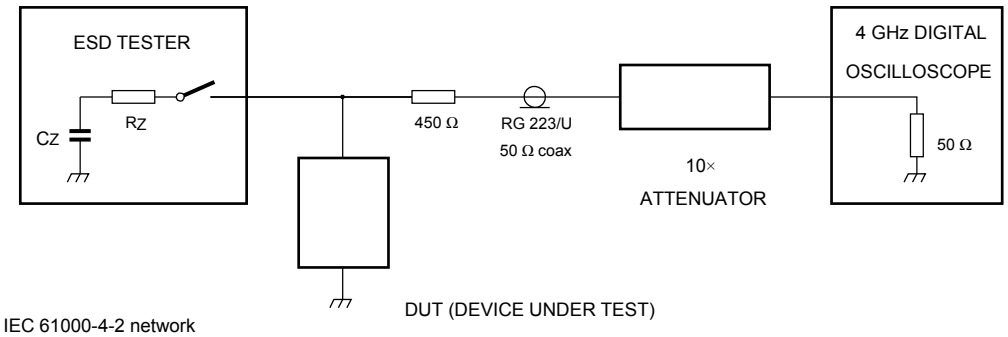
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Contact Discharge Voltage Per IEC61000-4-2 | - | 15KV | V |
| Maximum Air Discharge Voltage Per IEC61000-4-2 | - | 25KV | V |
| Maximum Operating Temperature | $T_{OPER}$ | -55 to +125 | °C |
| Maximum Storage Temperature | $T_{STG}$ | -55 to +125 | °C |
| Maximum Lead Temperature for Soldering During 10s | $T_L$ | 260 | °C |

## Electrical Characteristics ($T_A$=25°C)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Rated Voltage | $V_R$ | - | - | - | 12 | V |
| Trigger Voltage | $V_T$ | IEC61000-4-2 8KV contact discharge | - | 300 | - | V |
| Clamping Voltage | $V_C$ | IEC61000-4-2 8KV contact discharge | - | 35 | - | V |
| Leakage Current | $I_L$ | DC 12V shall be applied on component | - | 0.01 | 0.1 | uA |
| Capacitance | $C_P$ | $V_R$ = 0V, f = 1MHz | - | 0.05 | - | pF |

Notes: 1. Trigger and clamping voltage are measured per IEC 61000-4-2, 8KV contact discharge method.
2. After reliability tests such as high Temp storage, Temp cycles, continuous ESD strike etc, the maximum leakage current is less than 10uA.

## ESD Clamping Test




IEC 61000-4-2 network

$C_Z$ = 150 pF; $R_Z$ = 330 Ω

## ESD Clamping Test Waveforms

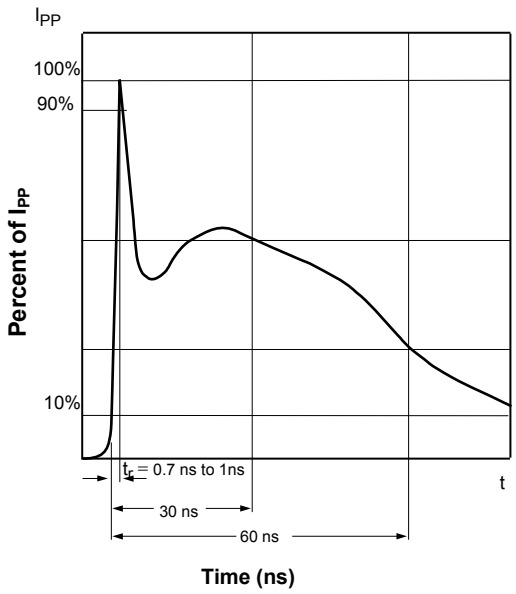



Fig.1 Pulse Waveform-ESD(IEC61000-4-2)

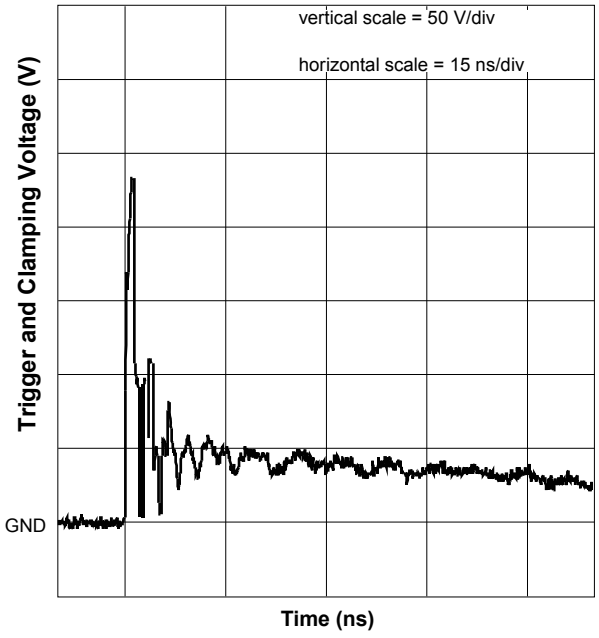
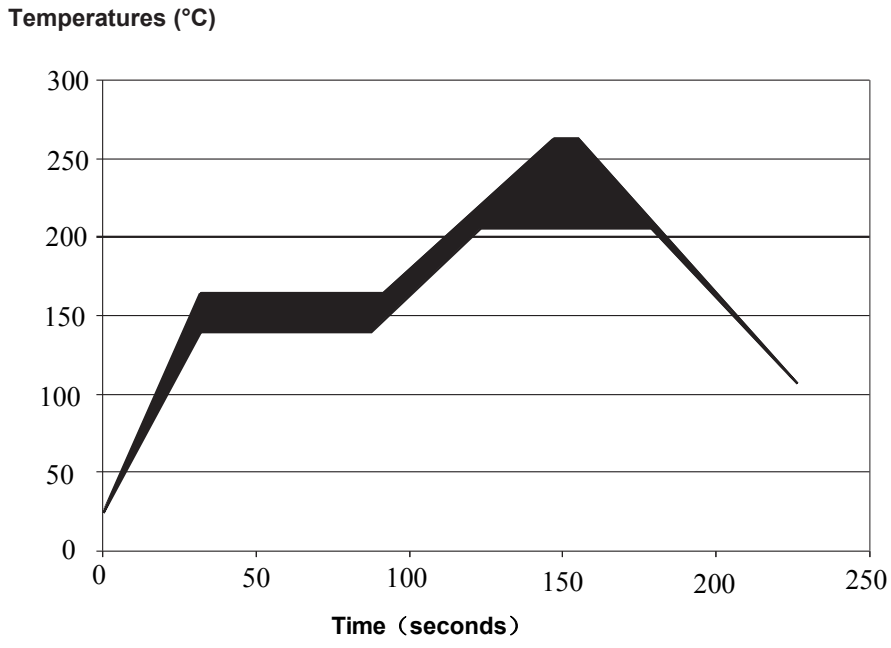
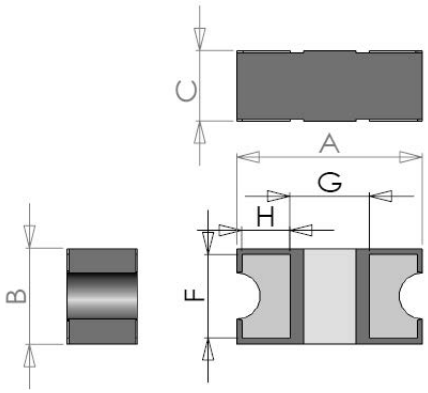



Fig.2 IEC61000-4-2 +8kV Contact Discharge

## Solder Reflow Recommendations

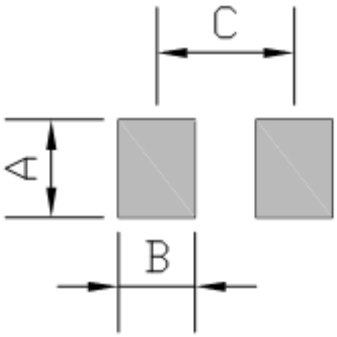


## Package Outline Dimensions




| Symbol | Dimension | | | Unit |
|---|---|---|---|---|
| | Min | Typ | Max | |
| A | 1.50 | 1.60 | 1.70 | mm |
| B | 0.74 | 0.82 | 0.90 | |
| C | 0.32 | 0.36 | 0.40 | |
| H | 0.265 | 0.285 | 0.305 | |
| F | 0.70 | 0.72 | 0.74 | |
| G | 0.93 | 0.95 | 0.97 | |

## Suggested Pad Layout




| Symbol | Dimension | Unit |
|---|---|---|
| A | 0.95 | mm |
| B | 0.65 | |
| C | 1.35 | |

## Order Information

| Device | Package | Net Weight | Carrier | Quantity | HSF Status |
|---|---|---|---|---|---|
| GSEPN12B0005 | 0603 | 1.00 mg | Tape & Reel | 3,000pcs/reel | RoHS compliant |