

## Description

■ This device is an ultra low capacitance ESD product designed to protect very high speed data interfaces. ESDPSA0402V05 has a typical capacitance of only 0.05pf (I/O to GND), and it can be used to meet the ESD immunity requirements of IEC61000-4-2 (15KV air, 8KV contact discharge).

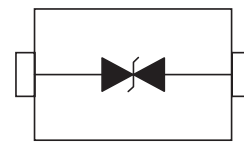
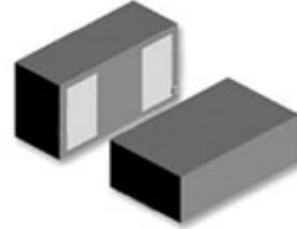
## Feature

- 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
- 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

## Application

- 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

## ESDPSA0402V05



Schematic Diagram

### Caution:

This component is designed for signal line protection only,  
Not intended to be used under bias, not for application with a power line.

## 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 <sub>OPER</sub> | -40 to +90  | °C   |
| Maximum Storage temperature                        | T <sub>STG</sub>  | -55 to +125 | °C   |
| Maximum lead temperature for soldering during 10s  | T <sub>L</sub>    | 260         | °C   |

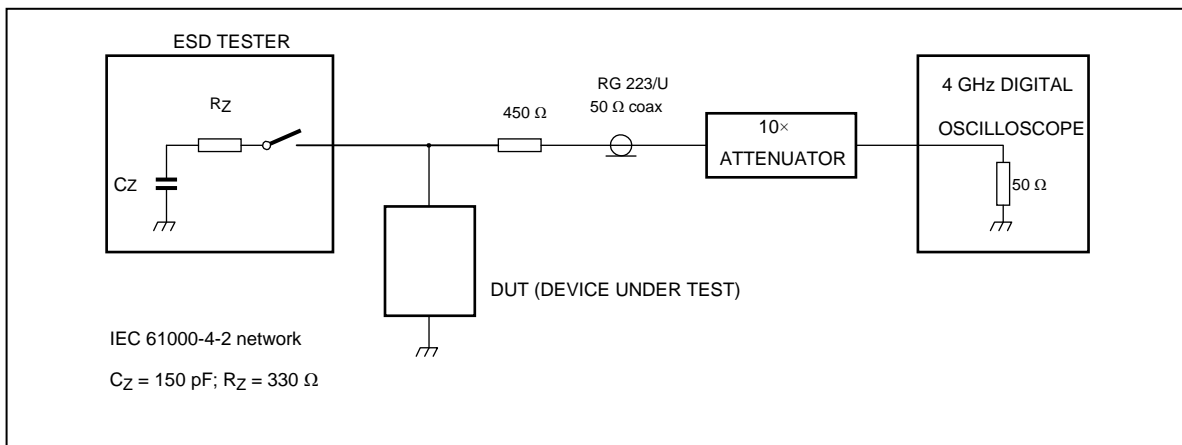
## Electrical Characteristics(T<sub>A</sub>=25°C)

| Parameter        | Symbol         | Test Conditions                     | Min | Typ  | Max  | Units |
|------------------|----------------|-------------------------------------|-----|------|------|-------|
| Rated Voltage    | V <sub>R</sub> | ---                                 | --- | ---  | 5    | V     |
| Trigger voltage  | V <sub>T</sub> | IEC61000-4-2 8KV contact discharge  | --- | 350  | ---  | V     |
| Clamping voltage | V <sub>C</sub> | IEC61000-4-2 8KV contact discharge  | --- | 35   | ---  | V     |
| Leakage current  | I <sub>L</sub> | DC 5V shall be applied on component | --- |      | 0.10 | uA    |
| Capacitance      | C <sub>P</sub> | V <sub>R</sub> = 0V, f = 1MHz       | --- | 0.05 |      | pF    |

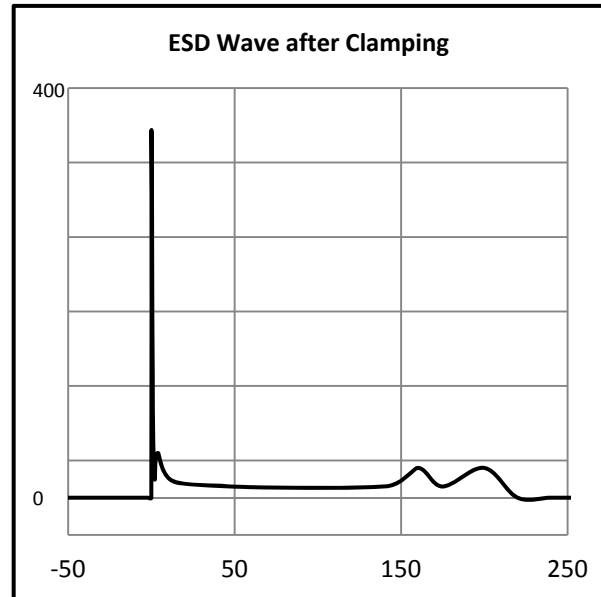
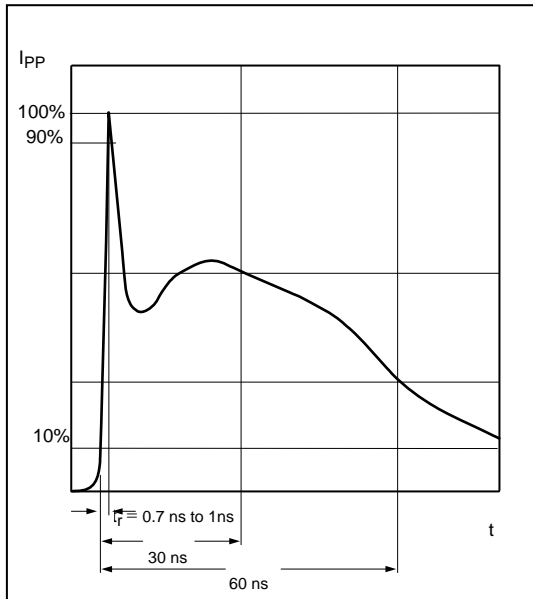
**Note:** 1 Trigger and clamping voltage are measured per IEC 61000-4-2, 8KV contact discharge method.

2 After reliability tests such as high temp storage, temp cycles, continuous ESD strike etc, the maximum leakage current is less than 10uA.

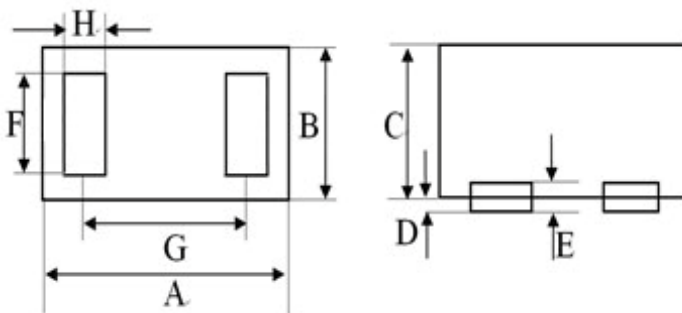
## ESD Clamping Test



## ESD Clamping Test Waveforms

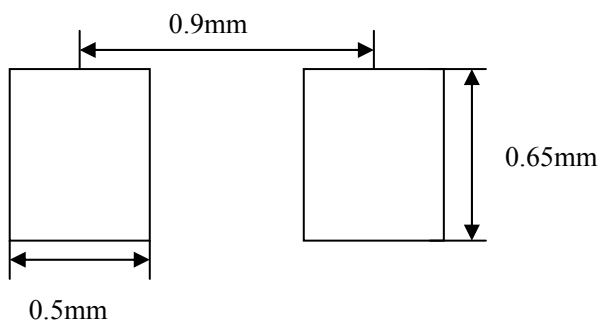


## Product Dimension



| Dim | millimeters |      |
|-----|-------------|------|
|     | min         | max  |
| A   | 0.90        | 1.20 |
| B   | 0.45        | 0.65 |
| C   | 0.30        | 0.40 |
| D   | 0.00        | 0.05 |
| E   | 0.125REF    |      |
| F   | 0.40        | 0.50 |
| G   | 0.65BSC     |      |
| H   | 0.25        | 0.35 |

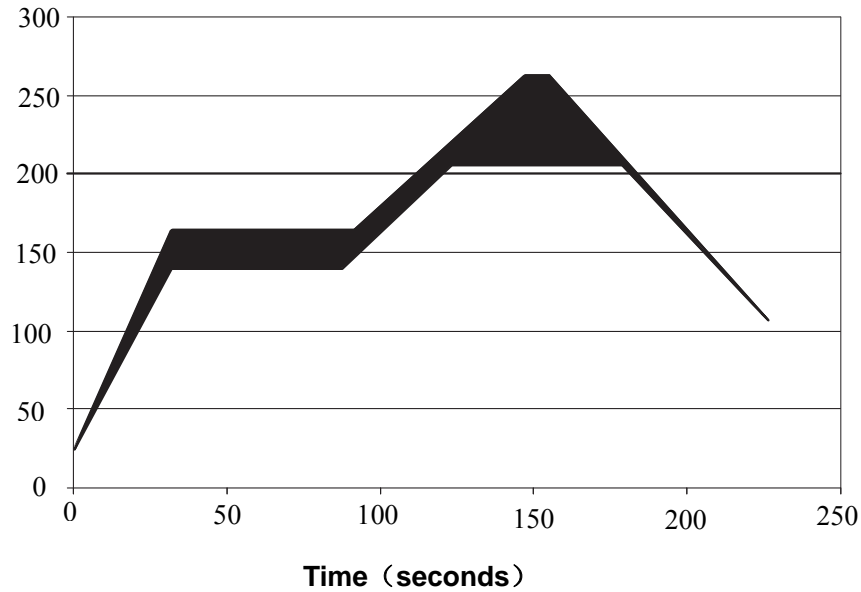
## PAD Dimension



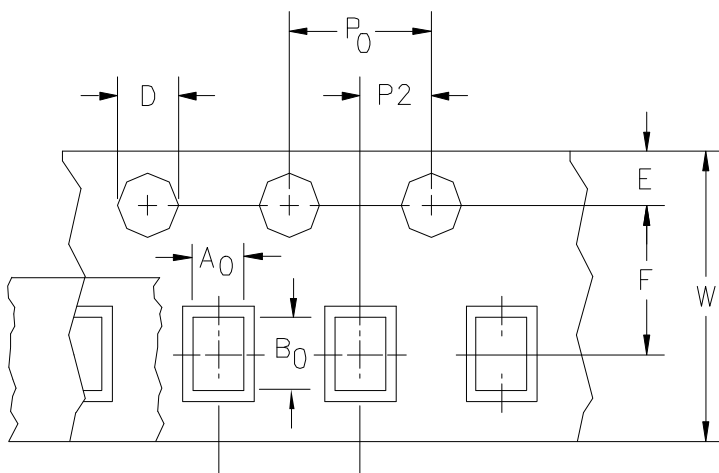
Solder thickness 0.15 to 0.2mm

## Solder Reflow Recommendations

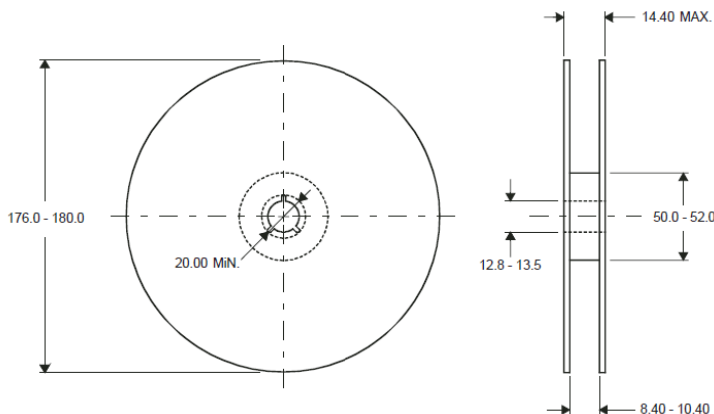
Temperatures (°C)



## Package Information

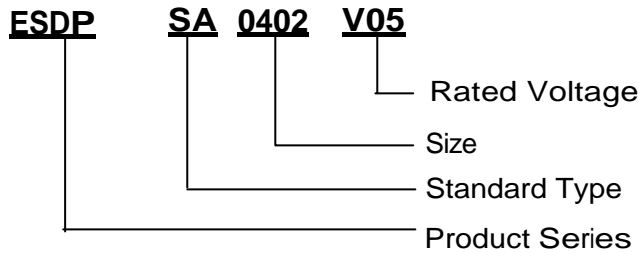


| Dimension | Typical | Unit |
|-----------|---------|------|
| A0        | 0.75    | mm   |
| B0        | 1.22    |      |
| D         | 1.55    |      |
| P0        | 4.00    |      |
| P1        | 2.00    |      |
| P2        | 2.00    |      |
| E         | 1.75    |      |
| F         | 3.50    |      |
| W         | 8.00    |      |



DIMENSIONS ARE: MILLIMETERS

## Part Number System



## Order Information

| Device         | Package | Net Weight | Carrier     | Quantity       | HSF Status     |
|----------------|---------|------------|-------------|----------------|----------------|
| ESDP SA0402V05 | 0402    | 0.44 mg    | Tape & Reel | 10,000pcs/reel | RoHS compliant |

## Revision history

| Date       | Revision | Description of changes |
|------------|----------|------------------------|
| 1-Apr-2013 | 3.0      | Change Dimensions      |

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