SOCAY

HF RoHS

# ESD Array

## ESDP020604V12B4

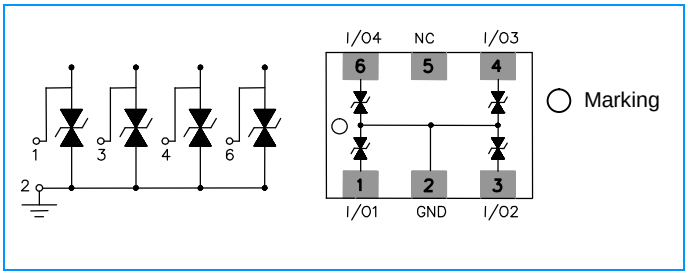
### Description

This specification is applied to protect sensitive electronic circuits from the threat of electrostatic discharge (ESD). The function meets with the requirement of IEC61000-4-2 specification. The extreme low capacitance is suit for HDMI ESD protection application. According to the special property of device, we recommend not to use on such application as: DC/AC power line.

### Features

- RoHS compliant, Lead-Free
- Protection against ESD voltages and currents (IEC 61000-4-2 Level 4)
- Extremely quick response time (<1ns) present ideal ESD protection
- Extremely low capacitance (0.1pF typical)
- Extremely low leakage current
- Surface mount device
- Zero signal distortion

### Equivalent Circuits




### Applications

- USB3.0
- HDMI
- DVI
- Display port
- MIPI
- LVDS
- MDDI
- DVI
- RGB

### Product Model

- Digital Video Equipment
- Mobil Phone
- GPS Antenna
- Bluetooth Communication Equipment

### Electrical Characteristics

| Characteristic | Value |
|---|---|
| **Rate Voltage $V_{DC}$ (Max)** | 12V |
| **Leakage Current $I_L$ (Max) (@12VDC)** | 0.01μA |
| **Trigger Voltage $V_T$** | 300V Typical |
| **Clamping Voltage $V_C$** | 30V Typical |
| **Capacitance, @1MHz $C_P$** | 0.1pF Typical |
| **Response Time** | <1ns |
| **ESD Voltage Capability, IEC61000-4-2 Contact Discharge Mode** | 8KV |
| **ESD Voltage Capability, IEC61000-4-2 Air Discharge Mode** | 15KV |
| **ESD Withstand Pulses** | 1000 Typical |

$C_P$ - Device Capacitance measured with 1Vrms



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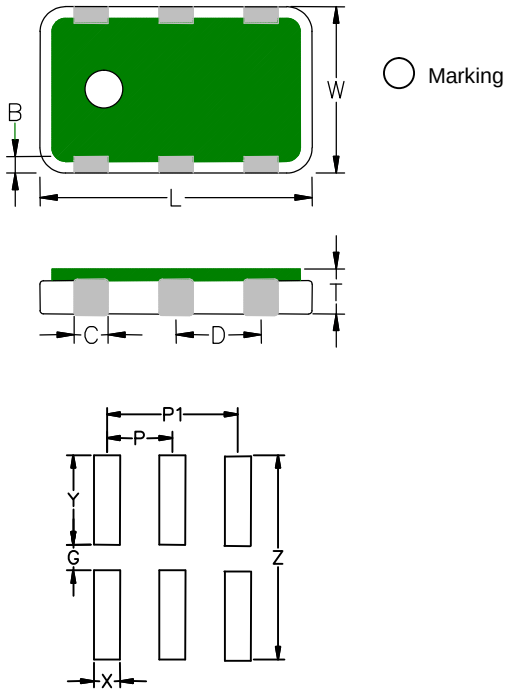
### Explanation of Part Number

**ESDP 02 0604 V12 B4**

- B4, Mode Code
- Max Rated Voltage $V_{DC}$, V12=12V
- Chip Size, 0604 = 0604 (EIA)
- Channels, 02 = 2 channels
- Series Type: Polymer ESD Suppressors

### Construction & Dimensions Unit: mm

| End termination | Ag / Ni / Sn |
|---|---|




**Recommended pad outline**

| Symbol | Spec. |
|---|---|
| L | 1.60±0.10 |
| W | 1.00±0.10 |
| T | 0.55±0.10 |
| B | 0.20±0.10 |
| C | 0.20±0.05 |
| D | 0.50±0.05 |
| P | 0.5 |
| P1 | 1.0 |
| X | 0.2 |
| Y | 0.7 |
| Z | 1.6 |
| G | 0.2 |

**Overcoat color: Green**



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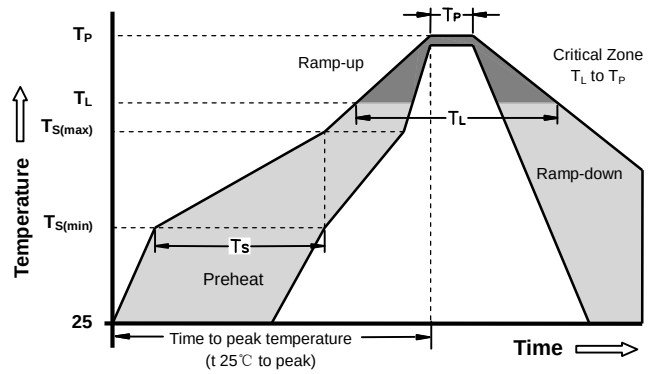
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### Temperature Specifications

| Parameter | | Value | Unit |
|---|---|---|---|
| Operating Temperature | | -55 to +125 | °C |
| Storage Temperature | | --55 to +125 | °C |
| Taping Package Storage Condition | Storage Temperature | 5 to 40 | °C |
| | Relative Humidity | <65 | %RH |
| | Storage Time | 12 Max | Month |

### Soldering Parameters




| Reflow Condition | | Pb free assembly |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150°C |
| | -Temperature Max ($T_{s(max)}$) | +200°C |
| | -Time (min to max) ($T_S$) | 60 -180 Seconds |
| Average ramp up rate ( Liquidus Temp $T_L$) to peak | | 3°C/Second Max |
| $T_{S(max)}$ to $T_L$ - Ramp-up Rate | | 3°C/Second Max |
| Reflow | - Temperature ($T_L$) (Liquidus) | +217°C |
| | - Time (min to max) ($T_L$) | 60 -150 Seconds |
| Peak Temperature ($T_P$) | | 260 +0/-5°C |
| Time within 5°C of actual peak Temperature ($T_P$) | | 20-40 Seconds |
| Ramp-down Rate | | 6°C/Second Max |
| Time 25°C to peak Temperature ($T_P$) | | 8 minutes Max |

### Precaution for soldering

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.

Do not give heat shock over 100°C in the process of soldering.

We recommend to take preheating and gradual cooling

**Soldering gun procedure**

Note the follows, in case of using solder gun for replacement.

1) The tip temperature must be less than 280 for the period within 3 seconds by using soldering gun under 30W

2) The soldering gun tip shall not touch this product directly.

**Soldering volume**

Note that excess of soldering volume will easily get crack the body of this product.



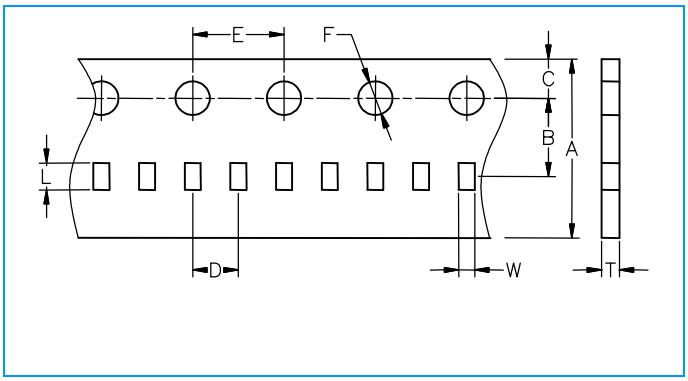
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### Packaging Information

**Carrier Tape Dimensions** **Unit: mm**

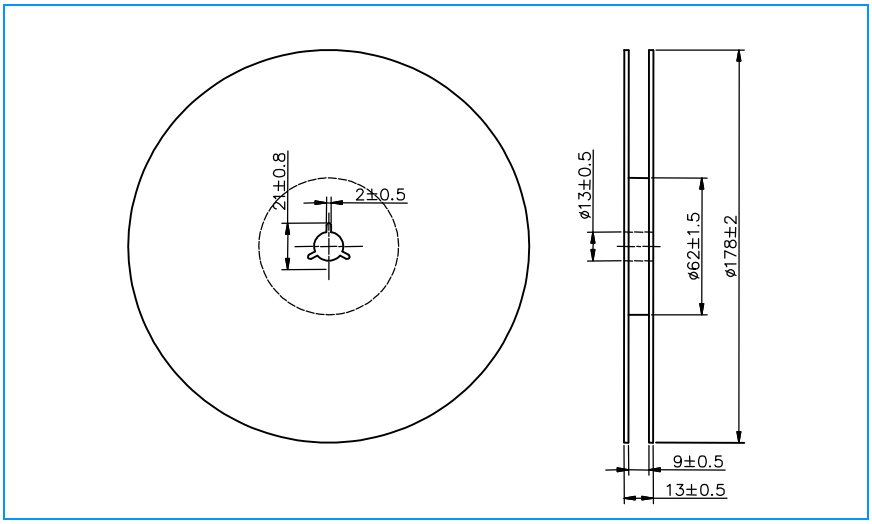



| Symbol | Spec. |
|---|---|
| A | 8.00±0.30 |
| B | 3.50±0.05 |
| C | 1.75±0.10 |
| D | 2.00±0.05 |
| E | 4.00±0.10 |
| F | 1.50±0.10 |
| L | 1.80±0.15 |
| W | 1.25±0.15 |
| T | 0.75±0.05 |

**Packaging method**

- Products shall be heat-sealed in the chip pocket, spacing pitch 2-mm of paper carrier tape with cover tape, and carrier tape shall be reeled to the reel.
- Tape material to be paper.
- Cover Tape adhesion to be 35±25 grams.

**Taping Reel Dimensions** **Unit: mm**




**Taping Specifications**

There Shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the heat of taping.

**Quantity of products in the taping package**

| | |
|---|---|
| **Standard Quantity** | 5000PCS / Reel |
| Shipping quantity is a multiple of standard quantity | |



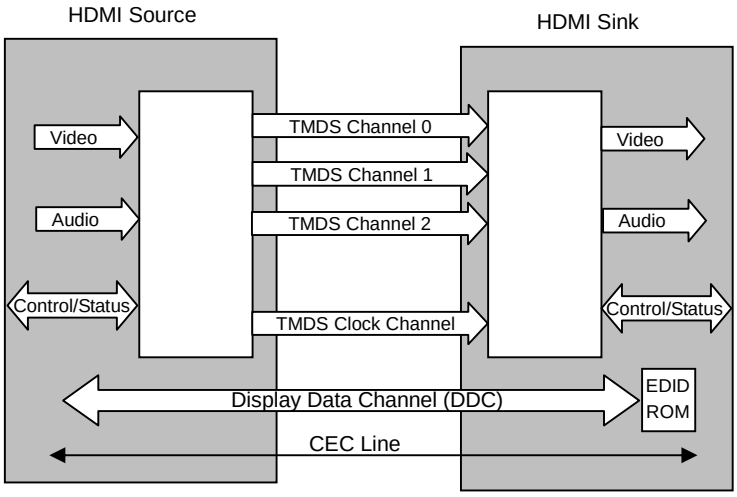
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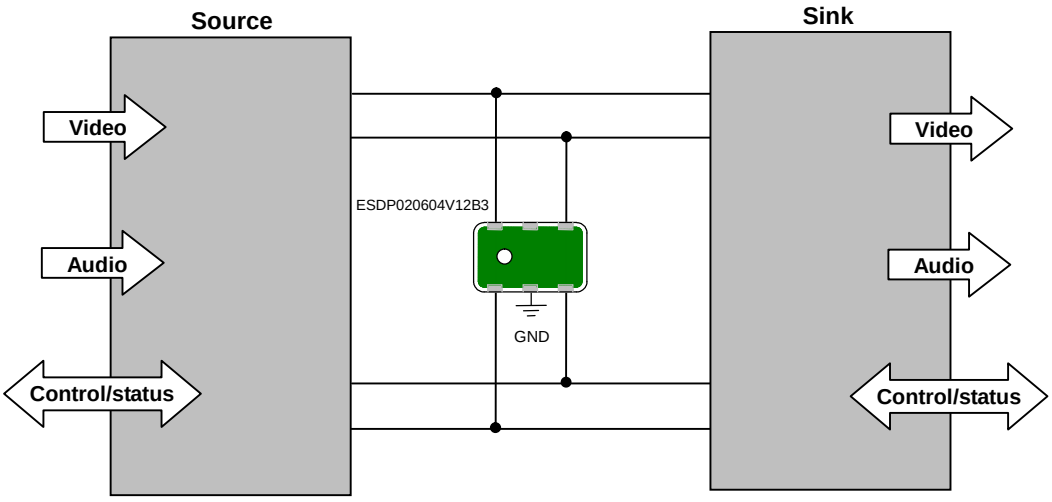
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### HDMI Interface Application

**HDMI Block Diagram**





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