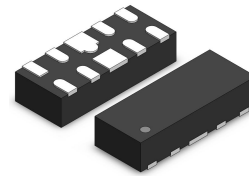




# Transient Voltage Suppressors for ESD Protection

## Features

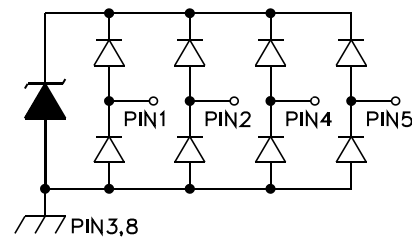
- ◆ Working voltage: 5.0V
- ◆ Low capacitance: 0.60pF (Typical)
- ◆ Low leakage current: 1.0μA @  $V_{RWM}$
- ◆ Low clamping voltage
- ◆ Response Time is < 1 ns

**DFN2510-10L**

## Applications

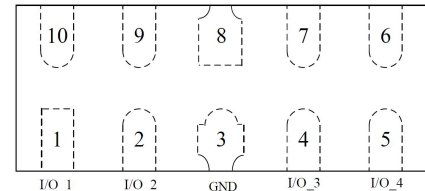
- ◆ USB 3.0, USB 2.0
- ◆ HDMI 1.3/1.4, Display Port 1.3, eSATA
- ◆ Unified Display Interface (UDI)
- ◆ Digital Visual Interface (DVI)
- ◆ High Speed Serial Interfaces

## Pin Configuration



## Mechanical Characteristics

- ◆ DFN2510-10L Package
- ◆ Molding Compound Flammability Rating: UL 94V-0
- ◆ Quantity Per Reel : 3,000pcs
- ◆ Reel Size : 7 inch



## Absolute Maximum Rating

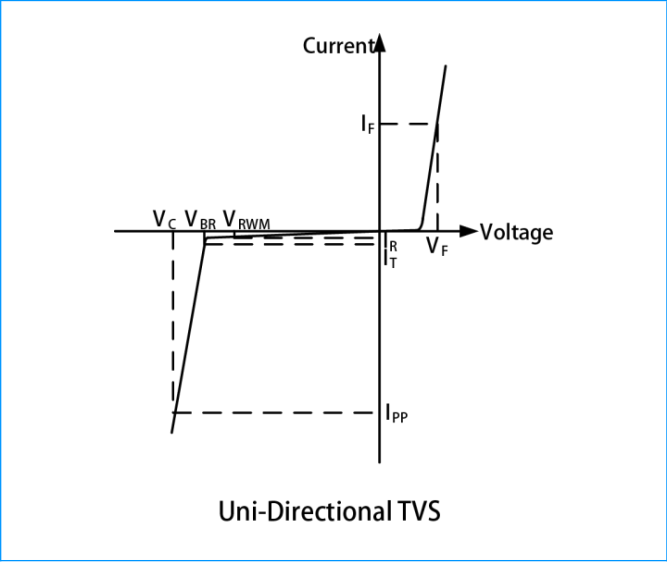
| Symbol    | Parameter                                                     | Value       | Units |
|-----------|---------------------------------------------------------------|-------------|-------|
| $T_{LST}$ | Lead Soldering Temperature                                    | 260 (10sec) | °C    |
| $T_{STG}$ | Storage Temperature Range                                     | -55 to +150 | °C    |
| $T_{OPT}$ | Operating Temperature Range                                   | -55 to +125 | °C    |
| $V_{ESD}$ | ESD per IEC 61000-4-2(Air)<br>ESD per IEC 61000-4-2 (Contact) | ±20<br>±15  | KV    |

# Transient Voltage Suppressors for ESD Protection

## SE05NRD34GU

### I-V Curve Characteristics

| Symbol    | Parameter                                   |
|-----------|---------------------------------------------|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Test Current                                |
| $I_F$     | Forward Current                             |
| $V_F$     | Forward Voltage @ $I_F$                     |



### Electrical Characteristics ( @ T<sub>A</sub>=25 ° Unless Otherwise Specified )

| Symbol    | Test Condition                                    | Minimum | Typical | Maximum | Units   |
|-----------|---------------------------------------------------|---------|---------|---------|---------|
| $V_{RWM}$ | Any I/O pin to GND                                | --      | --      | 5.0     | V       |
| $I_R$     | $V_{RWM}=5V, T=25^{\circ}C$<br>Any I/O pin to GND | --      | --      | 1.0     | $\mu A$ |
| $V_{BR}$  | $I_T = 1mA$<br>Any I/O pin to GND                 | 6.0     | --      | --      | V       |
| $V_C$     | $I_{PP}=1A, t_p=8/20\mu s$<br>Any I/O pin to GND  | --      | 10      | --      | V       |
| $V_C$     | $I_{PP}=4A, t_p=8/20\mu s$<br>Any I/O pin to GND  | --      | 13      | --      | V       |
| $C_J$     | $V_R=0V, f=1MHz$<br>Between I/O and GND           | --      | 0.60    | --      | pF      |
| $C_J$     | $V_R=0V, f=1MHz$<br>Between I/O and I/O           | --      | 0.40    | --      | pF      |

# Transient Voltage Suppressors for ESD Protection

## SE05NRD34GU

### Electrical Characteristic Curves

Fig. 1 Peak Pulse Power Rating Curve

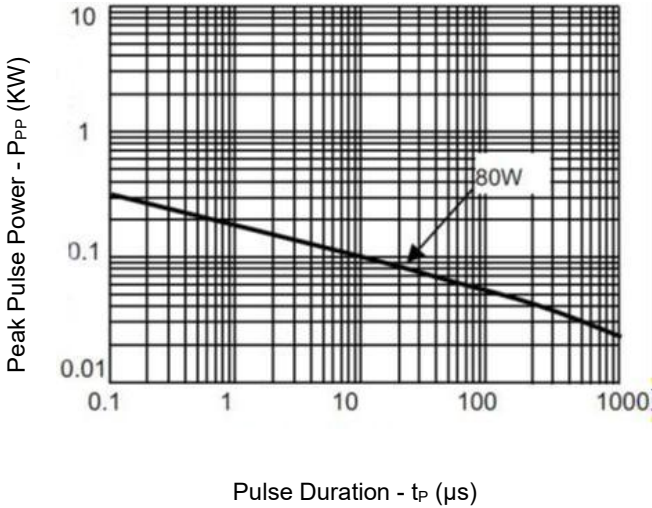


Fig. 2 Pulse Derating Curve

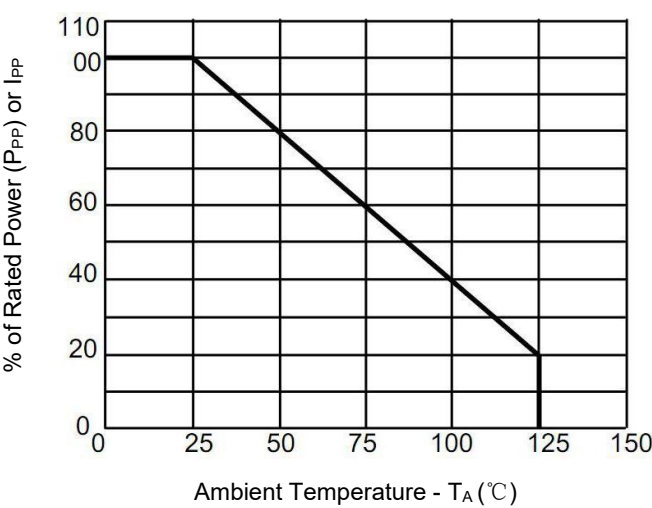


Fig. 3 Pulse Waveform - 8/20 $\mu s$

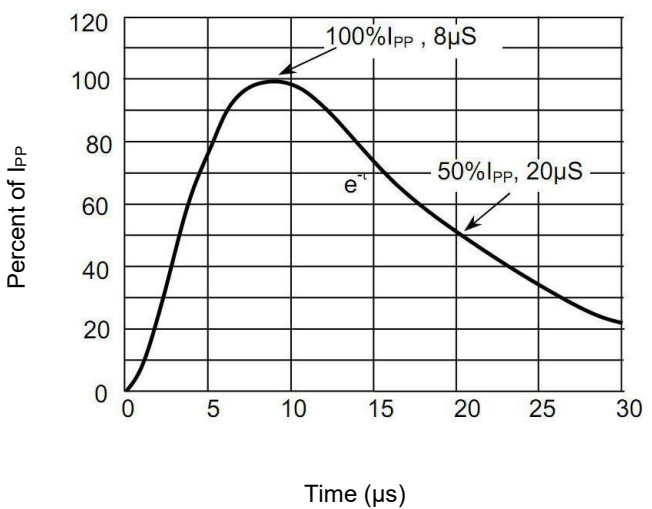
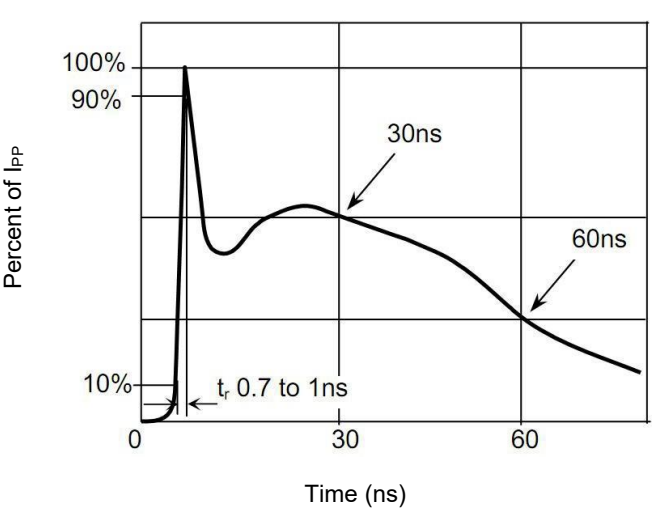


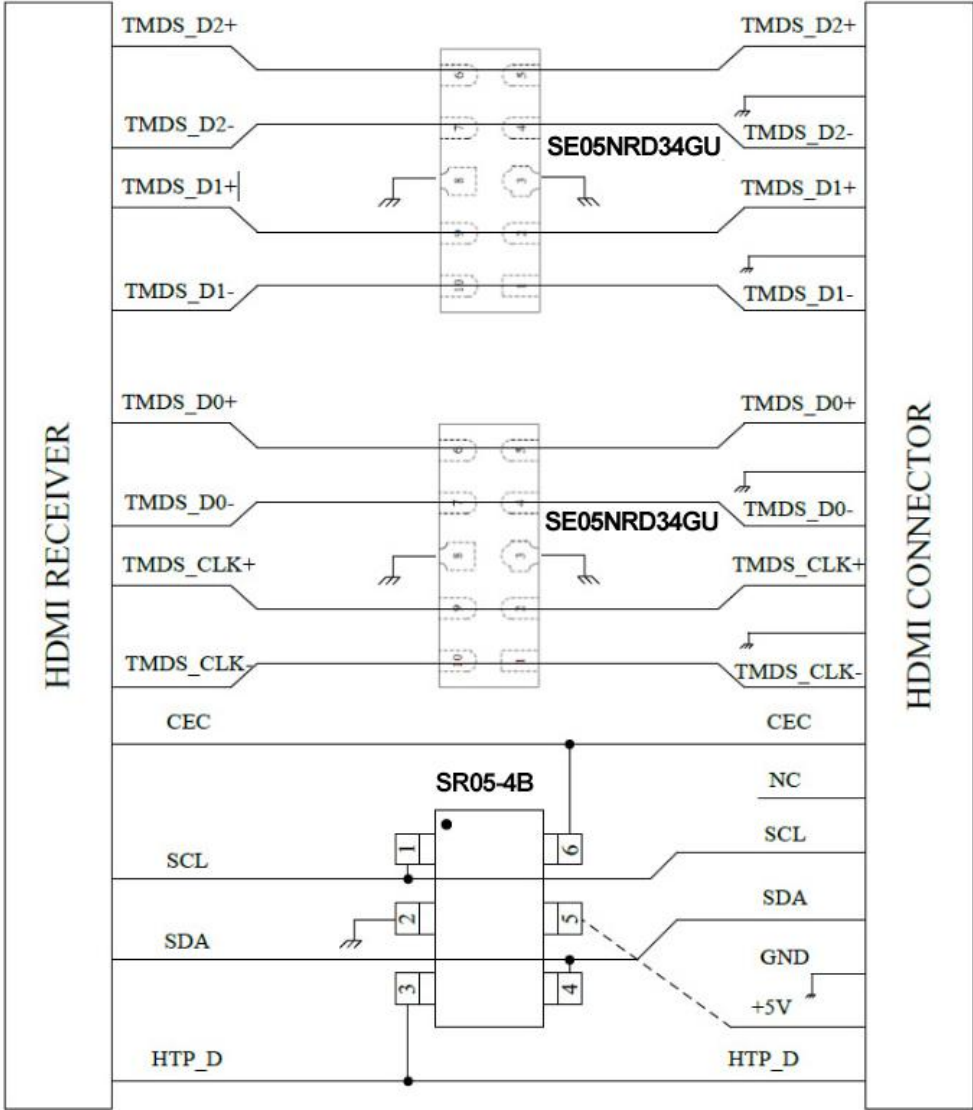
Fig. 4 Pulse Waveform-ESD (IEC61000-4-2)



# Transient Voltage Suppressors for ESD Protection

## SE05NRD34GU

### Application Information

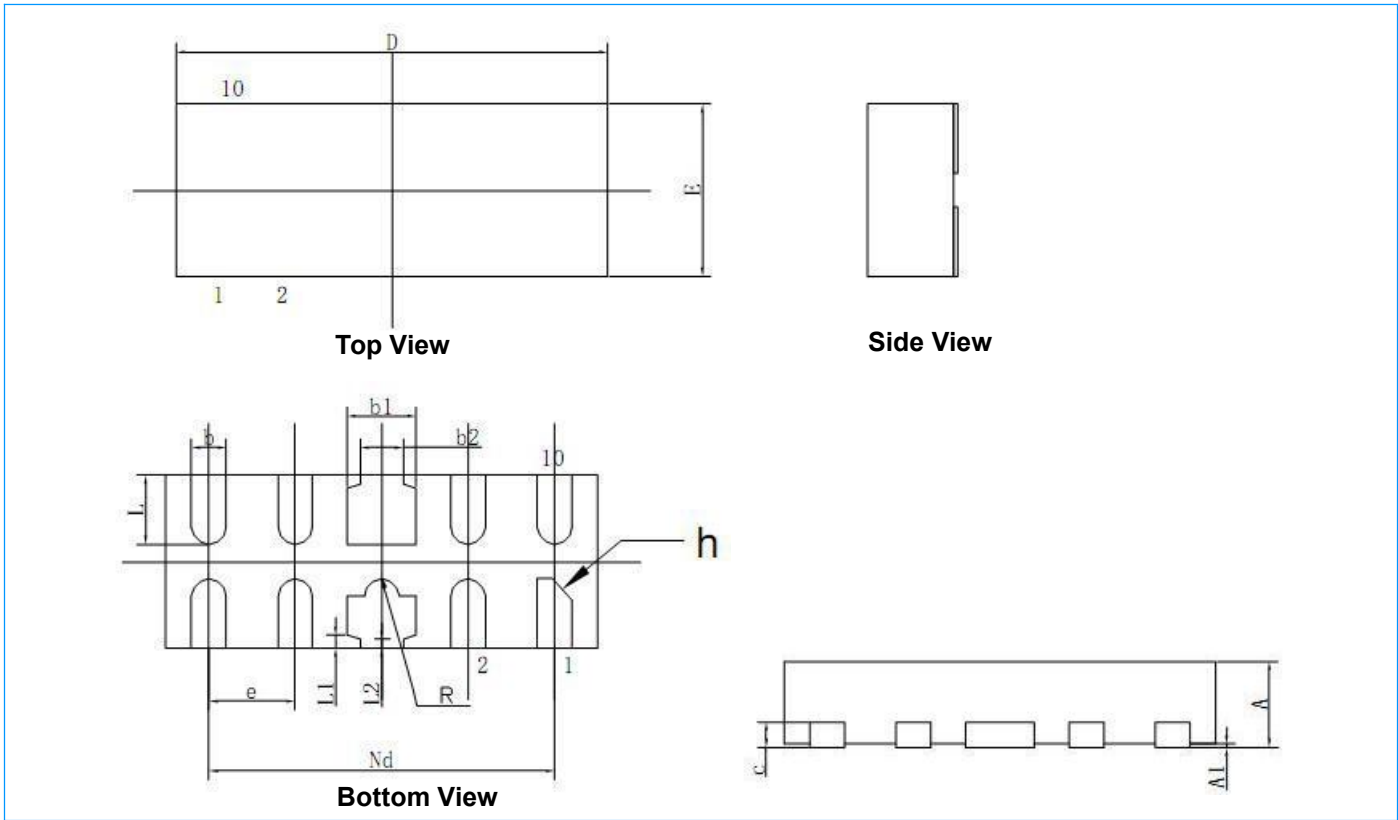


Layout Top View for HDMI Interface with SE05NRD34GU

# Transient Voltage Suppressors for ESD Protection

## SE05NRD34GU

### DFN2510-10L Package Outline & Dimensions



| Symbol | Dimensions In Millimeters |      |      |
|--------|---------------------------|------|------|
|        | Min.                      | Nom. | Max. |
| A      | 0.45                      | 0.50 | 0.55 |
| A1     | --                        | 0.02 | 0.05 |
| b      | 0.15                      | 0.20 | 0.25 |
| b1     | 0.35                      | 0.40 | 0.45 |
| b2     | 0.20                      | 0.25 | 0.30 |
| c      | 0.10                      | 0.15 | 0.20 |
| D      | 2.45                      | 2.50 | 2.55 |
| e      | 0.50 BSC                  |      |      |
| Nd     | 2.00 BSC                  |      |      |
| E      | 0.95                      | 1.00 | 1.05 |
| L      | 0.35                      | 0.40 | 0.45 |
| L1     | 0.075 REF                 |      |      |
| L2     | 0.050 REF                 |      |      |
| h      | 0.08                      | 0.12 | 0.15 |
| R      | 0.05                      | 0.10 | 0.15 |