

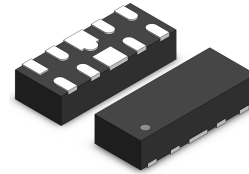
# Transient Voltage Suppressors for ESD Protection

## SE05NRD54GH

### Features

- ◆ Working voltage: 5.0V
- ◆ Low capacitance: 0.60pF (Typical)
- ◆ Low leakage current: 0.1μA @  $V_{RWM}$
- ◆ Low clamping voltage
- ◆ Response Time is < 1 ns

### DFN2510-10L



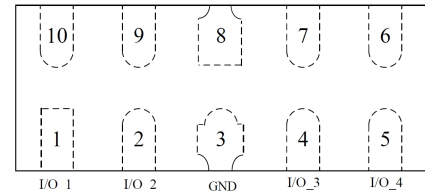
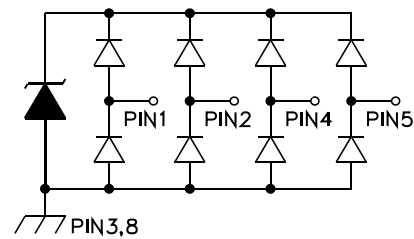
### Applications

- ◆ 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

### Mechanical Characteristics

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

### Pin Configuration



### Absolute Maximum Rating

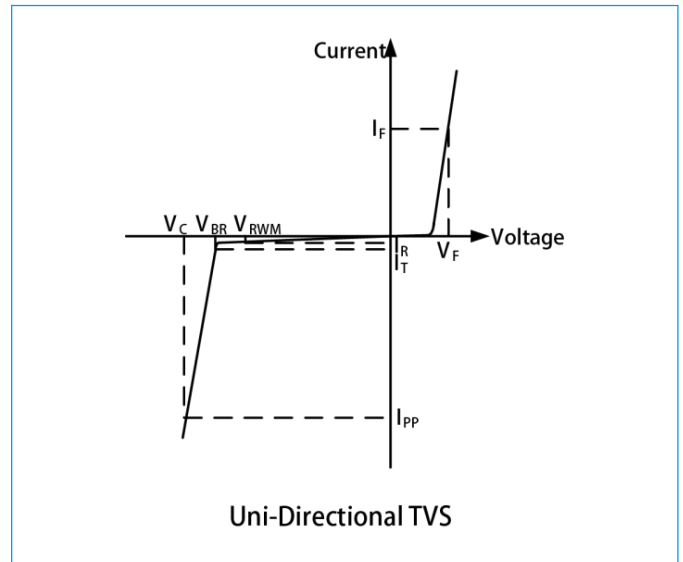
| Symbol    | Parameter                                                     | Value       | Units |
|-----------|---------------------------------------------------------------|-------------|-------|
| $T_{LST}$ | Lead Soldering Temperature                                    | 260 (10sec) | °C    |
| $T_{STG}$ | 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) | ±30<br>±30  | KV    |

## Transient Voltage Suppressors for ESD Protection

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#### 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 (@ $T_A=25^\circ\text{C}$ Unless Otherwise Specified )

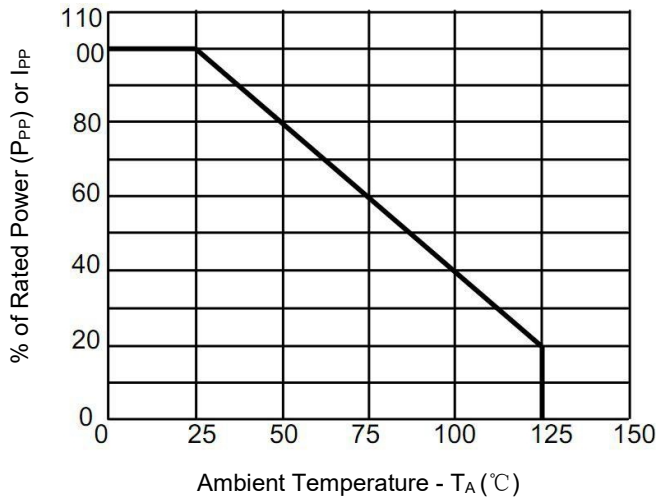
| Symbol    | Test Condition                                                   | Minimum | Typical | Maximum | Units         |
|-----------|------------------------------------------------------------------|---------|---------|---------|---------------|
| $V_{RWM}$ | Any I/O pin to GND                                               | --      | --      | 5.0     | V             |
| $I_R$     | $V_{RWM}=5\text{V}$ , $T=25^\circ\text{C}$<br>Any I/O pin to GND | --      | --      | 0.1     | $\mu\text{A}$ |
| $V_{BR}$  | $I_T = 1\text{mA}$<br>Any I/O pin to GND                         | 6.0     | --      | --      | V             |
| $V_C$     | $I_{PP}=1\text{A}$ , $t_p=8/20\mu\text{s}$<br>Any I/O pin to GND | --      | 10      | --      | V             |
| $V_C$     | $I_{PP}=4\text{A}$ , $t_p=8/20\mu\text{s}$<br>Any I/O pin to GND | --      | 13      | --      | V             |
| $C_J$     | $V_R=0\text{V}$ , $f=1\text{MHz}$<br>Between I/O and GND         | --      | 0.60    | --      | pF            |

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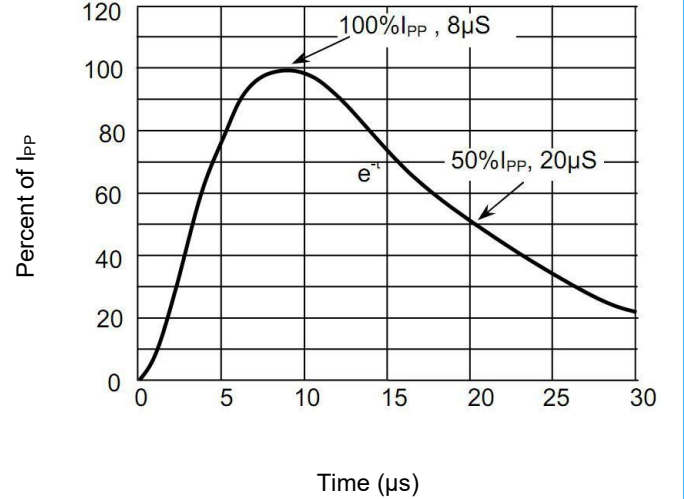
**SE05NRD54GH**

## Electrical Characteristic Curves

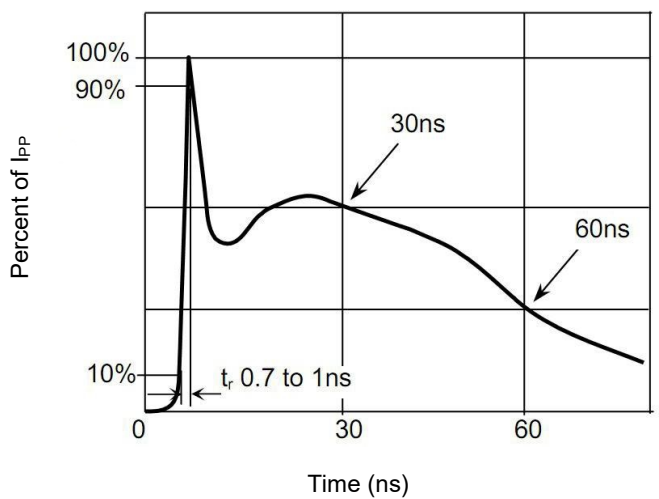
**Fig. 1 Pulse Derating Curve**



**Fig. 2 Pulse Waveform - 8/20 $\mu$ s**



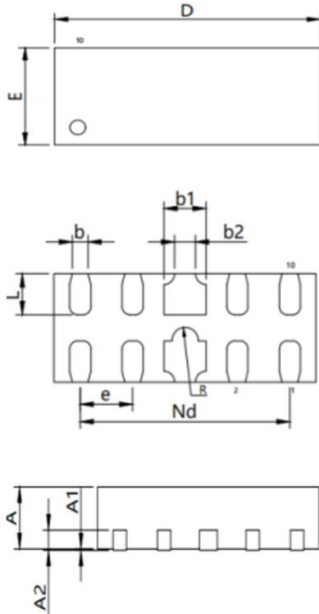
**Fig. 3 Pulse Waveform-ESD (IEC61000-4-2)**



## Transient Voltage Suppressors for ESD Protection

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### DFN2510-10L Package Outline Dimensions



| DIM       | Millimeters |      |      |
|-----------|-------------|------|------|
|           | Min.        | Typ. | Max. |
| <b>D</b>  | 2.45        | 2.50 | 2.55 |
| <b>E</b>  | 0.95        | 1.00 | 1.05 |
| <b>b1</b> | 0.35        | 0.40 | 0.45 |
| <b>b2</b> | 0.15        | 0.20 | 0.25 |
| <b>b</b>  | 0.10        | 0.15 | 0.20 |
| <b>L</b>  | 0.33        | 0.38 | 0.43 |
| <b>Nd</b> | 2.00 BSC    |      |      |
| <b>e</b>  | 0.50 BSC    |      |      |
| <b>R</b>  | 0.125 BSC   |      |      |
| <b>A</b>  | 0.45        | 0.50 | 0.55 |
| <b>A2</b> | 0.152 REF   |      |      |
| <b>A1</b> | --          | 0.00 | 0.05 |

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