Elektronische Bauelemente

# SIESD15

**1600W, 15V**
**Transient Voltage Suppressors**
**for ESD Protection (Uni-direction)**

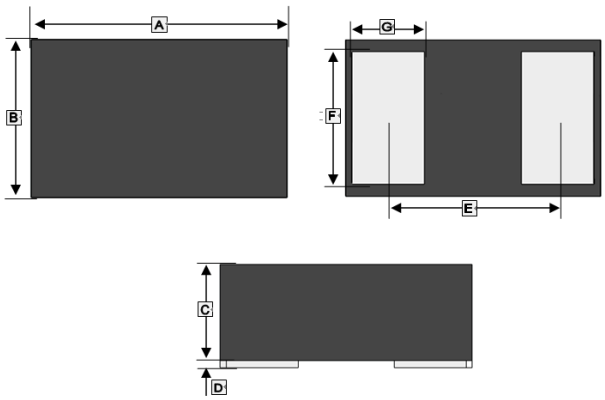
RoHS Compliant Product
A suffix of "-C" specifies halogen and lead-free

## DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

**DFN1610**




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 1.55 | 1.65 | E | 1.10 BSC. | |
| B | 0.95 | 1.05 | F | 0.75 | 0.95 |
| C | 0.45 | 0.55 | G | 0.35 | 0.45 |
| D | 0.025 TYP. | | | | |

## FEATURES

- Uni-directional ESD Protection of One Line
- Low Reverse Clamping Voltage
- Low Leakage Current
- Fast Response Time
- JESD22-A114-B ESD Rating of Class 3B Per Human Body Model
- IEC 61000-4-2 Level 4 ESD Protection
- Surge Protection According to IEC61000-4-5 8/20μs Waveform: $I_{PPM}$ 60A
- Polarity: Color Band Denotes Cathode End

## MARKING

**15P**

## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---|---|---|
| DFN1610 | 3K | 7 inch |

## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SIESD15 | Lead (Pb)-free |
| SIESD15-C | Lead (Pb)-free and Halogen-free |

## ABSOLUTE MAXIMUM RATINGS ($T_A$=25℃ unless otherwise specified)

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| IEC 61000-4-2 ESD Voltage [1] | Air Model | $V_{ESD}$ | ±25 | kV |
| | Contact Model | | ±25 | |
| JESD22-A114-B ESD Voltage [1] | Per Human Body Model | | ±16 | |
| ESD Voltage [1] | Machine Model | | ±0.4 | |
| Peak Pulse Power [2] | | $P_{PP}$ | 1600 | W |
| Peak Pulse Current [2] | | $I_{PP}$ | 60 | A |
| Maximum Lead Solder Temperature @10 Second Duration | | $T_L$ | 260 | ℃ |
| Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55~150 | ℃ |

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## ELECTRICAL CHARACTERISTICS ($T_A$=25℃ unless otherwise specified)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Reverse Stand-off Voltage | $V_{RWM}$ | - | - | 15 | V | |
| Breakdown Voltage | $V_{(BR)}$ | 16 | - | - | V | $I_T$=1mA |
| Clamping Voltage [2] | $V_C$ | - | - | 28 | V | $I_{PP}$=60A |
| Forward Voltage | $V_F$ | - | - | 1 | V | $I_F$=15mA |
| Reverse leakage current | $I_R$ | - | - | 1 | μA | $V_{RWM}$=15V |
| Junction Capacitance | $C_J$ | - | 390 | - | pF | $V_R$=0V, f=1MHz |

Notes:
1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

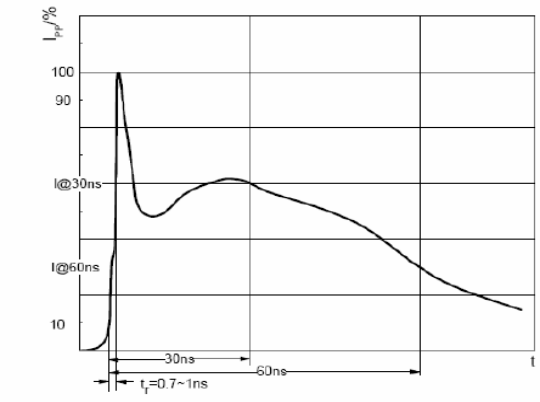
## ESD STANDARDS COMPLIANCE

### IEC61000-4-2 Standard

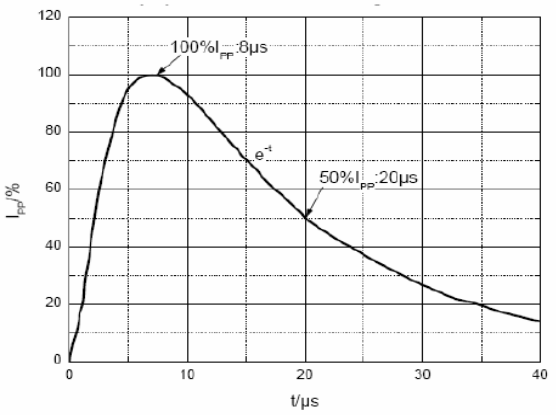
| Contact Discharge | | Air Discharge | |
|---|---|---|---|
| Level | Test Voltage kV | Level | Test Voltage kV |
| 1 | 2 | 1 | 2 |
| 2 | 4 | 2 | 4 |
| 3 | 6 | 3 | 8 |
| 4 | 8 | 4 | 15 |

### JESD22-A114-B Standard

| ESD Class | Human Body Discharge V |
|---|---|
| 0 | 0～249 |
| 1A<br>1B<br>1C | 250～499<br>500～999<br>1000～1999 |
| 2 | 2000～3999 |
| 3A<br>3B | 4000～7999<br>8000～15999 |



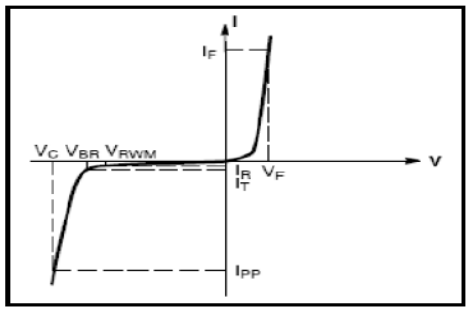

ESD pulse waveform according to IEC61000-4-2




8/20μs pulse waveform according to IEC 61000-4-5

## ELECTRICAL PARAMETER

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




V-I characteristics for a uni-directional TVS

## TYPICAL CHARACTERISTICS