Elektronische Bauelemente

# SBESDH12C-C

**260W, 12V**

**Bi-Direction ESD Protection Diode**

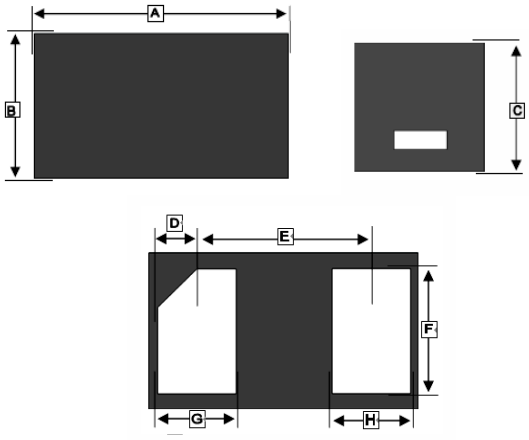
RoHS Compliant Product
A suffix of “-C” specifies halogen and lead-free

## 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.

**DFN1006**




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 0.95 | 1.08 | E | 0.65BSC. | |
| B | 0.55 | 0.68 | F | 0.4 | 0.6 |
| C | 0.4 | 0.55 | G | 0.2 | 0.3 |
| D | 0.07 | 0.17 | H | 0.2 | 0.3 |

## FEATURES

- Bi-directional ESD protection of one line
- Reverse stand−off voltage: 12V
- 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

## MARKING

**H2C**

## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---|---|---|
| DFN1006 | 10K | 7 inch |

## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SBESDH12C-C | Lead (Pb)-free and Halogen-free |

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

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| IEC 61000-4-2 ESD Voltage [1] | Air | $V_{ESD}$ | ±15 | kV |
| | Contact | | ±8 | |
| JESD22-A114-B ESD Voltage [1] | Per Human Body Model | | ±16 | |
| | Machine Model | | ±0.4 | |
| Peak Pulse Power [2] | | $P_{PP}$ | 260 | W |
| Peak Pulse Current [2] | | $I_{PP}$ | 10 | A |
| Maximum Lead Solder Temperature(10 Second Duration) | | $T_L$ | 260 | ℃ |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | 150, -55~150 | ℃ |

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

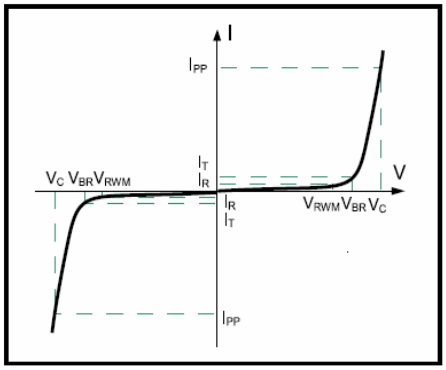
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Reverse Stand-off Voltage | $V_{RWM}$ | - | - | 12 | V | |
| Breakdown Voltage | $V_{(BR)}$ | 13.3 | - | 17 | V | $I_T$=1mA |
| Clamping Voltage [2] | $V_C$ | - | - | 27 | V | $I_{PP}$=10A |
| Reverse Leakage Current | $I_R$ | - | - | 1 | μA | $V_{RWM}$=12V |
| Junction Capacitance | $C_J$ | - | 30 | - | 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.

## 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 |

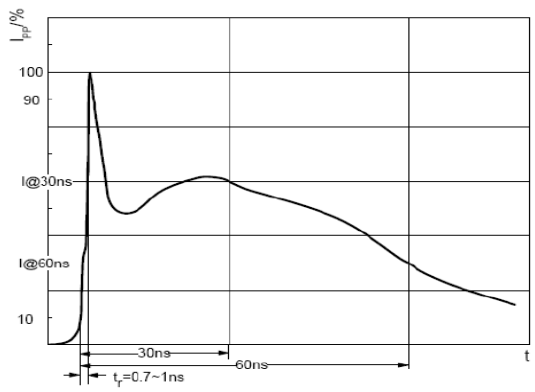



**V-I characteristics for a Bi-directional TVS**

## ESD STANDARDS COMPLIANCE

### IEC61000-4-2 Standard

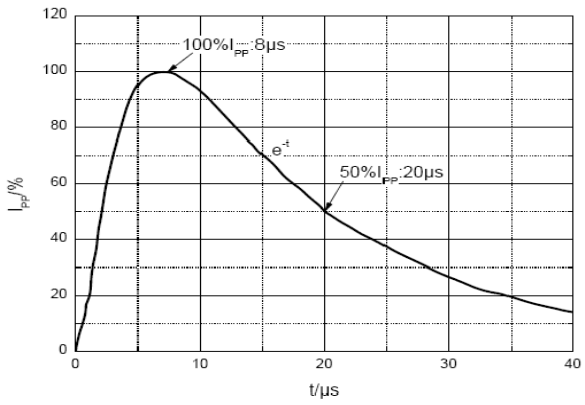
| Contact Discharge | | Air Discharge | |
|---|---|---|---|
| Level | Test Voltage kV | Level | Test Voltage kV |
| 1 | 2 | 1 | 2 |
| 2 | 4 | 2 | 4 |
| 3 | 6 | 3 | 8 |
| 4 | 8 | 4 | 15 |




**ESD pulse waveform according to IEC61000-4-2**

### JESD22-A114-B Standard

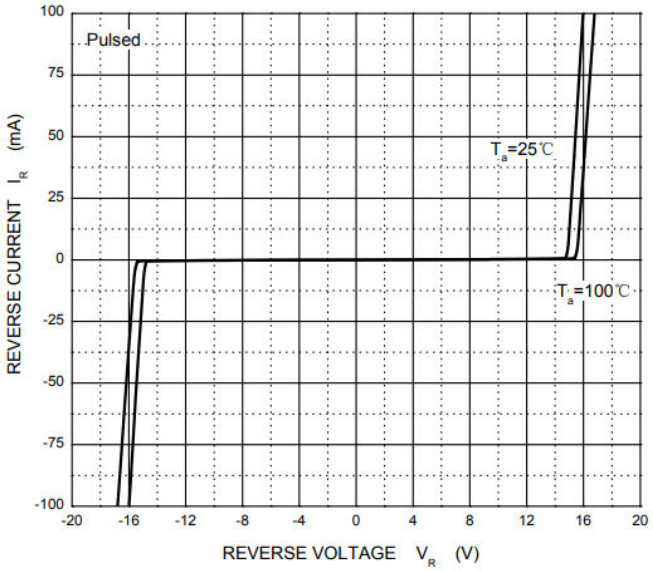
| ESD Class | Human Body Discharge V |
|---|---|
| 0 | 0～249 |
| 1A<br>1B<br>1C | 250～499<br>500～999<br>1000～1999 |
| 2 | 2000～3999 |
| 3A<br>3B | 4000～7999<br>8000～15999 |



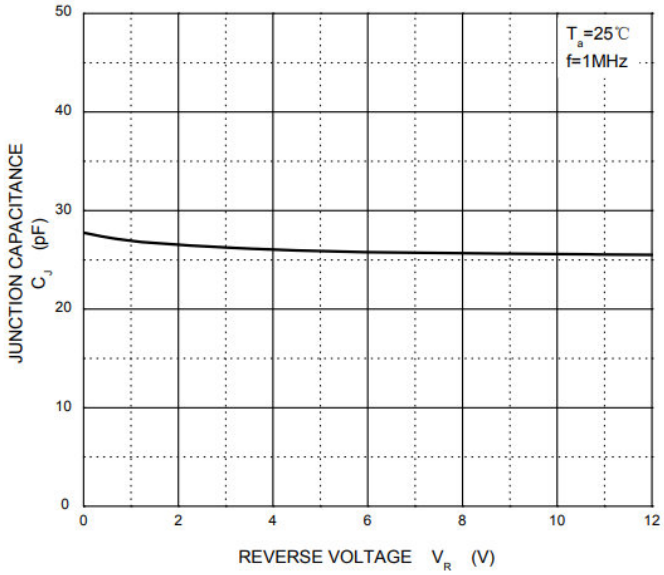

**8/20μs pulse waveform according to IEC 61000-4-5**

## TYPICAL CHARACTERISTICS

**Reverse Characteristics**




**Capacitance Characteristics**




**$V_C$ —— $I_{PP}$**