

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

**DESCRIPTION**

The SBESD9N5 is a transient voltage suppressors (TVS) which provide a very high level protection for sensitive electronic components that may be subjected to electrostatic discharge (ESD). It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

The SBESD9N5 was past ESD transient voltage up to  $\pm 12\text{KV}$  (contact) according to IEC61000-4-2 and withstand peak current up to 3A for 8/20us pulse according to IEC61000-4-5.

The SBESD9N5 is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.

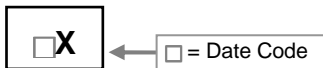
**APPLICATIONS**

- Mobile phone
- PAD
- Notebook
- LCD TV
- Other electronics equipments

**FEATURES**

- Ultra-low clamping voltage
- Low leakage current
- Small package

**MARKING**



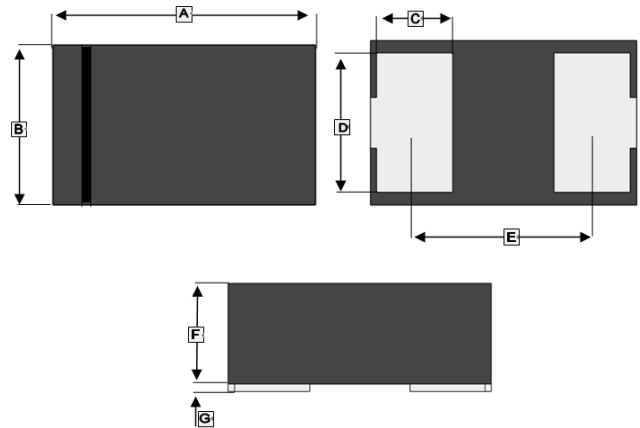
**PACKAGE INFORMATION**

| Package    | MPQ | Leader Size |
|------------|-----|-------------|
| DFN1006-2L | 5K  | 7 inch      |

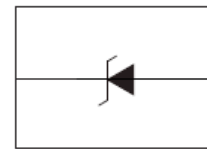
**ABSOLUTE MAXIMUM RATINGS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

| Rating                                       | Symbol            | Value          | Unit             |
|--|-------------------|----------------|------------------|
| IEC 61000-4-2 (ESD)                          | Air contact       | $\pm 15$       | kV               |
|  | Contact discharge | $\pm 10$       |                  |
| Peak pulse power ( $t_p=8/20\mu\text{s}$ )   | $P_{PK}$          | 45             | W                |
| Peak pulse current ( $t_p=8/20\mu\text{s}$ ) | $I_{PP}$          | 3              | A                |
| Storage temperature range                    | $T_J, T_{STG}$    | 150, -55 ~ 150 | $^\circ\text{C}$ |
| Lead temperature                             | $T_L$             | 260            | $^\circ\text{C}$ |

**DFN1006-2L**



| REF. | Millimeter |      | REF. | Millimeter |      |
|------|------------|------|------|------------|------|
|      | Min.       | Max. |      | Min.       | Max. |
| A    | 0.95       | 1.05 | E    | 0.65 TYP.  |      |
| B    | 0.55       | 0.65 | F    | 0.3        | 0.4  |
| C    | 0.2        | 0.3  | G    | 0.00       | 0.05 |
| D    | 0.45       | 0.55 |      |            |      |

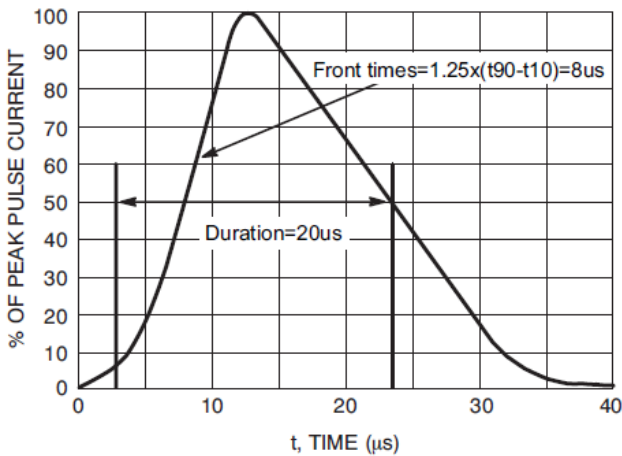


Uni-direction

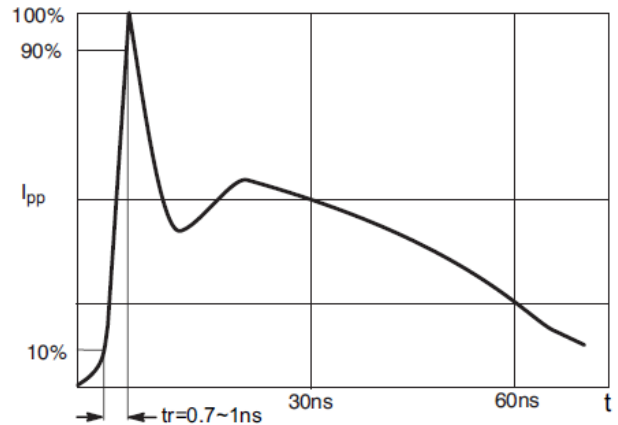
**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

| Parameter                       | Symbol    | Condition                               | Min. | Typ. | Max. | Units         |
|---------------------------------|-----------|---|------|------|------|---------------|
| Reveres maximum working voltage | $V_{RWM}$ | $I_R=1\mu\text{A}$                      | -    | 5    | -    | V             |
| Reveres leakage current         | $I_R$     | $V_{RWM}=5\text{V}$                     | -    | -    | 1    | $\mu\text{A}$ |
| Reveres breakdown voltage       | $V_{BR}$  | $I_T=1\text{mA}$                        | 6.6  | 8    | 8.9  | V             |
| Forward voltage                 | $V_F$     | $I_F=10\text{mA}$                       | -    | 0.85 | 1    | V             |
| Clamping Voltage                | $V_C$     | $I_{PP}=1\text{A}, t_p=8/20\mu\text{s}$ | -    | -    | 11   | V             |
|                                 |           | $I_{PP}=3\text{A}, t_p=8/20\mu\text{s}$ | -    | -    | 15   | V             |
| Junction capacitance            | $C_J$     | I/O to GND                              | -    | 0.5  | 0.8  | pF            |

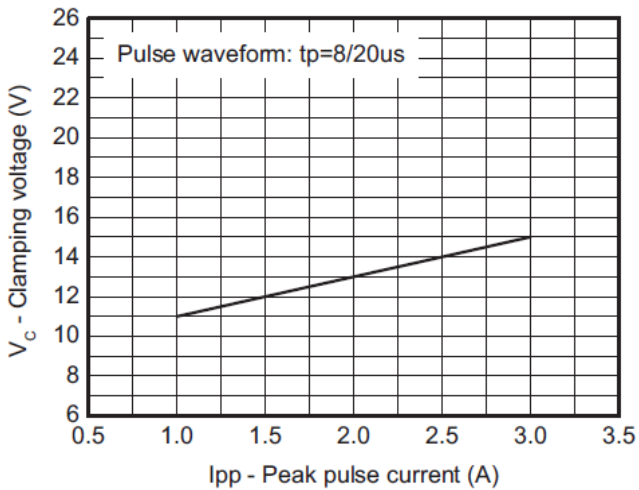
**RATINGS AND CHARACTERISTICS CURVES**



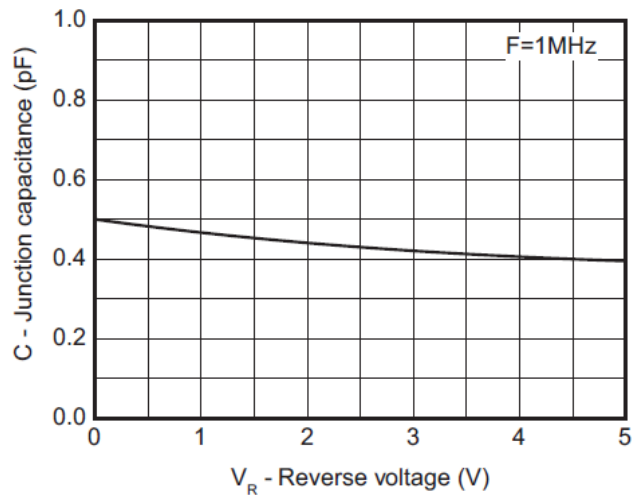
8/20us waveform



IEC61000-4-2 waveform

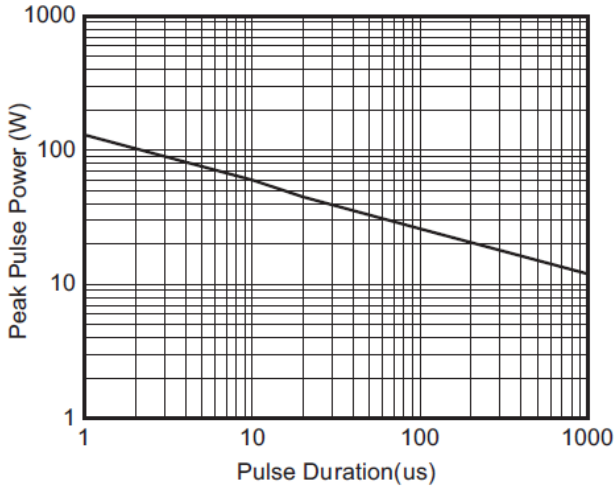


Clamping voltage vs. Peak pulse current

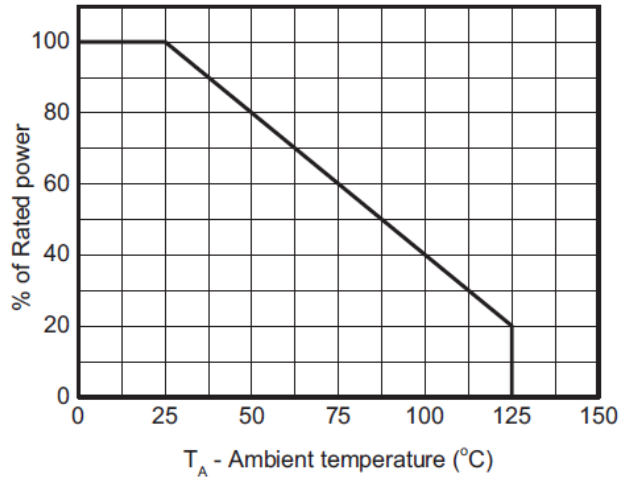


Capacitance vs. Reverses voltage

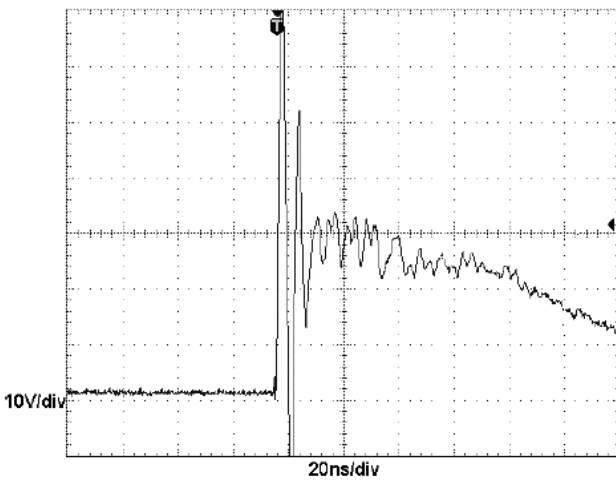
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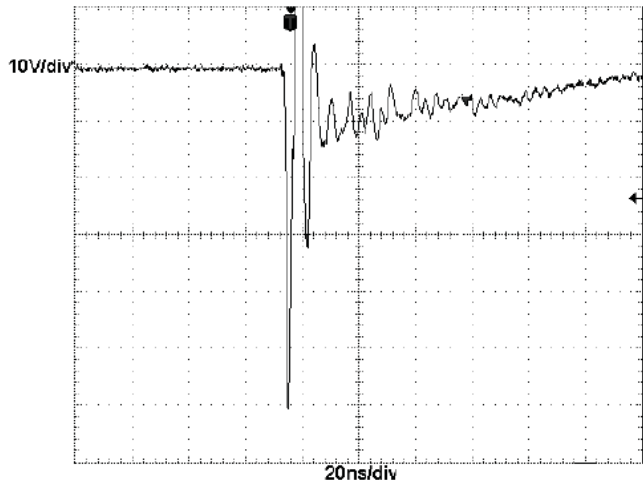
**Non-Repetitive Peak Pulse Power vs. Pulse time**



**Power derating vs. Temperature**



**ESD clamping  
(IEC61000-4-2 +8KV contact)**



**ESD clamping  
(IEC61000-4-2 -8KV contact)**