

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 multilayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

FEATURES

- Bi-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

MARKING

WB

PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN1006	10K	7 inch

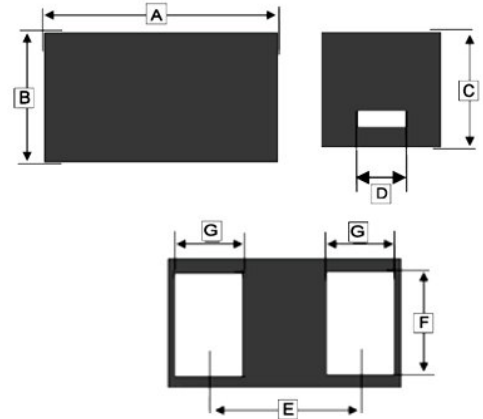
ORDER INFORMATION

Part Number	Type
SBESD4V5C-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted.)

Parameter	Symbol	Ratings	Unit		
IEC 61000-4-2 ESD Voltage ¹	V _{ESD}	Air	±25	kV	
		Contact	±25		
		JESD22-A114-B ESD Voltage ¹	Per Human Body Model		±16
			Machine Model		±0.4
Peak Pulse Power ²	P _{PP}	540	W		
Peak Pulse Current ²	I _{PP}	30	A		
Maximum Lead Solder Temperature(10 Second Duration)	T _L	260	°C		
Operating Junction and Storage Temperature Range	T _J , T _{STG}	150, -55~150	°C		

DFN1006



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	0.95	1.05	E	0.64 BSC.	
B	0.55	0.65	F	0.45	0.55
C	0.40	0.55	G	0.20	0.30
D	0.20 TYP.				



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

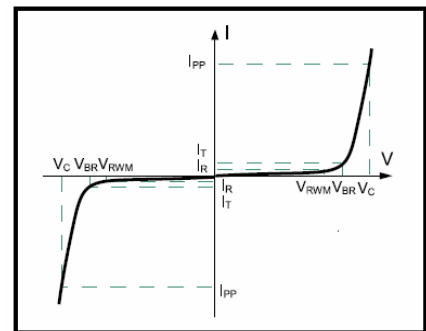
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Reverse Stand-off Voltage	V_{RWM}	-	-	4.5	V	
Breakdown Voltage	$V_{(BR)}$	4.6	-	6	V	$I_T=1\text{mA}$
		4.5	-	-		$I_T=100\text{mA}$
Clamping Voltage ²	V_C	-	-	18	V	$I_{PP}=30\text{A}$
Reverse Leakage Current	I_R	-	-	1	μA	$V_{RWM}=4.5\text{V}$
Junction Capacitance	C_J	-	60		pF	$V_R=0\text{V}$, $f=1\text{MHz}$

Notes:

- Device stressed with ten non-repetitive ESD pulses.
- Non-repetitive current pulse 8/20 μs 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

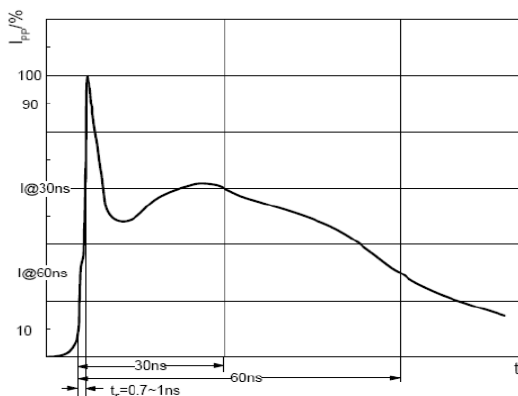
ESD STANDARDS COMPLIANCE

IEC61000-4-2 Standard

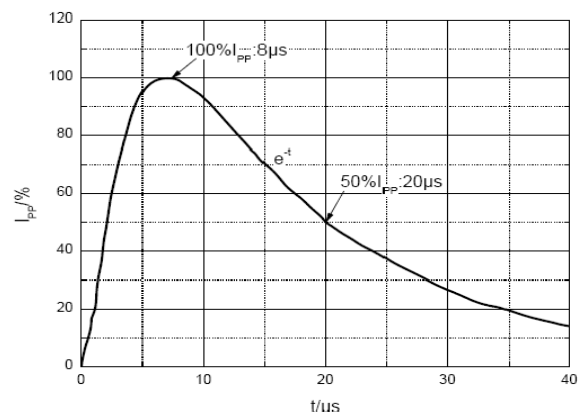
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

JESD22-A114-B Standard

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



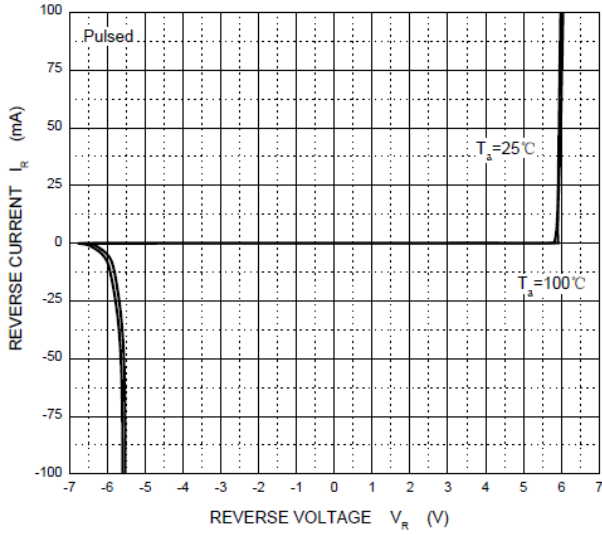
ESD pulse waveform according to IEC61000-4-2



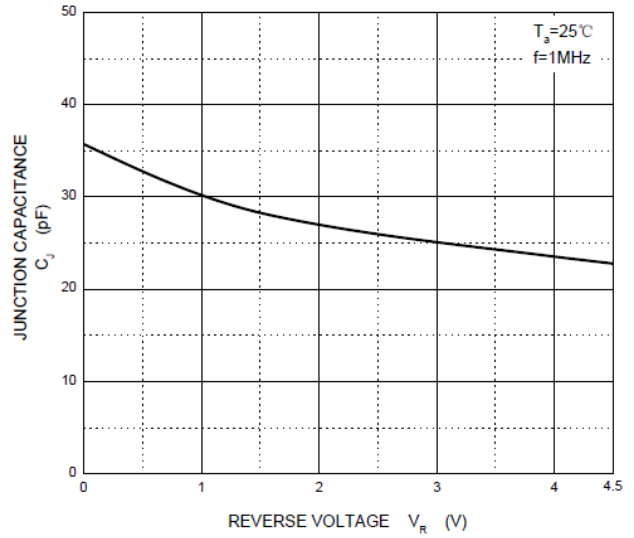
8/20 μs pulse waveform according to IEC 61000-4-5

TYPICAL CHARACTERISTICS

Reverse Characteristics



Capacitance Characteristics



V_C — I_{PP}

