ESD9B5V

1-Line, Bi-directional, Transient Voltage Suppressors

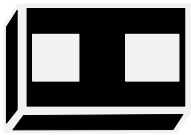
Descriptions

The ESD9B5V is a bi-directional TVS (Transient Voltage Suppressor) designed to protect sensitive electronic components from damage due to ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and CDE (Cable Discharge Event). The ESD9B5V has been specifically designed to replace MLV (Multilayer Varistor) in portable application such as cellular handsets, notebook computers, tablets and PADs.

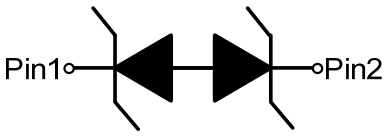
The ESD9B5V is based on solid-state silicon technology and offer unique electrical characteristics like lower clamping voltage and no device degrading compared to MLV.

The ESD9B5V may be used to provide ESD protection up to ±30kV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 6.5A (8/20μs) according to IEC61000-4-5.

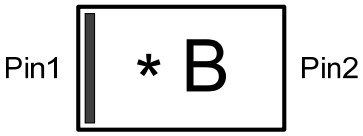
The ESD9B5V is available in FBP-02C package. Standard products are Pb-free and Halogen-free.



FBP-02C (Bottom view)



Circuit diagram (Top view)



*** = Month (A~Z)**
B = Device code
Marking (Top View)

Features

- Stand-off voltage: 5V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (contact discharge)
  IEC61000-4-5 (surge): 6.5A (8/20μs)
- Capacitance: C_J = 22pF typ.
- Low clamping voltage
- Solid-state silicon technology

Applications

- Cellular handsets
- Tablets
- Computers and peripherals
- Notebooks
- Digital camera
- Other electronics equipments

Order information

Device	Package	Shipping
ESD9B5V-2/TR	FBP-02C	10000/Tape&Reel

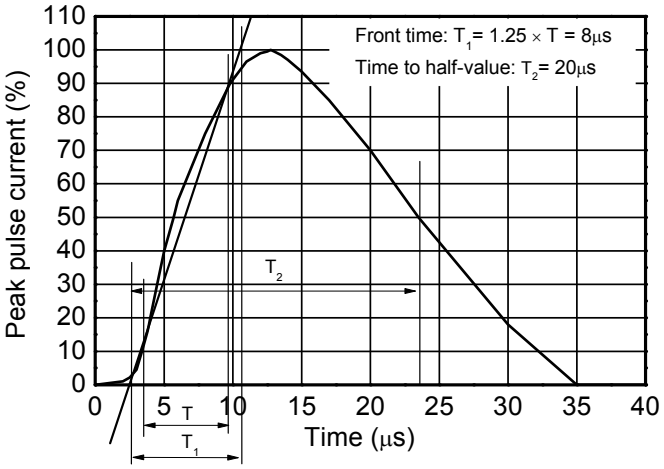
Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (tp=8/20us)	P_{pk}	85	W
Peak pulse current (tp=8/20us)	I_{PP}	6.5	A
ESD voltage IEC61000-4-2 air	V_{ESD}	±30	kV
ESD voltage IEC61000-4-2 contact		±30	
Operation junction temperature	T_J	125	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

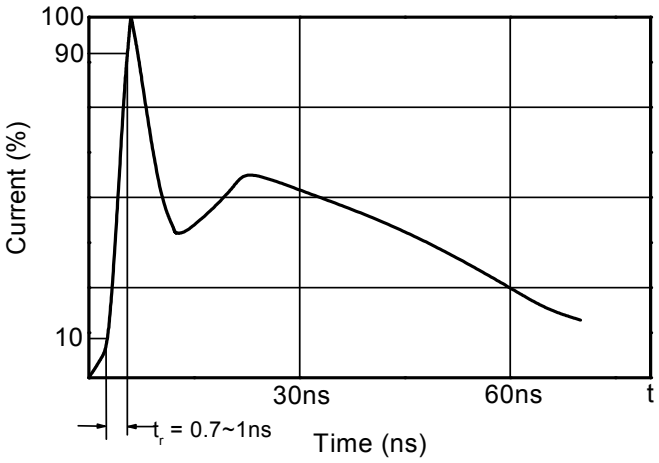
Electronics characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reveres maximum working voltage	V_{RWM}				5.0	V
Reveres leakage current	I_R	V_{RWM} = 5V			1.0	μA
Reveres breakdown voltage	V_{BR}	I_T = 1mA	5.6	7.5	8.2	V
Forward voltage	V_F	I_F = 1mA	5.6	7.5	8.2	V
Clamping voltage	V_{CL}	I_{PP} = 1A, t_p = 8/20μs			9	V
		I_{PP} = 6.5A, t_p = 8/20μs			13	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		22	35	pF

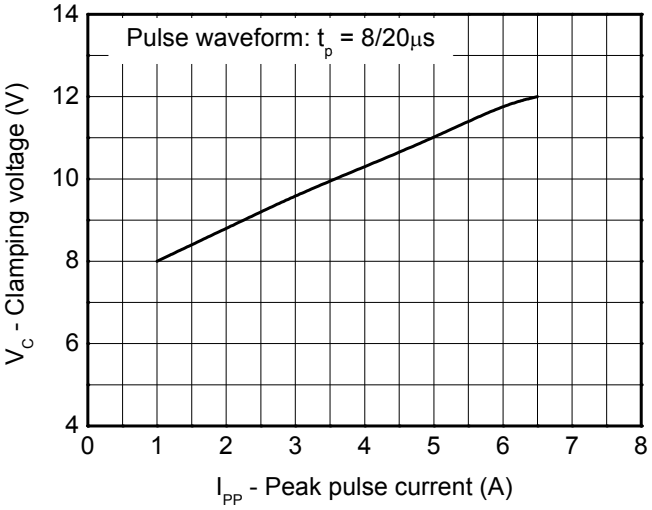
Typical characteristics (T_A=25°C, unless otherwise noted)



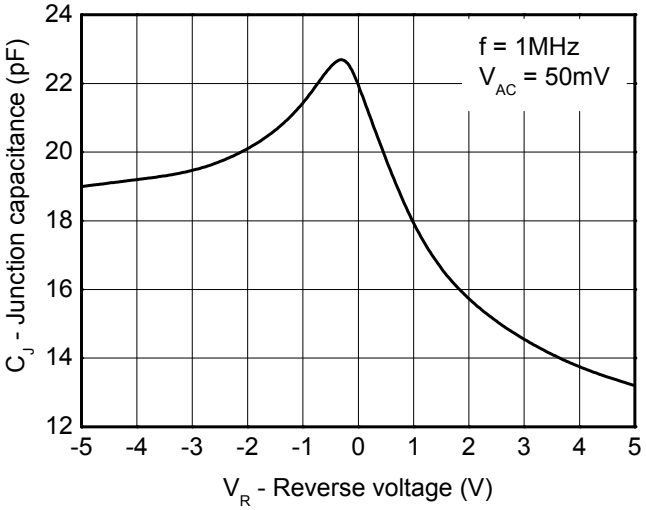
8/20μs waveform per IEC61000-4-5



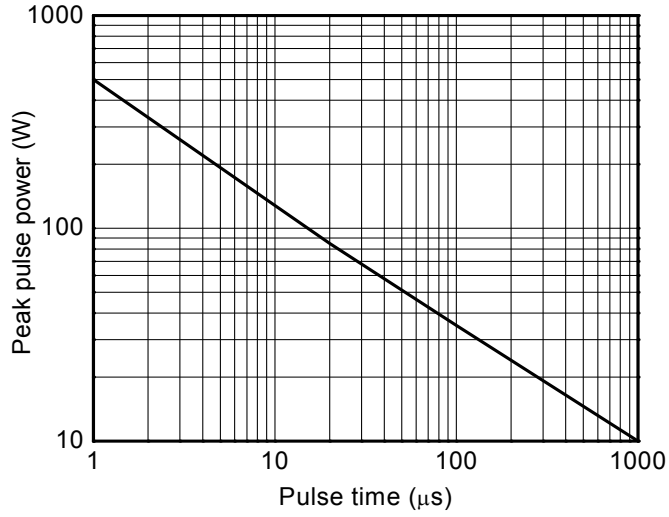
Contact discharge current waveform per IEC61000-4-2



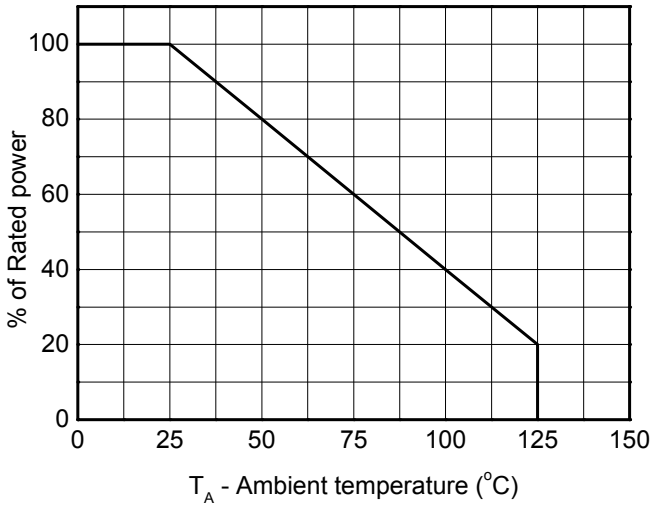
Clamping voltage vs. Peak pulse current



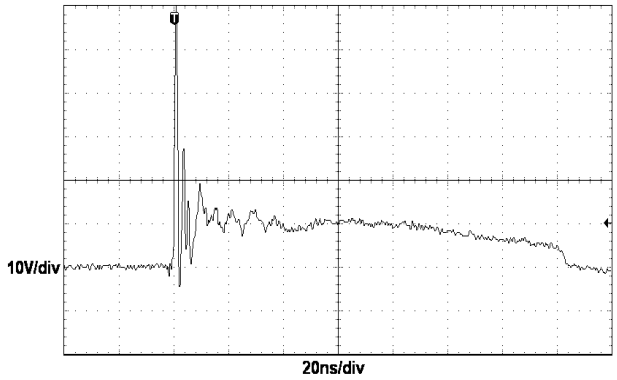
Capacitance vs. Reveres voltage



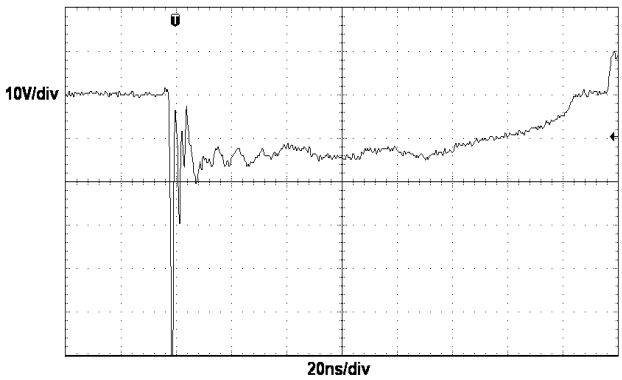
Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature



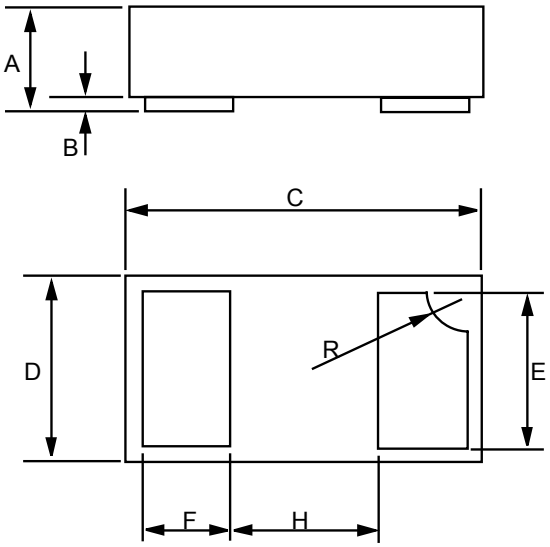
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



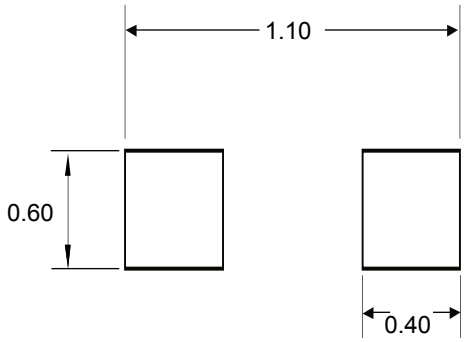
ESD clamping
(-8kV contact discharge per IEC61000-4-2)

Package outline dimensions

FBP-02C



Dim	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.013	0.015	0.34	0.40
B	0.000	0.002	0.00	0.05
C	0.037	0.042	0.95	1.075
D	0.021	0.026	0.55	0.675
E	0.017	0.021	0.45	0.55
F	0.007	0.011	0.20	0.30
H	0.015Typ.		0.40Tyo.	
R	0.001	0.005	0.05	0.15



Unit:mm