

ESD9BL**
[Http://www.willsemi.com](http://www.willsemi.com)
**1-Line, Bi-directional, Low-Capacitance,
Transient Voltage Suppressors**
Descriptions

The ESD9B**L 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 multilayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

The ESD9B**L was past ESD transient voltage up to $\pm 9\text{KV}$ (contact) according to IEC61000-4-2 and withstand peak current up to 3.5A for 8/20us pulse according to IEC61000-4-5.

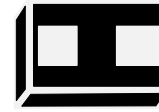
The ESD9B**L series are available in FBP-02C, SOD-923 and DFN1006 packages. Standard products are Pb-free and Halogen-free..

Features

- Working voltage : 5V
- Peak power (tp=8/20us) : 40W Max.
- Peak current (tp=8/20us) : 3.5A Max.
- Transient protection
IEC61000-4-2 : $\pm 15\text{KV}$ air
: $\pm 9\text{KV}$ contact
- Low clamping voltage
- Low leakage current
- Small package

Applications

- Cell phone
- PMP
- MID
- PDA
- Digital camera
- Other electronics equipments


FBP-02C

SOD-923

DFN1006

Pin configuration (Top view)

FBP-02C

SOD-923

DFN1006

* = Month (A~Z)

.B = Device code

L = Device code

Marking

Order information

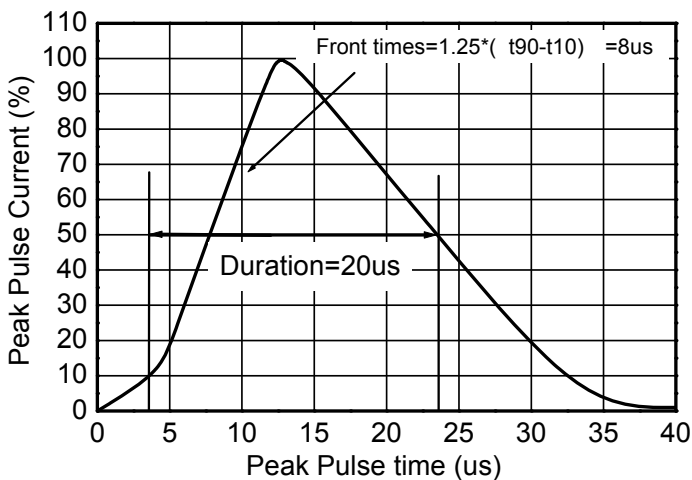
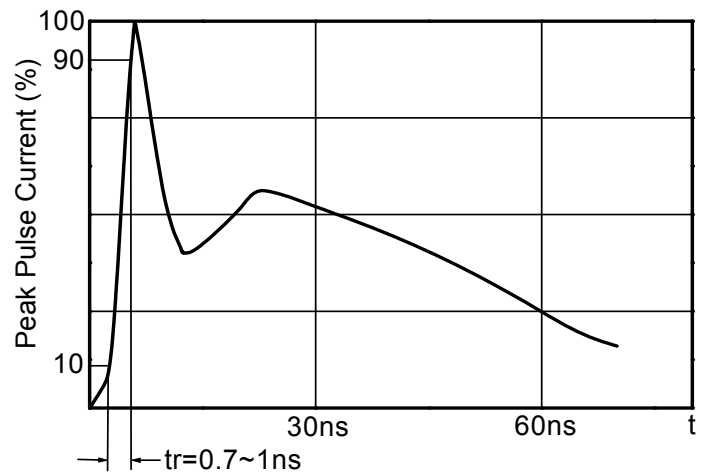
Device	Package	Shipping
ESD9B5VL-2/TR	FBP-02C	10000/Tape&Reel
ESD9B5VLD-2/TR	SOD-923	5000/Tape&Reel
ESD9N5BL-2/TR	DFN1006	5000/Tape&Reel

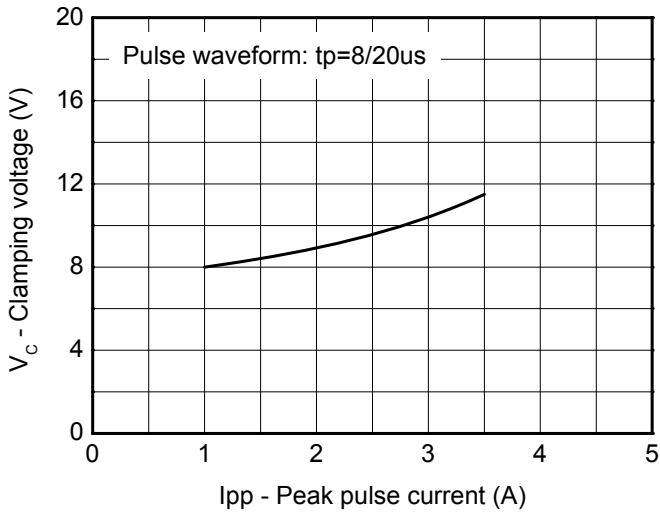
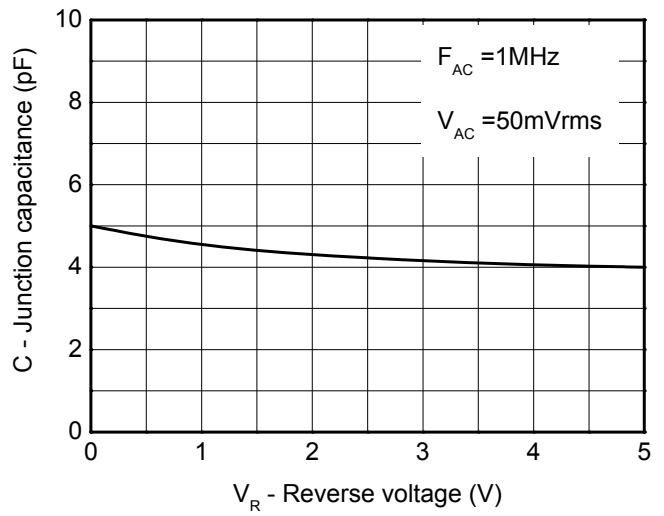
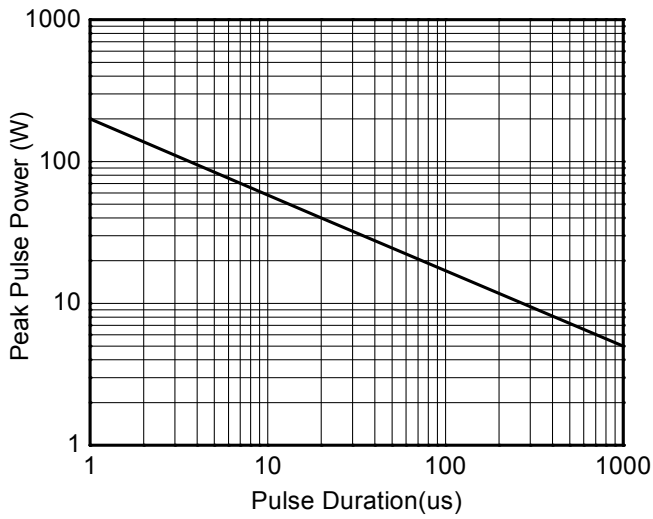
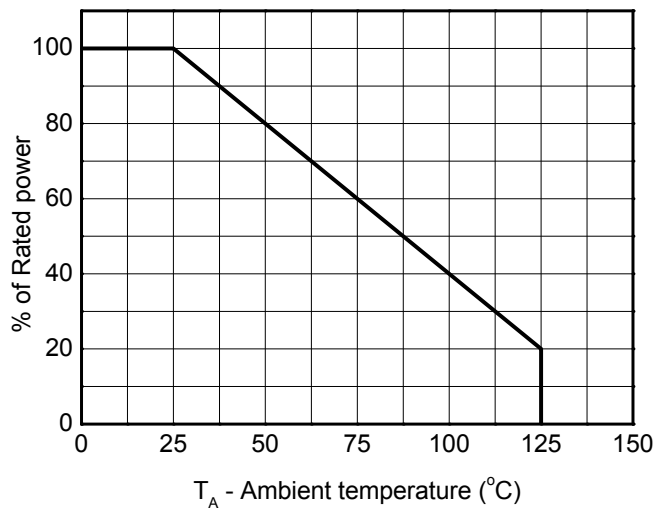
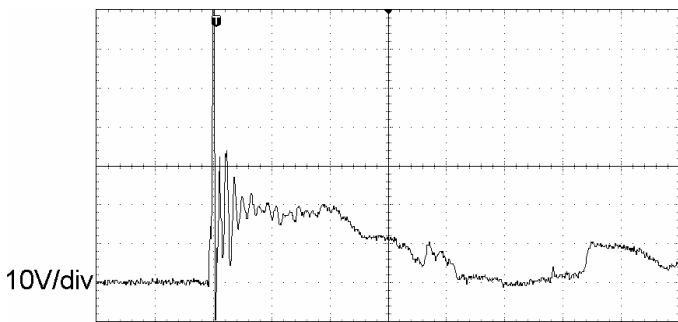
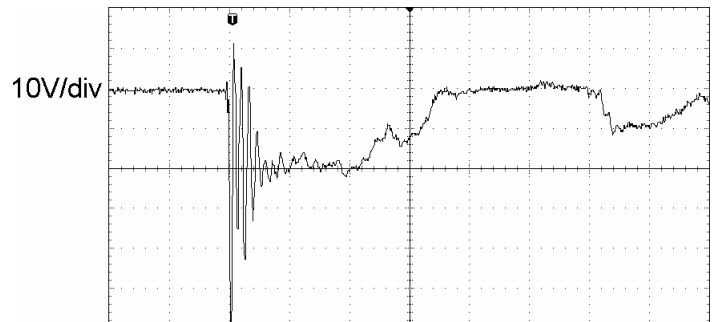
Absolute maximum ratings

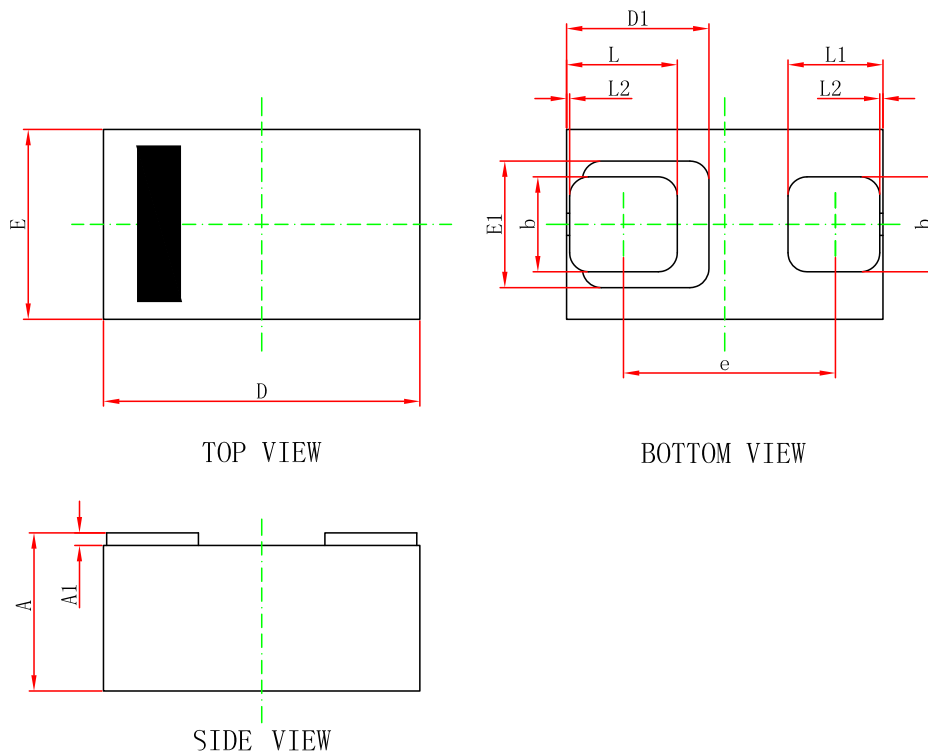
Parameter	Symbol	Rating	Unit
Peak pulse power (tp=8/20us)	Ppk	40	W
Peak pulse current (tp=8/20us)	Ipp	3.5	A
ESD voltage IEC61000-4-2 air	V _{ESD}	±15	KV
ESD voltage IEC61000-4-2 contact		±9	
Operation junction temperature	T _J	125	°C
Lead temperature	T _L	260	°C
Storage temperature	T _{sg}	-55~150	°C

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

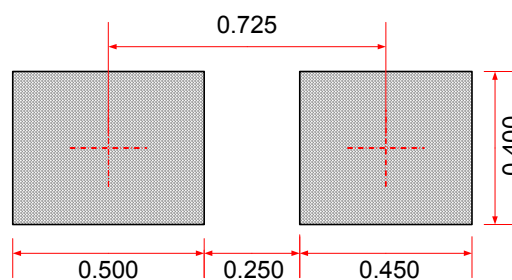
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reveres maximum working voltage	V _{RWM}				5.0	V
Reveres leakage current	I _R	V _{RWM} =5V			5.0	uA
Reveres breakdown voltage	V _{BR}	I _T =1mA	6.5	7.5	8.2	V
Forward voltage	V _F	I _F =1mA	6.5	7.5	8.2	V
Clamping voltage	V _C	I _{pp} =1A tp=8/20us			8	V
		I _{pp} =3.5A tp=8/20us			11.5	V
Junction capacitance	C _J	F=1MHz, V _R =0V		5	10	pF

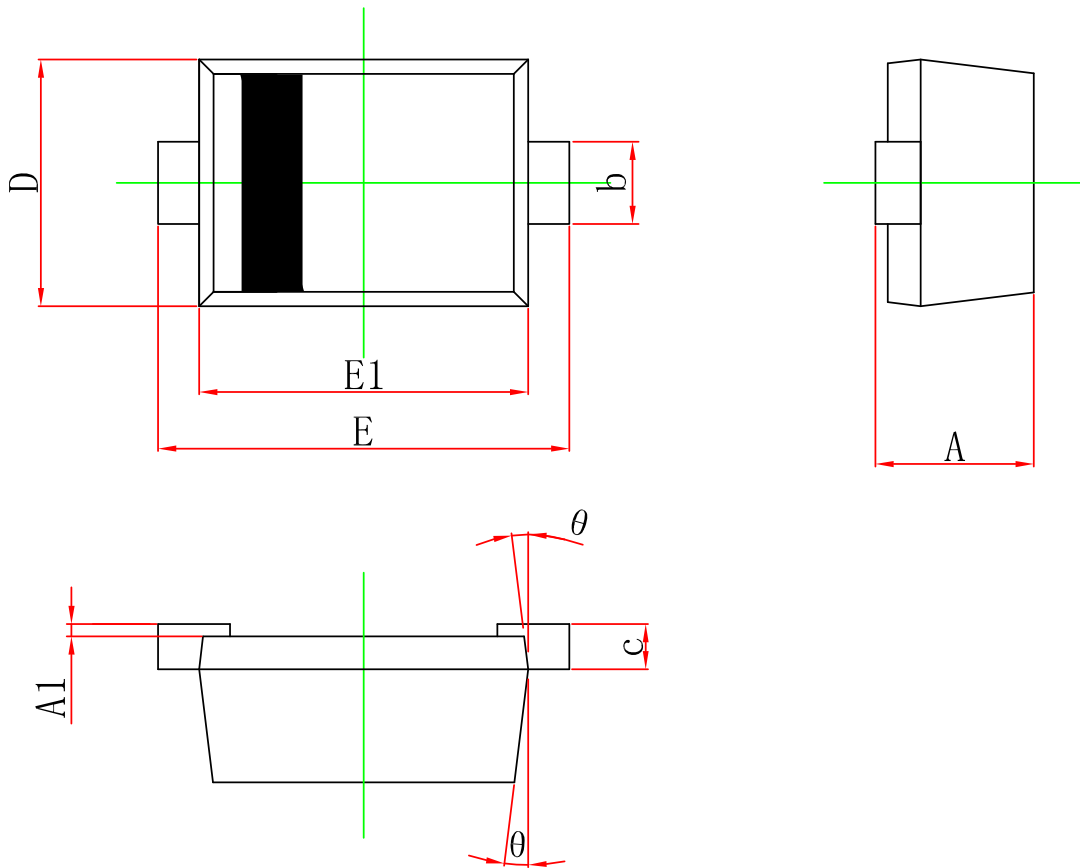

8/20us waveform

IEC61000-4-2 waveform

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

Clamping voltage vs. Peak pulse current

Capacitance vs. Reverse voltage

Non-Repetitive Peak Pulse Power vs. Pulse time

Power derating vs. Temperature

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

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

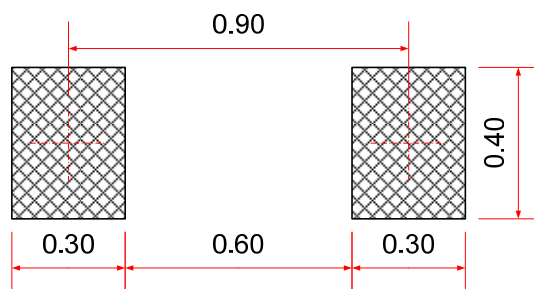
Package outline dimensions
FBP-02C


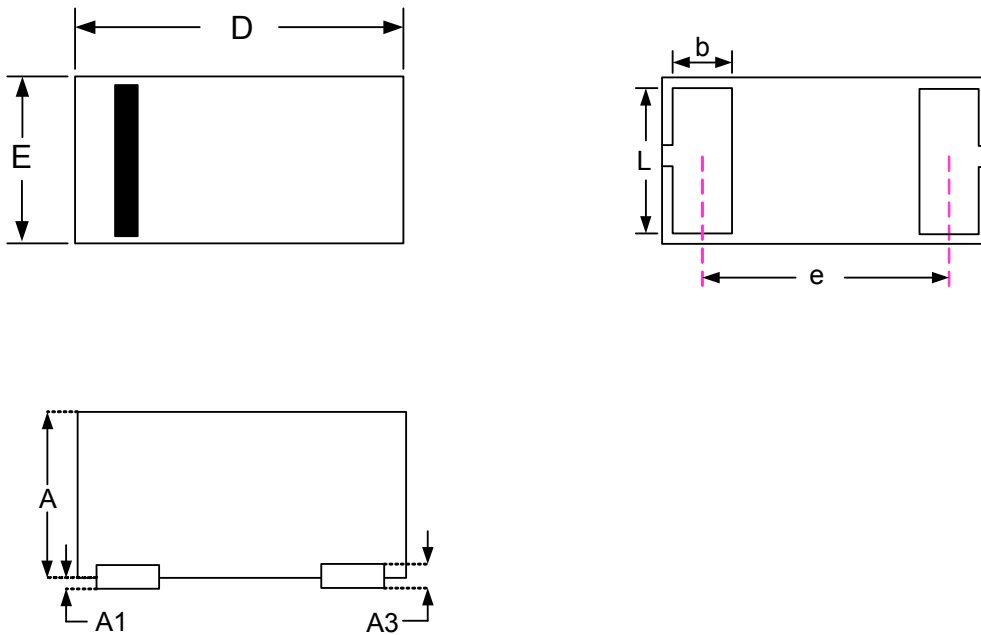
Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.450	0.500	0.550
A1	0.010	-	0.090
D	0.950	1.000	1.050
E	0.550	0.600	0.650
D1	0.450 Ref.		
E1	0.400 Ref.		
b	0.250	0.300	0.350
e	0.600	0.675	0.750
L	0.320	0.385	0.450
L1	0.250	0.300	0.350
L2	0.010 Ref.		

Recommend PCB Layout (Unit: mm)


Package outline dimensions
SOD-923


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.350	-	0.450
A1	0.000	-	0.050
b	0.150	-	0.270
c			0.180
D	0.550	0.600	0.650
E	0.900	1.000	1.100
E1	0.750	0.800	0.850
θ	7° Ref.		

Recommend PCB Layout (Unit: mm)


Package outline dimensions
DFN1006-2L


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.3	-	0.5
A1	0.00	-	0.05
A3	0.125 Ref.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.15	0.25	0.35
L	0.40	0.50	0.60
e	0.65 Typ.		

Recommend PCB Layout (Unit: mm)
