

ESD9B**

**1-Line, Bi-directional, Normal-Capacitance,
Transient Voltage Suppressors**

[Http://www.willsemi.com](http://www.willsemi.com)

Descriptions

The ESD9B** series are Bi-directional transient voltage suppressors (TVS) to protect sensitive electronic components from electrostatic discharge (ESD). It is particularly well-suited for cellular phones, PMP, MID, PDA, digital cameras and other electronic equipments.

The ESD9B** series are safely dissipating ESD strikes to meet the ESD immunity testing of IEC61000-4-2 level 4.

The ESD9B** series are available in a FBP-02C, SOD-923 and DFN1006 package with Pb-free.



FBP-02C



SOD-923



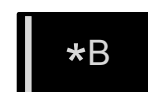
DFN1006



Pin configuration (Top view)

Features

- Working voltage : 5V
- Peak power (tp=8/20us) : 85W Max.
- Peak current (tp=8/20us) : 6.5A Max.
- Transient protection
IEC61000-4-2 : ±30kV air
: ±30kV contact
- Low clamping voltage
- Low leakage current
- Small package



FBP-02C



SOD-923



DFN1006

* = Month (A~Z)

B = Device code

9C = Device code

Marking

Applications

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

Order information

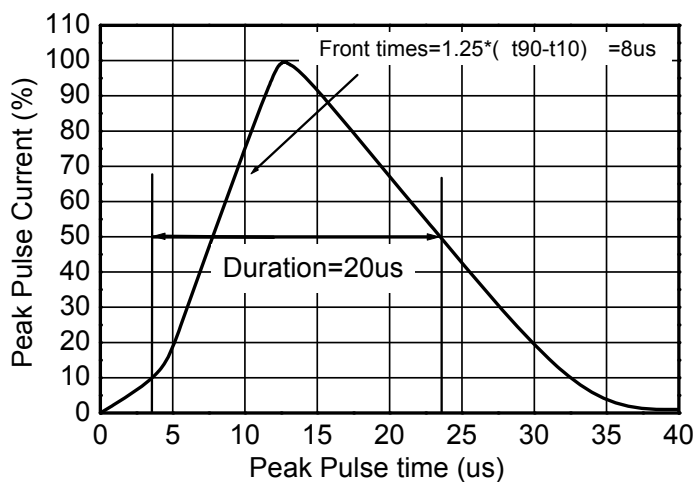
Device	Package	Shipping
ESD9B5V-2/TR	FBP-02C	10000/Tape&Reel
ESD9B5VD-2/TR	SOD-923	5000/Tape&Reel
ESD9N5B-2/TR	DFN1006	5000/Tape&Reel

Absolute maximum ratings

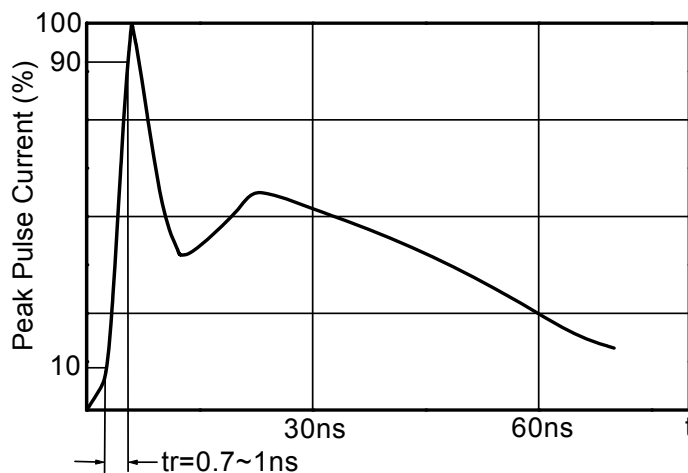
Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p=8/20\mu s$)	Ppk	85	W
Peak pulse current ($t_p=8/20\mu s$)	I _{pp}	6.5	A
ESD voltage IEC61000-4-2 air	V _{ESD}	±30	kV
ESD voltage IEC61000-4-2 contact		±30	
Operation junction temperature	T _J	125	°C
Lead temperature	T _L	260	°C
Storage temperature	T _{sg}	-55~150	°C

Electronics characteristics (T_a=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	uA
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 _C	I _{pp} =1A t _p =8/20us			9	V
		I _{pp} =6.5A t _p =8/20us			13	V
Junction capacitance	C	F=1MHz, V _R =0V		20	35	pF

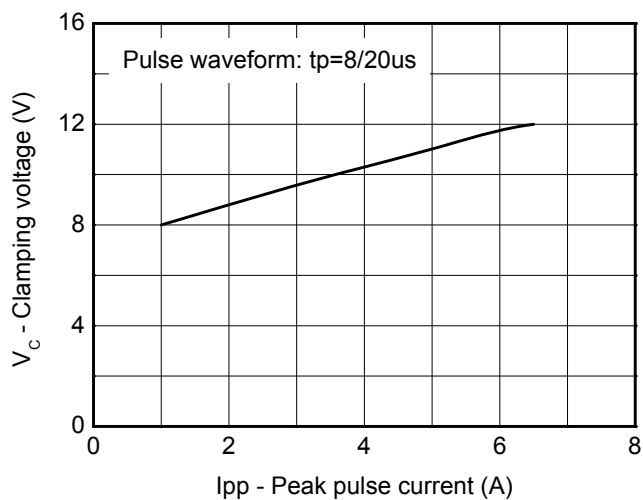


8/20us waveform

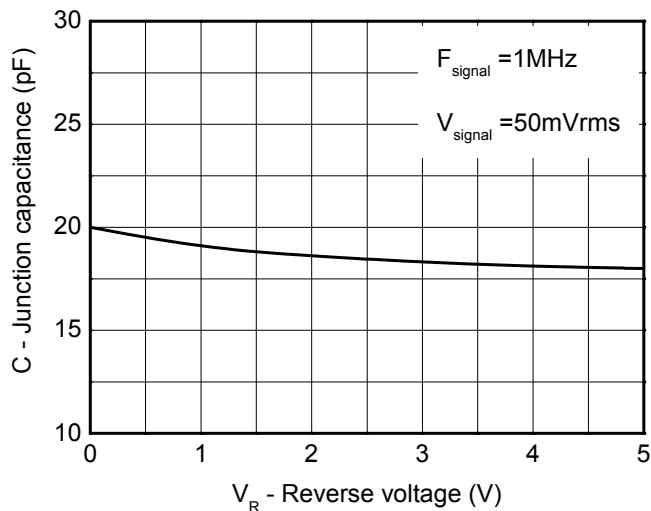


IEC61000-4-2 waveform

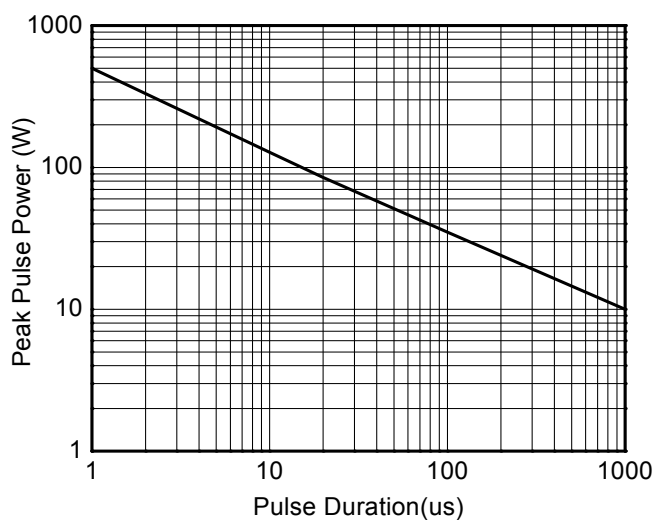
Typical characteristics (Ta=25°C, unless otherwise noted)



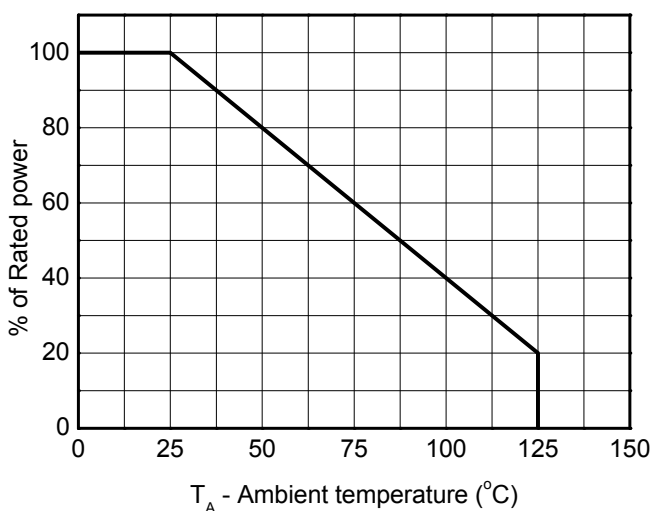
Clamping voltage vs. Peak pulse current



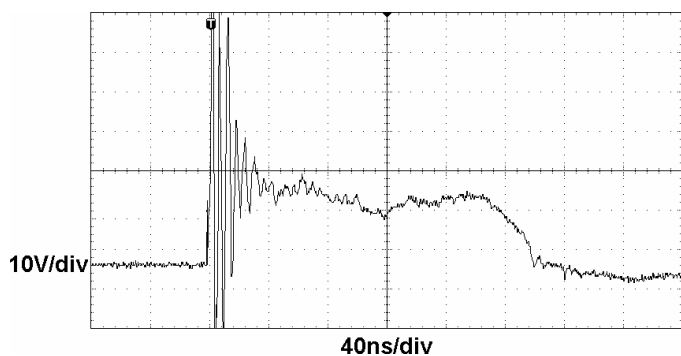
Capacitance vs. Reverse voltage



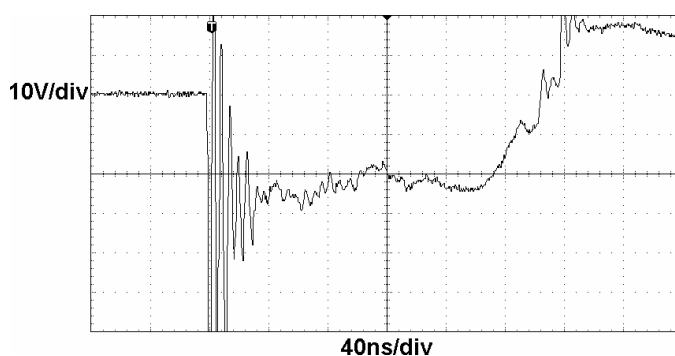
Non-Repetitive Peak Pulse Power vs. Pulse time



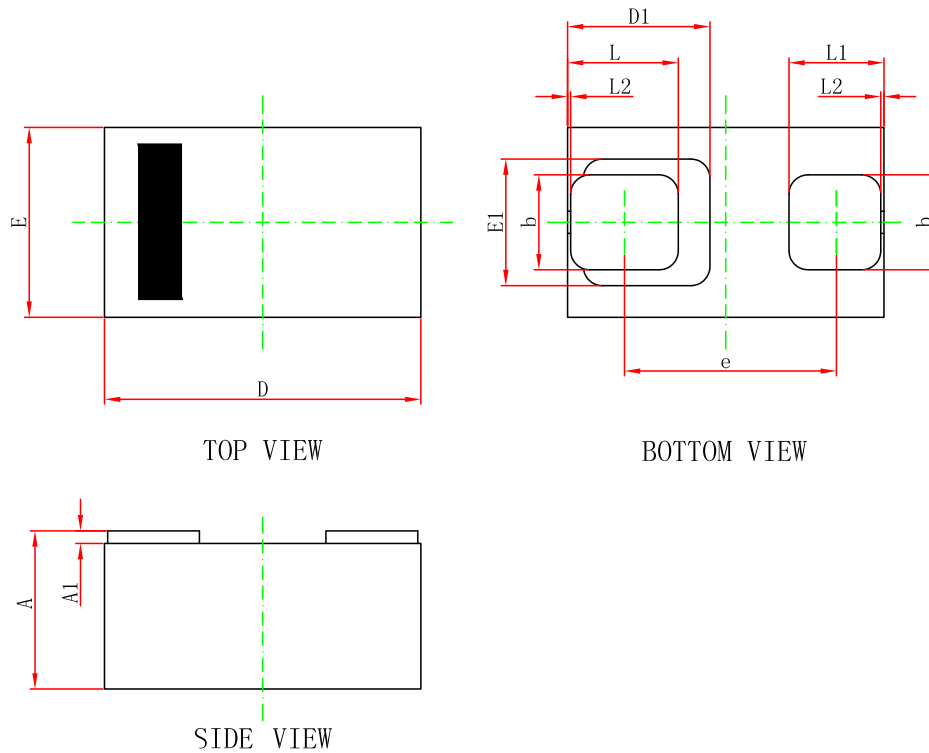
Power derating vs. Temperature



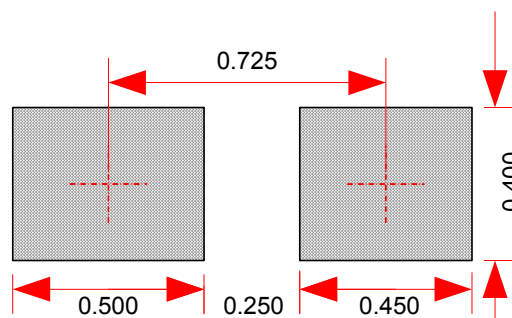
**ESD clamping voltage
(IEC61000-4-2 +8kV contact)**

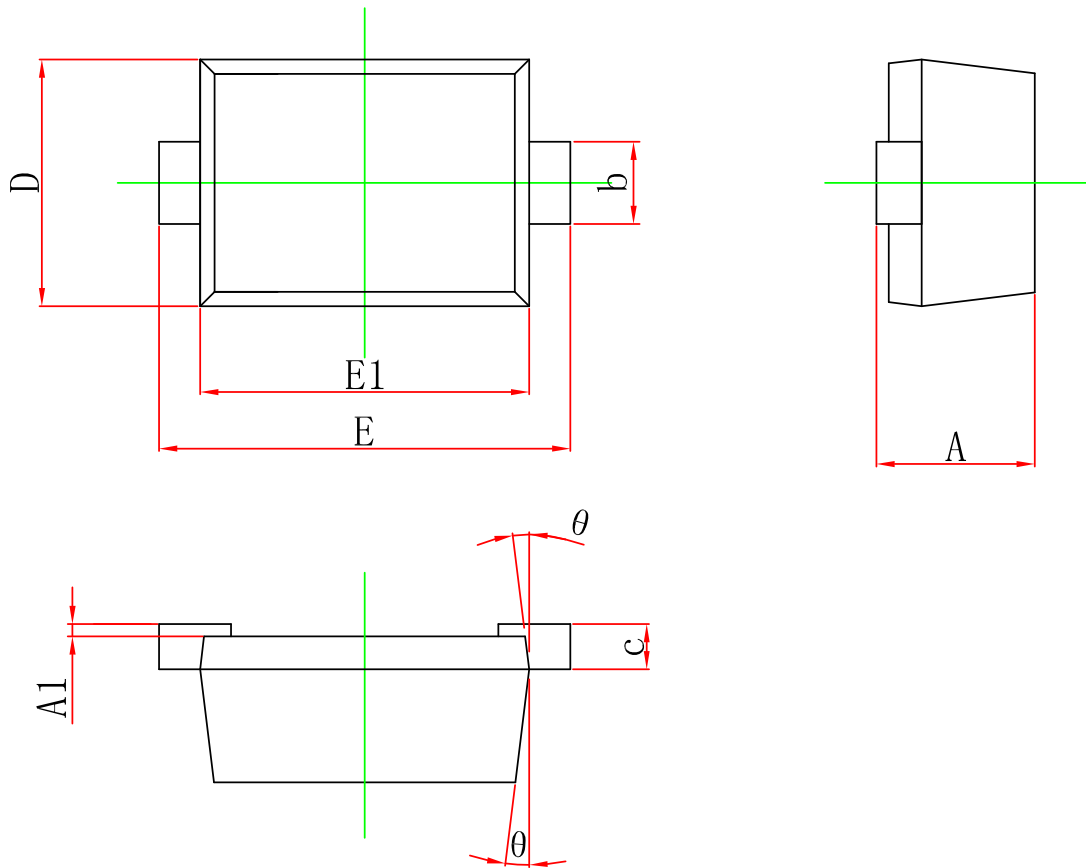


**ESD clamping voltage
(IEC61000-4-2 -8kV contact)**

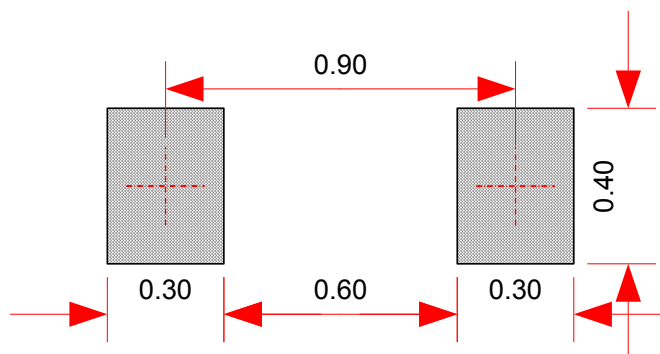
Package outline dimensions
FBP-02C


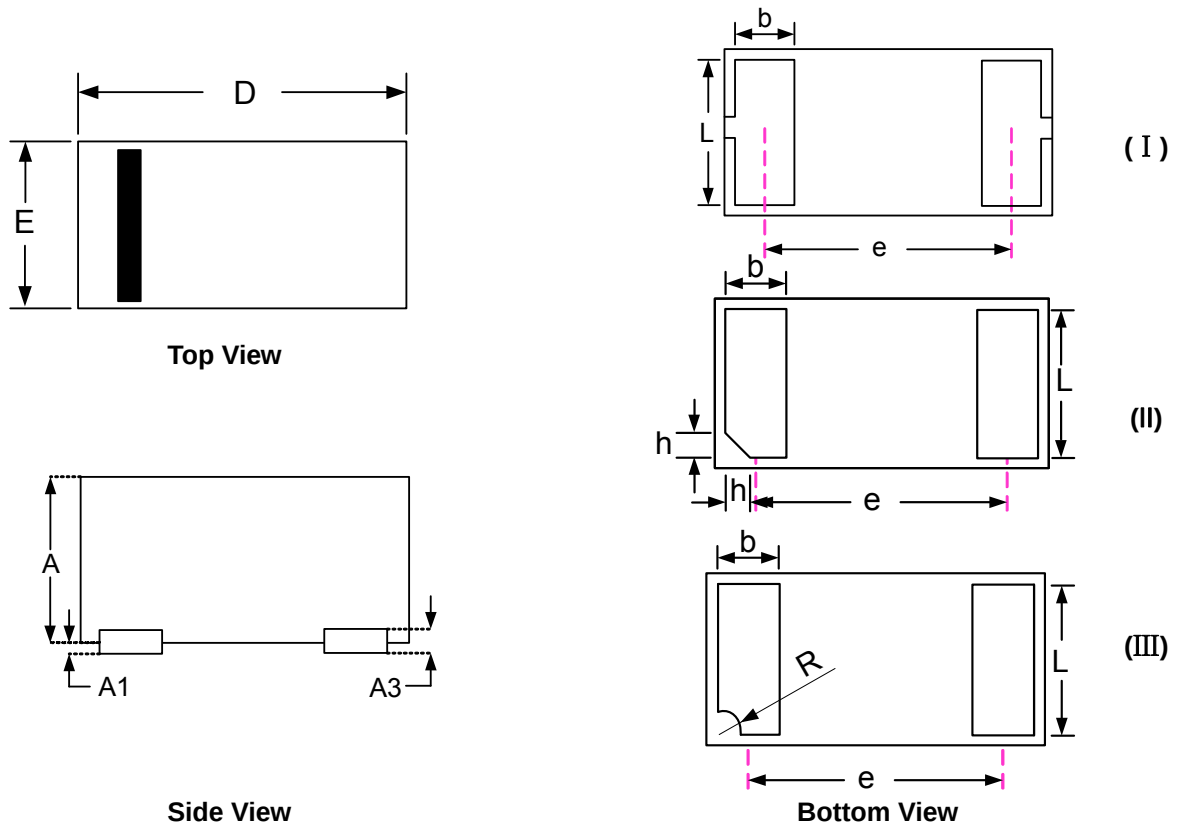
Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.450	0.500	0.550
A1	0.010	-	0.090
D	0.950	1.000	1.050
E	0.550	0.600	0.650
D1	0.450 Ref.		
E1	0.400 Ref.		
b	0.250	0.300	0.350
e	0.600	0.675	0.750
L	0.320	0.385	0.450
L1	0.250	0.300	0.350
L2	0.010 Ref.		

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
h	0.07	0.12	0.17
R	0.05	0.10	0.15
e	0.65 Typ.		

Recommend PCB Layout (Unit: mm)
