ESD9***

1-Line, Uni-directional, Normal-Capacitance,
Transient Voltage Suppressors

Descriptions

The ESD9*** series are 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 ESD9*** series are past ESD transient voltage up to ±30KV (contact) according to IEC61000-4-2 and will withstand peak current up to 11A for 8/20us pulse according to IEC61000-4-5.

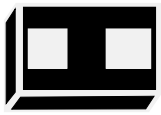
The ESD9*** series are available in FBP-02C, SOD-923 and DFN1006 packages. Standard products are Pb-free and Halogen-free.

Features

- Working voltage : 5V
- Peak power (tp=8/20us) : 154W Max.
- Peak current (tp=8/20us) : 11A Max.
- Transient protection
  IEC61000-4-2 : ±30KV air
  : ±30KV contact
- Low clamping voltage
- Low leakage current
- Small package

Applications

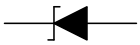
- Cell phone
- PMP
- MID
- PDA
- Digital camera
- Other electronics equipments



FBP-02C

SOD-923

DFN1006



Pin configuration (Top view)

FBP-02C

SOD-923

DFN1006

*** = Month (A~Z)**
H = Device code
B = Device code

Marking

Order information

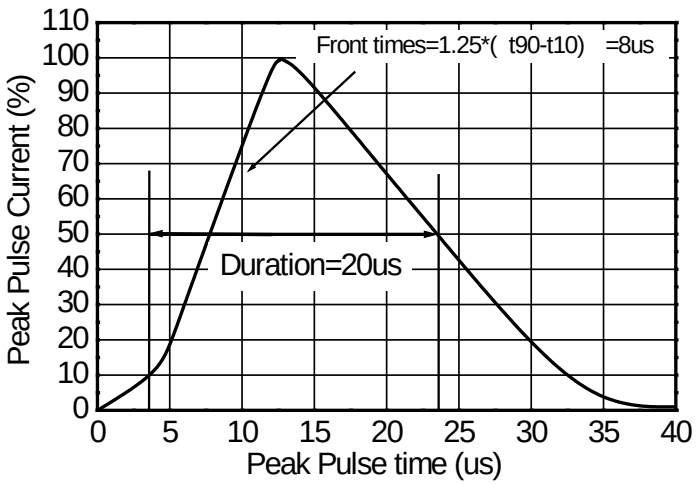
Device	Package	Shipping
ESD9X5V-2/TR	FBP-02C	10000/Tape&Reel
ESD9X5VD-2/TR	SOD-923	5000/Tape&Reel
ESD9N5V-2/TR	DFN1006	10000/Tape&Reel

Absolute maximum ratings

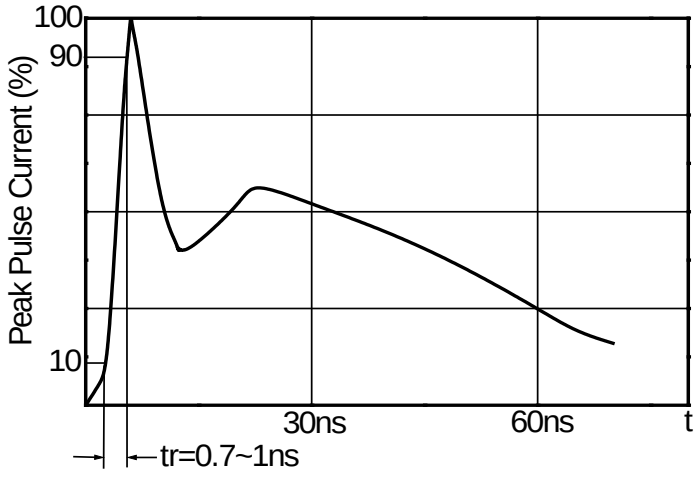
Parameter	Symbol	Rating	Unit
Peak pulse power (tp=8/20us)	Ppk	154	W
Peak pulse current (tp=8/20us)	Ipp	11	A
ESD voltage IEC61000-4-2 air	V_{ESD}	±30	KV
ESD voltage IEC61000-4-2 contact		±30	
Operation junction temperature	T_J	125	°C
Lead temperature	T_L	260	°C
Storage temperature	Tsg	-55~150	°C

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	uA
Reveres breakdown voltage	V_{BR}	I_T=1mA	6.2	6.8	7.6	V
Forward voltage	V_F	I_F=20mA	0.4	0.8	1.3	V
Clamping voltage	V_C	Ipp=1A tp=8/20us			7.5	V
		Ipp=11A tp=8/20us			14	V
Junction capacitance	C_J	F=1MHz, V_R=0V		50	70	pF

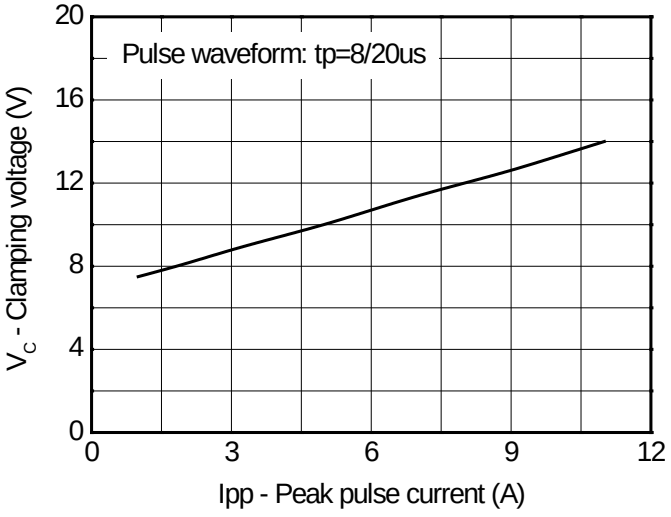


8/20us waveform

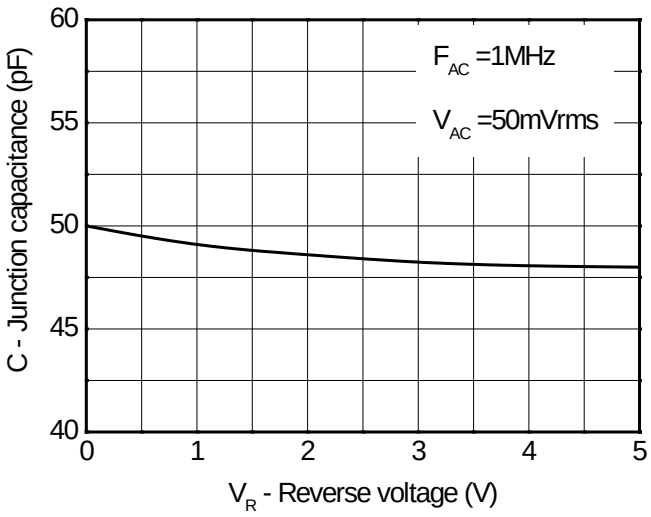


IEC61000-4-2 waveform

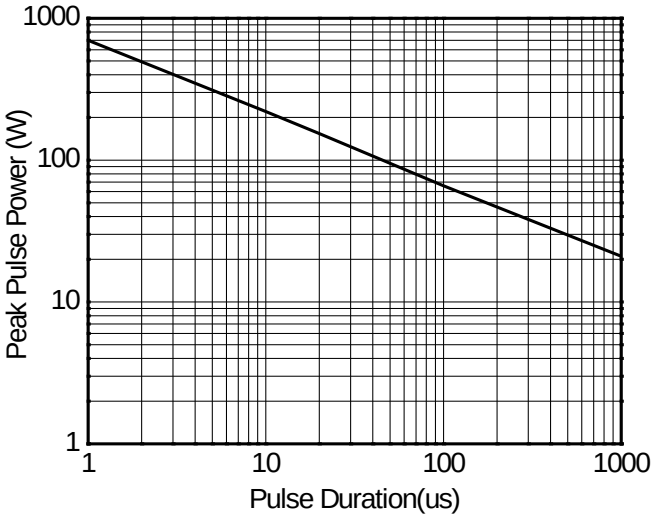
Typical characteristics (Ta=25 C, unless otherwise noted)



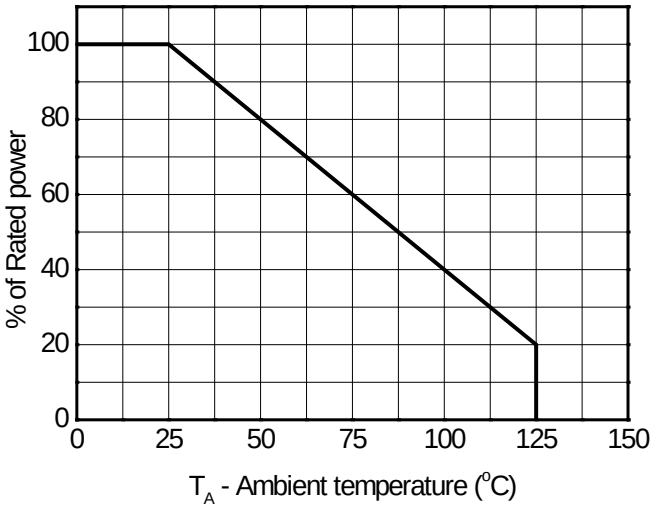
Clamping voltage vs. Peak pulse current



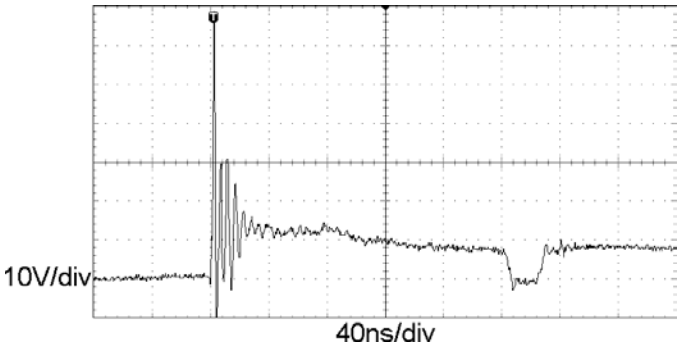
Capacitance vs. Reveres voltage



Non-Repetitive Peak Pulse Power vs. Pulse time

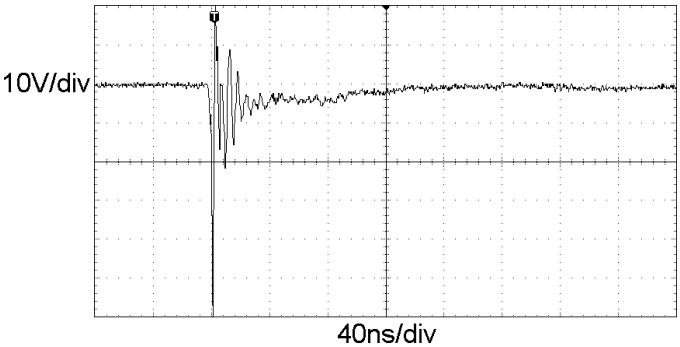


Power derating vs. Temperature



ESD clamping voltage

(IEC61000-4-2 +8KV contact)

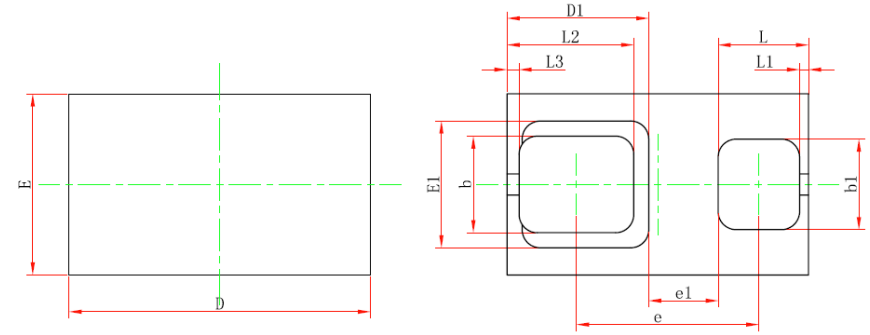


ESD clamping voltage

(IEC61000-4-2 -8KV contact)

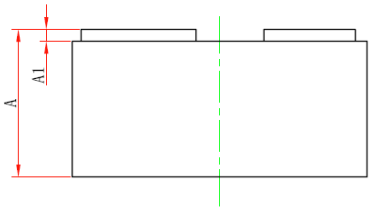
Package outline dimensions

FBP-02C



TOP VIEW

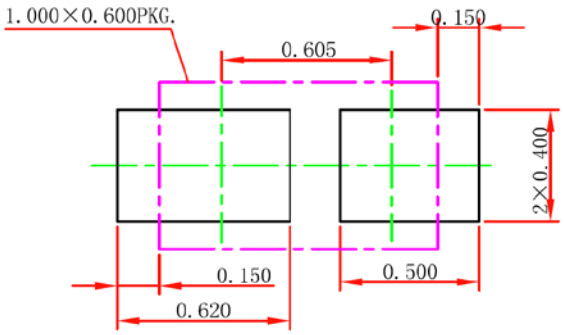
BOTTOM VIEW



SIDE VIEW

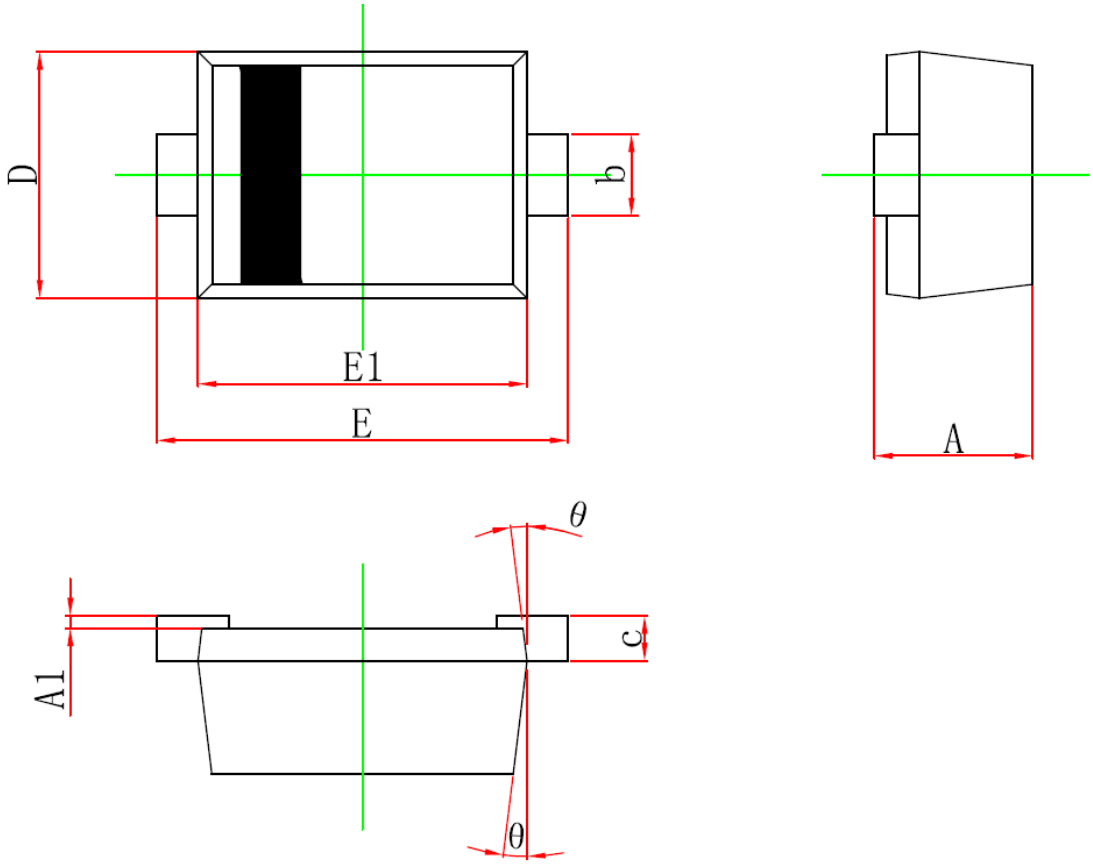
Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.450	0.500	0.550
A1	0.010	--	0.100
D	0.950	1.000	1.050
E	0.550	0.600	0.650
D1	0.470 Ref.		
E1	0.420 Ref.		
b	0.270	0.320	0.370
b1	0.250	0.300	0.350
e	0.555	0.605	0.655
e1	0.230 Ref.		
L	0.250	0.300	0.350
L1	0.030 Ref.		
L2	0.370	0.420	0.470
L3	0.040 Ref.		
备注：	其各个尺寸公差有所变动为正常情况		

Recommend PCB Layout (Unit: mm)



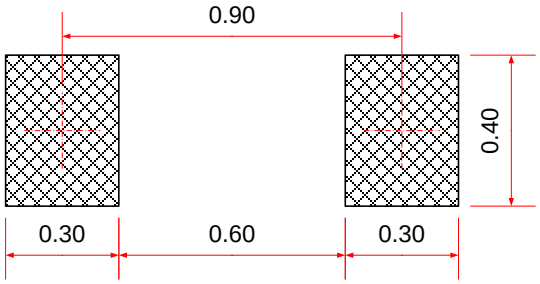
Package outline dimensions

SOD-923



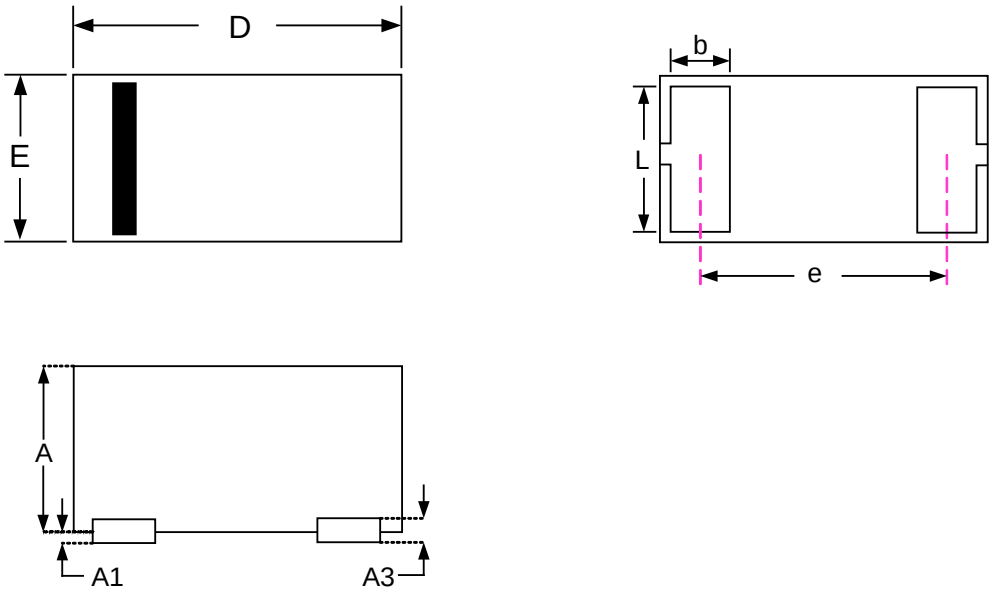
Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.350	-	0.450
A1	0.000	-	0.050
b	0.150	-	0.270
c			0.180
D	0.550	0.600	0.650
E	0.900	1.000	1.100
E1	0.750	0.800	0.850
θ	7^{o} Ref.		

Recommend PCB Layout (Unit: mm)



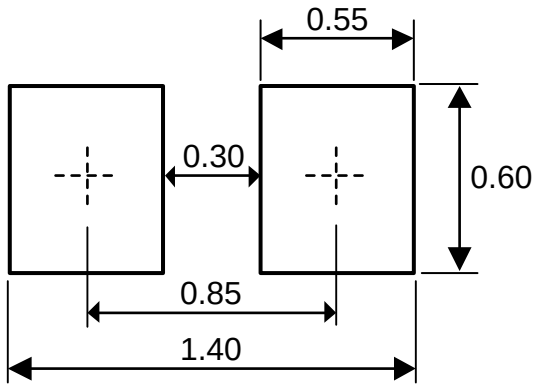
Package outline dimensions

DFN1006-2L



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.40	-	0.50
A1	0.00	-	0.05
A3	0.125 Ref.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.20	0.25	0.30
L	0.45	0.50	0.55
e	0.65 Typ.		

Recommend PCB Layout (Unit: mm)



Notes:
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.