ESDA6V8BLF

2-Line, Bi-directional, Low-Capacitance, Transient Voltage Suppressors

http//:www.sh-willsemi.com

Descriptions

The ESDA6V8BLF is a Bi-directional 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 equipment applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

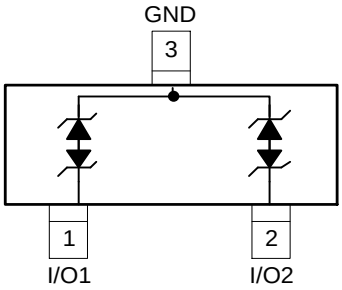
The ESDA6V8BLF is based on solid-state silicon technology and offer unique electrical characteristics like lower clamping voltage and no device degrading compared to MLV.

The ESDA6V8BLF is past ESD transient voltage up to ±8KV (contact) according to IEC61000-4-2 and will withstand peak current up to 3A for 8/20μs pulse to meet the IEC61000-4-5.

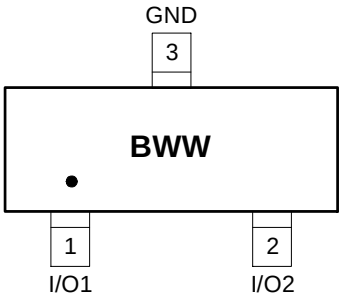
The ESDA6V8BLF is available in SOT-23-3L package. Standard products are Pb-free and Halogen-free.



SOT-23



Circuit Diagram



SOT-23

B = Device code
WW = Date code

Marking & Pin configuration

Features

- Working voltage: ±5.0V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±8kV (contact discharge)
  ±15kV (air discharge)
  IEC61000-4-4 (EFT): 40A (5/50ns)
  IEC61000-4-5 (surge): 3A (8/20μs)
- Low Capacitance: C_J = 5.0pF typ.
- Low leakage current
- Small package

Applications

- Cell phone
- Notebook
- STB
- Digital camera
- Other electronics equipment

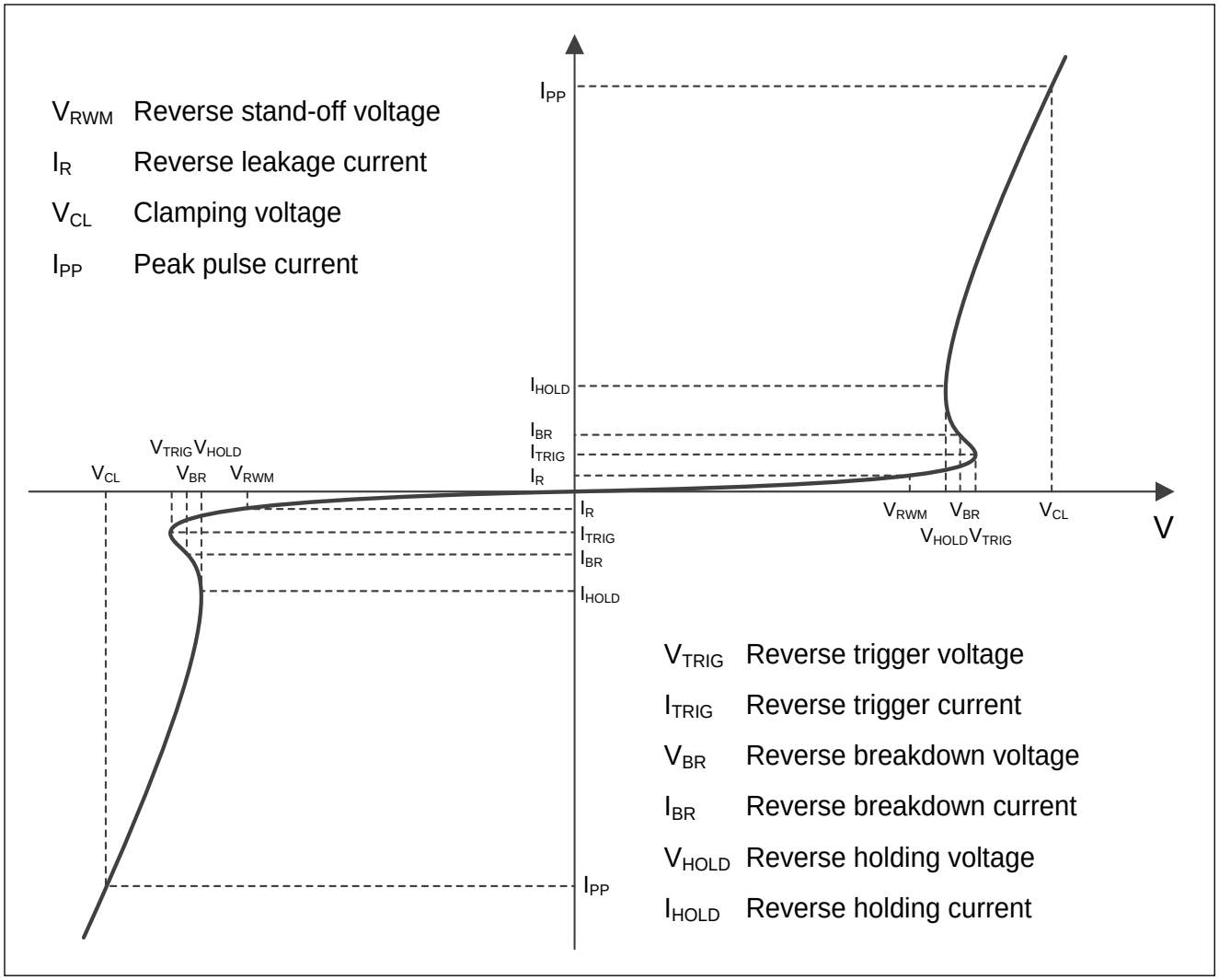
Order information

Device	Package	Shipping
ESDA6V8BLF-3/TR	SOT-23	3000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (tp=8/20μs)	Ppk	33	W
Peak pulse current (tp=8/20μs)	Ipp	3	A
ESD voltage IEC61000-4-2 air	V_{ESD}	±15	kV
ESD voltage IEC61000-4-2 contact		±8	
Junction temperature	T_J	125	°C
Operating temperature	T_{OP}	-40~85	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

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



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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse maximum working voltage	V_{RWM}				±5.0	V
Reverse leakage current	I_R	V_{RWM}=5V			1.0	μA
Reveres breakdown voltage	V_{BR}	I_T=1mA	6.2		8.2	V
Clamping voltage 1)	V_{CL}	I_{PP} = 16A, t_p = 100ns		13		V
Dynamic resistance 1)	R_{DYN}			0.4		Ω
Clamping voltage 2)	V_{CL}	V_{ESD} = 8kV		13		V
Clamping voltage3)	V_C	Ipp=1A tp=8/20μs			8.5	V
		Ipp=3 A tp=8/20μs			11	V
Junction capacitance	C_J	f=1MHz, V_R=0V Any I/O pin to GND		5.0	10	pF
		f=1MHz, V_R=0V Between I/O pins		2.5	5	pF

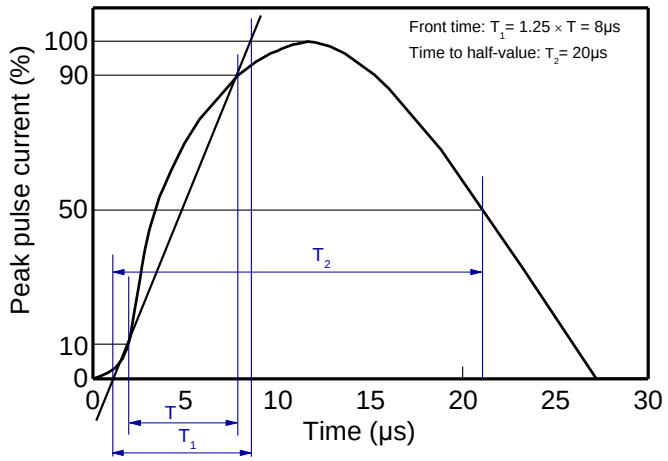
Notes:

1) TLP parameter: Z_0 = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.

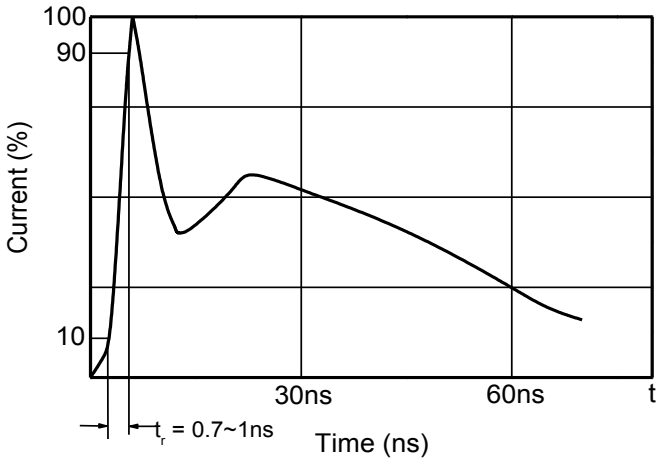
2) Contact discharge mode, according to IEC61000-4-2.

3) Non-repetitive current pulse, according to IEC61000-4-5.

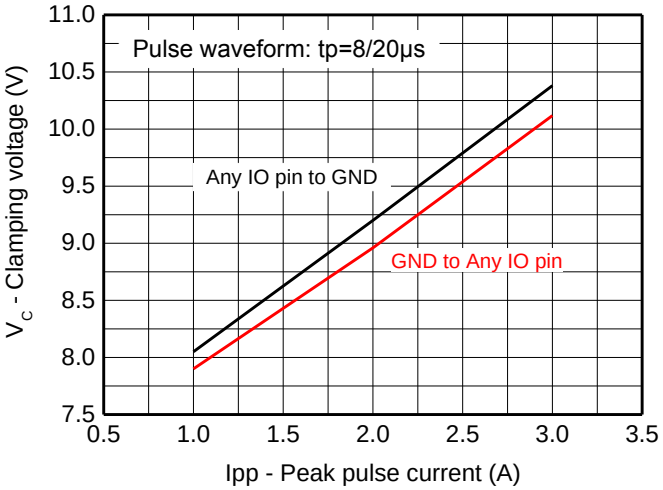
Typical characteristics (Ta=25°C, unless otherwise noted)



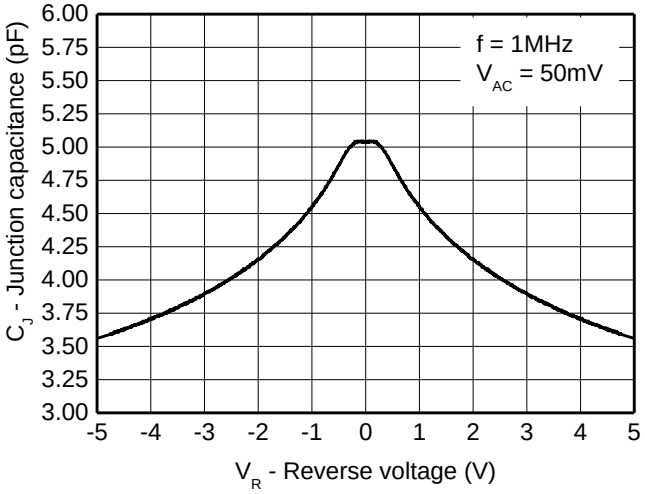
8/20μs waveform per IEC61000-4-5



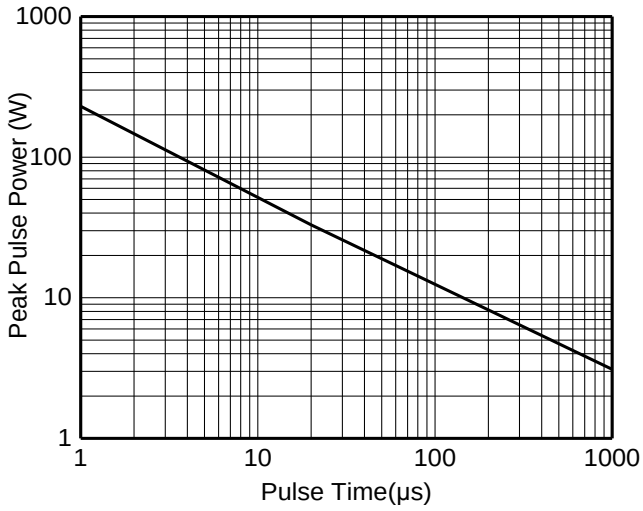
Contact discharge current waveform per IEC61000-4-2



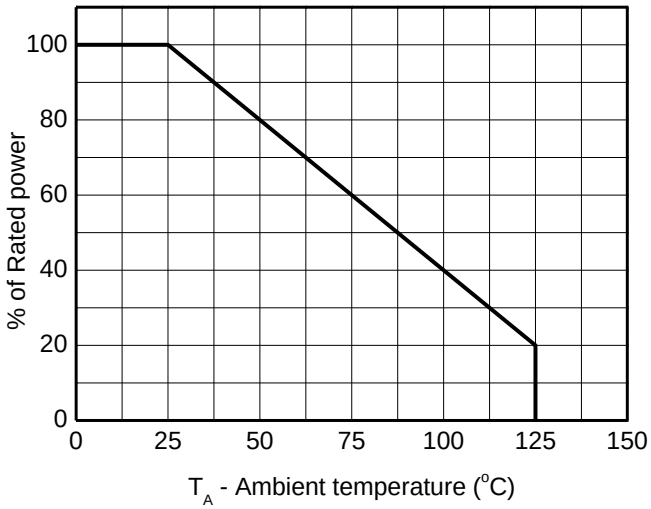
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

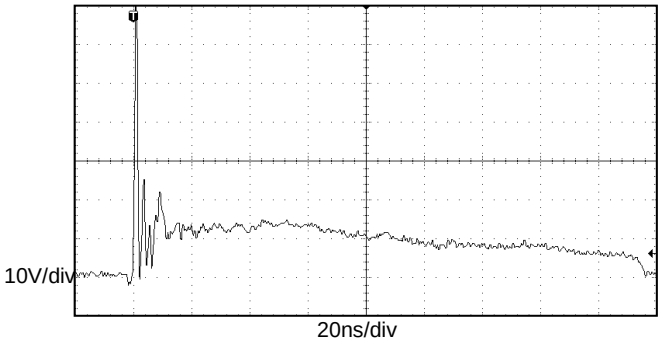


Non-Repetitive Peak Pulse Power vs. Pulse time



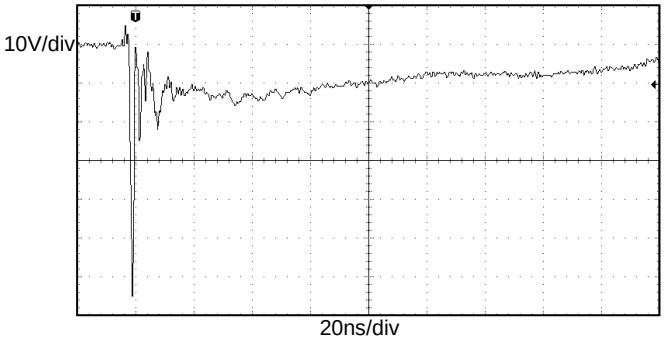
Power derating vs. Ambient Temperature

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



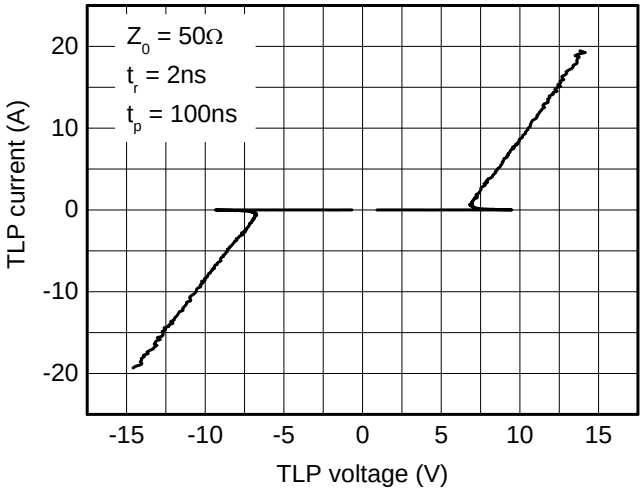
ESD clamping

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



ESD clamping

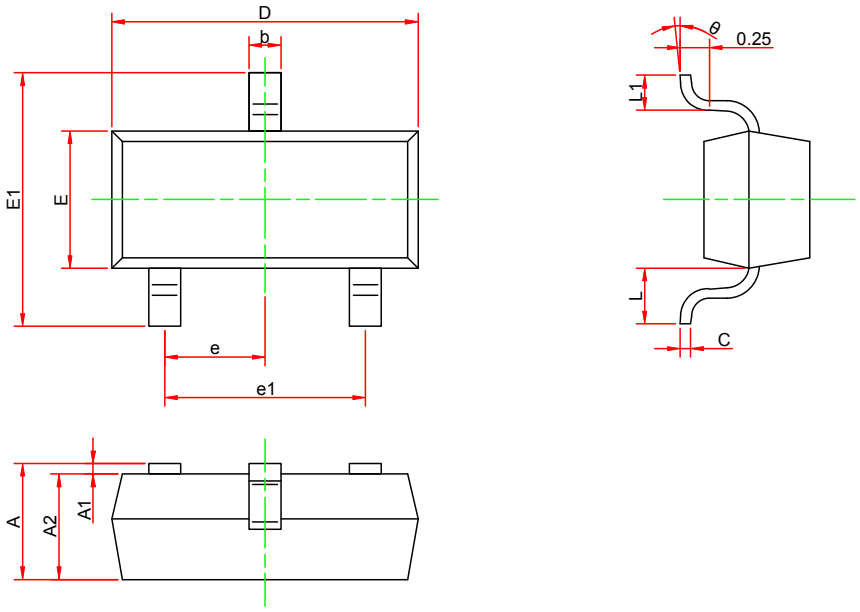
(-8kV contact discharge per IEC61000-4-2)



TLP Measurement

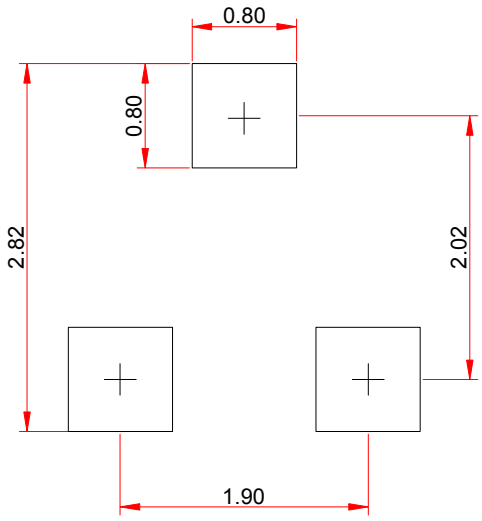
Package outline dimensions

SOT-23



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	-	1.150
A1	0.000	-	0.100
A2	0.900	-	1.050
b	0.300	-	0.500
c	0.080	-	0.150
D	2.800	-	3.000
E	1.200	-	1.400
E1	2.250	-	2.550
e	0.950TYP		
e1	1.800		2.000
L	0.500REF		
L1	0.300	-	0.500
θ	0°	-	8°

Recommend land pattern (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.