

SOD-523 Plastic-Encapsulate ESD Protection Diodes

DESCRIPTION

The ESD5Z Series is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications..

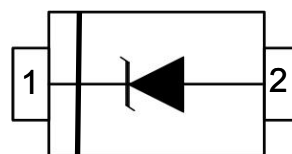
Features

- ◆ IEC61000-4-2 Level 4 ESD Protection
- ◆ Protects one directional I/O line
- ◆ Low clamping voltage
- ◆ Working voltages : 2.5V,3.3V,5V,6V,7V, 12V,15V
- ◆ Low leakage current)

Pin Configuration



Circuit Diagram



Applications

- ◆ Cell Phone Handsets and Accessories
- ◆ Microprocessor based equipment
- ◆ Personal Digital Assistants (PDA's)
- ◆ Notebooks, Desktops, and Servers
- ◆ Portable Instrumentation
- ◆ Peripherals

Mechanical Characteristics

- ◆ Package: SOD-523
- ◆ Flammability Rating: UL 94V-0
- ◆ High temperature soldering guaranteed: 260 °C/10s
- ◆ Packaging: Tape and Reel

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	V _{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 22	
ESD Voltage per human body model	ESD	16	kV
ESD Voltage per machine model		400	V
Total Power Dissipation on FR-5 Board (Note 1) @ T _A =25°C	P _D	150	mW
Junction and Storage Temperature	T _J ,T _{STG}	-55 to +150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T _L	260(10S)	°C

These ratings are limiting values above which the serviceability of the diode may be impaired

Note: 1.FR-5=1.0x0.75x0.62 in

2.The above data above is for reference only.

Electrical Characteristics (T_A=25°C unless otherwise specified)

PART NUMBER	DEVICE MARKING	V _{RWM} (V)	I _R (μA)	V _B (V)	I _T	V _C (V)		V _C (V)		P _{PK} (W)	C _J (pF)
		Max	Max	Min	(mA)	Max	@A	Max	@A	Max	Max
ESD5Z2V5	ZD ₅	2.5	6.0	4.0	1	9.0	5.0	11.5	9.0	104	145
ESD5Z3V3	ZE ₃	3.3	0.90	5.0	1	10.0	5.0	14.0	7.5	105	105
ESD5Z5V0	ZF ₅	5.0	0.08	6.2	1	11.6	5.0	15.0	7.0	105	80
ESD5Z6V0	ZG ₆	6.0	0.05	6.8	1	13.5	5.0	17.5	6.0	105	70
ESD5Z7V0	ZH ₇	7.0	0.03	7.5	1	14.0	5.0	18.0	6.0	108	65
ESD5Z12V	ZM ₁₂	12.0	0.03	14.1	1	20.0	1.0	26.0	4.0	104	45
ESD5Z15V	ZN ₁₅	15.0	0.50	16.0	1	23.0	1.0	30.0	4.0	120	28

ELECTRICAL CHARACTERISTICS CURVE

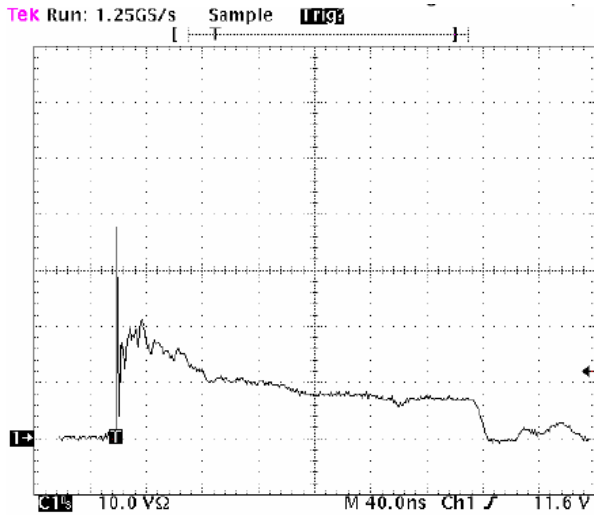


Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV contact per IEC 61000-4-2

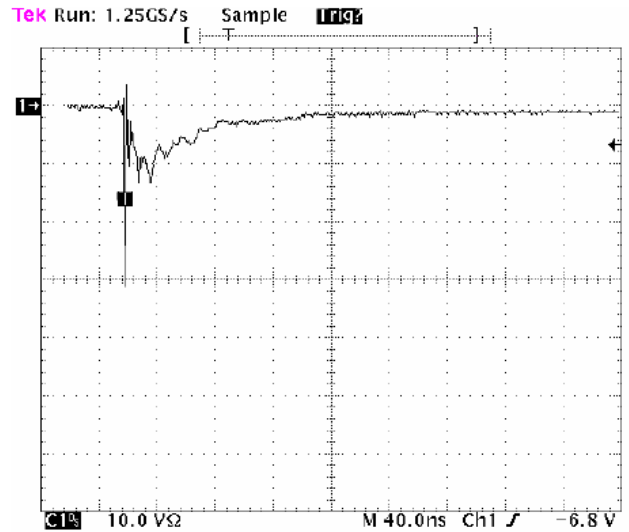
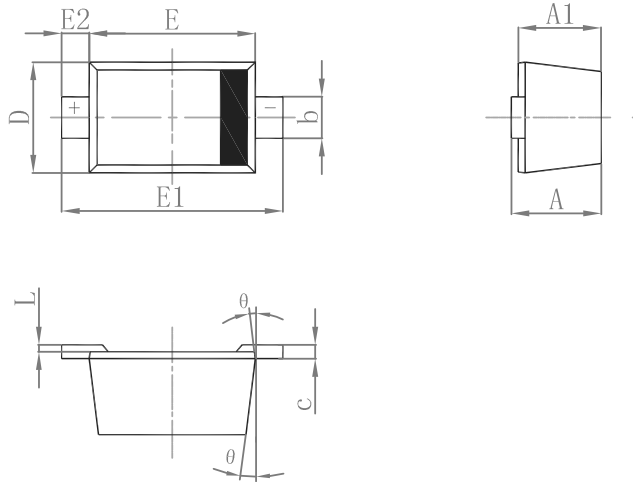


Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV contact per IEC 61000-4-2

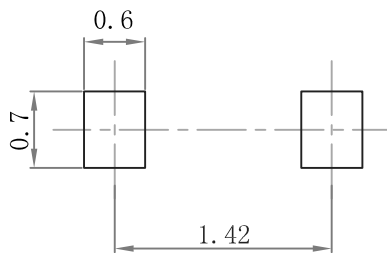
Outline Drawing

SOD-523 Package Outline Dimensions



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.510	0.770	0.020	0.031
A1	0.500	0.770	0.020	0.031
b	0.250	0.400	0.010	0.016
c	0.080	0.150	0.003	0.006
D	0.750	1.000	0.030	0.040
E	1.100	1.300	0.043	0.051
E1	1.500	1.700	0.059	0.067
E2	0.150	0.250	0.006	0.010
L	0.000	0.070	0.000	0.003
K	0°	8°	0°	8°

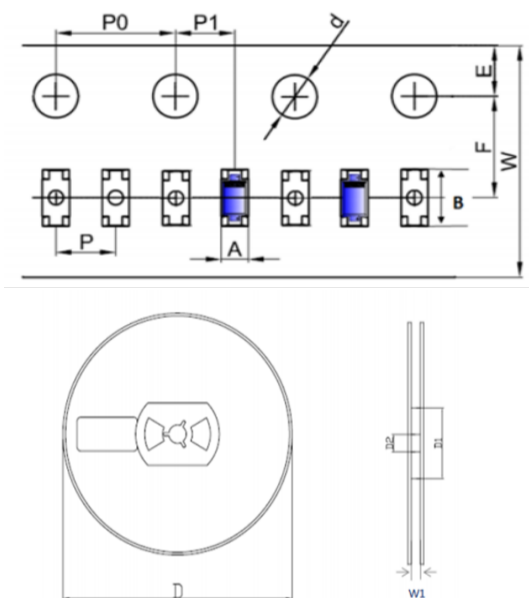
Suggested Pad Layout



Note:

1. Controlling dimension: in/millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

PACKAGE SPECIFICATIONS



REF	mm	inch
A	0.99 $\pm$ 0.10	0.036 $\pm$ 0.004
B	1.85 $\pm$ 0.10	0.072 $\pm$ 0.004
d	1.55 $\pm$ 0.10	0.060 $\pm$ 0.004
D	178.00 $\pm$ 1.00	7.008 $\pm$ 0.039
D1	54.20 $\pm$ 2.00	2.134 $\pm$ 0.079
D2	13.50 $\pm$ 0.20	0.532 $\pm$ 0.008
E	1.75 $\pm$ 0.10	0.068 $\pm$ 0.004
F	3.50 $\pm$ 0.10	0.136 $\pm$ 0.004
P	2.00 $\pm$ 0.10	0.078 $\pm$ 0.004
P0	4.00 $\pm$ 0.10	0.156 $\pm$ 0.004
P1	2.00 $\pm$ 0.10	0.078 $\pm$ 0.004
W	8.00 $\pm$ 0.10	0.312 $\pm$ 0.004
W1	9.30 $\pm$ 0.50	0.366 $\pm$ 0.020

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOD-523	7'	178	3000	190×190×190	18,000	400×400×220	108,000