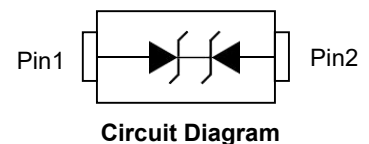


## Description

The AZ5123-01H-SX protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, low operating voltage. It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.

## Feature

- 80W peak pulse power per line ( $t_p = 8/20\mu s$ )
- SOD-523 package
- Replacement for MLV(0603)
- Bidirectional configurations
- Protects one power or I/O port
- Low clamping voltage
- RoHS compliant
- Transient protection for data lines to IEC 61000-4-2(ESD)  $\pm 30kV$ (air),  $\pm 30kV$ (contact); IEC 61000-4-4 (EFT) 40A (5/50ns)



## Applications

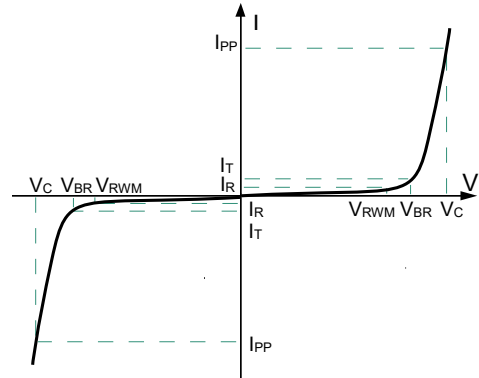
- Cellular phones
- Portable devices
- Digital cameras
- Power supplies

## Mechanical Characteristics

- Lead finish: 100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature: 260°C
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17  $\mu m$
- Pin flatness:  $\leq 3mil$

Electronics Parameter

Symbol	Parameter
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$P_{PP}$	Peak Pulse Power
$C_J$	Junction Capacitance
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



Electrical characteristics per line@25°C ( unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	$V_{RWM}$			3.3		V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	4.8		6.8	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$ $T=25^\circ\text{C}$			1.0	$\mu\text{A}$
Clamping Voltage <sup>1)</sup>	$V_C$	$TLP = 16\text{A}$ , $t_p = 100\text{ns}$		9.0		V
Dynamic resistance <sup>1)</sup>	$R_{DYN}$			0.15		$\Omega$
Clamping Voltage <sup>2)</sup>	$V_C$	$I_{PP}=10\text{A}$		8	10	V
Junction Capacitance	$C_J$	$V_R=0\text{V}$ $f = 1\text{MHz}$		33		pF

Notes:

- 1.TLP parameter:  $Z_0=50\Omega$ ,  $t_p=100\text{ns}$ ,  $t_r=2\text{ns}$ , averaging window from 60ns to 80ns.  $R_{DYN}$  is calculated from 4A to 16A.
- 2.Non-repetitive current pulse, according to IEC61000-4-5.

Absolute maximum rating@25°C

Rating	Symbol	Value	Unit
Peak Pulse Power ( $t_p=8/20\mu\text{s}$ )	$P_{pp}$	80	W
Operating Temperature	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 to +150	$^\circ\text{C}$

Typical Characteristics

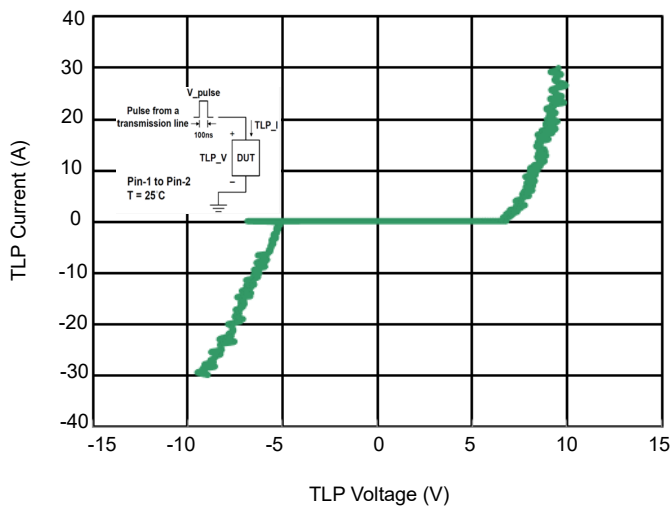
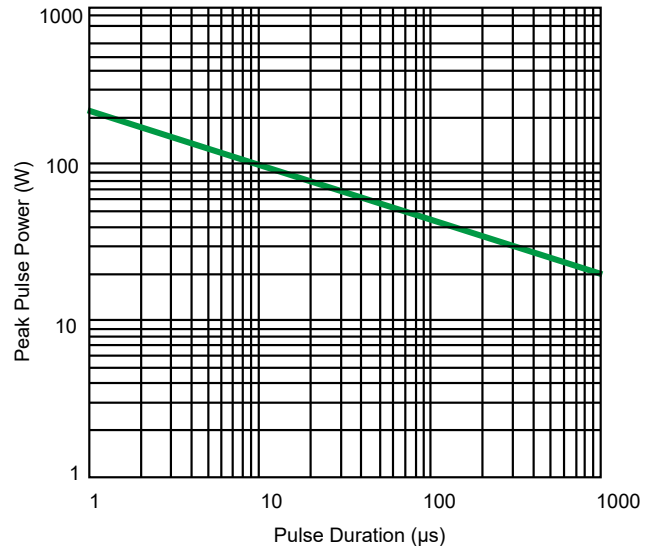
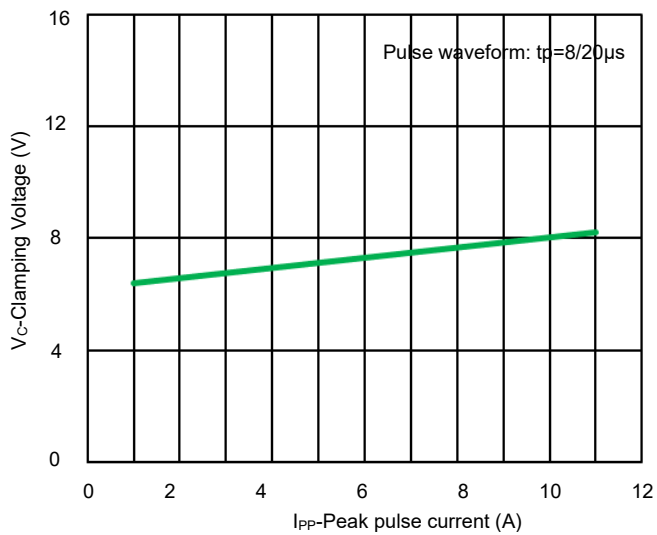
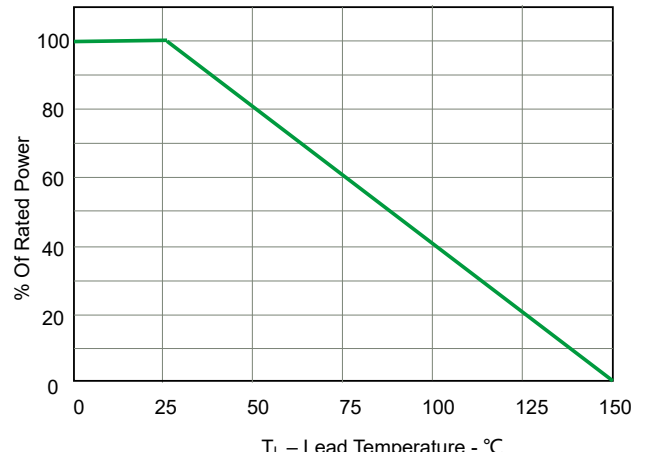
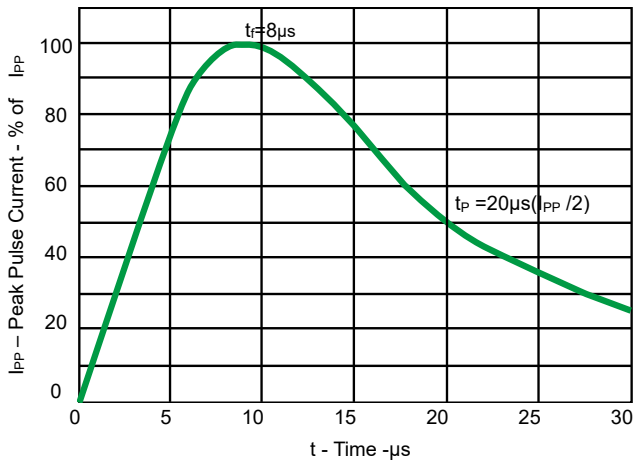


Fig 4. Non Repetitive Peak Pulse Power vs. Pulse time

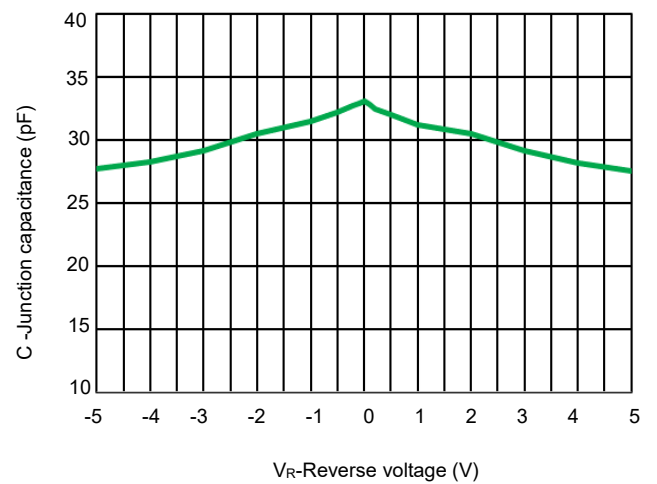


Fig 5. TLP Measurement

Fig 6. Capacitance vs. Reverse voltage

Transient Voltage Suppressors for ESD Protection

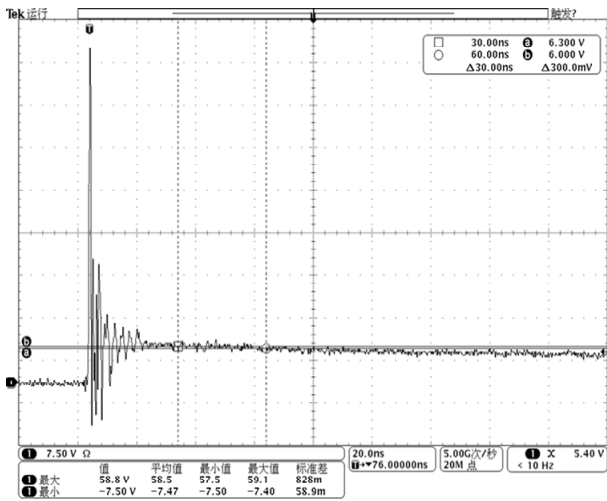


Fig7.ESD Clamping voltage

(IEC61000-4-2 +8kV contact)

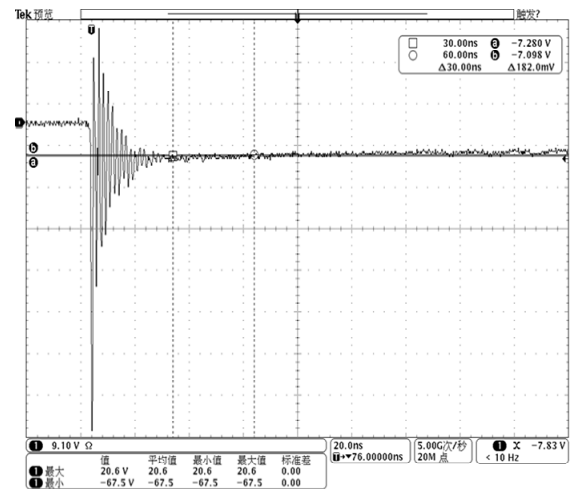
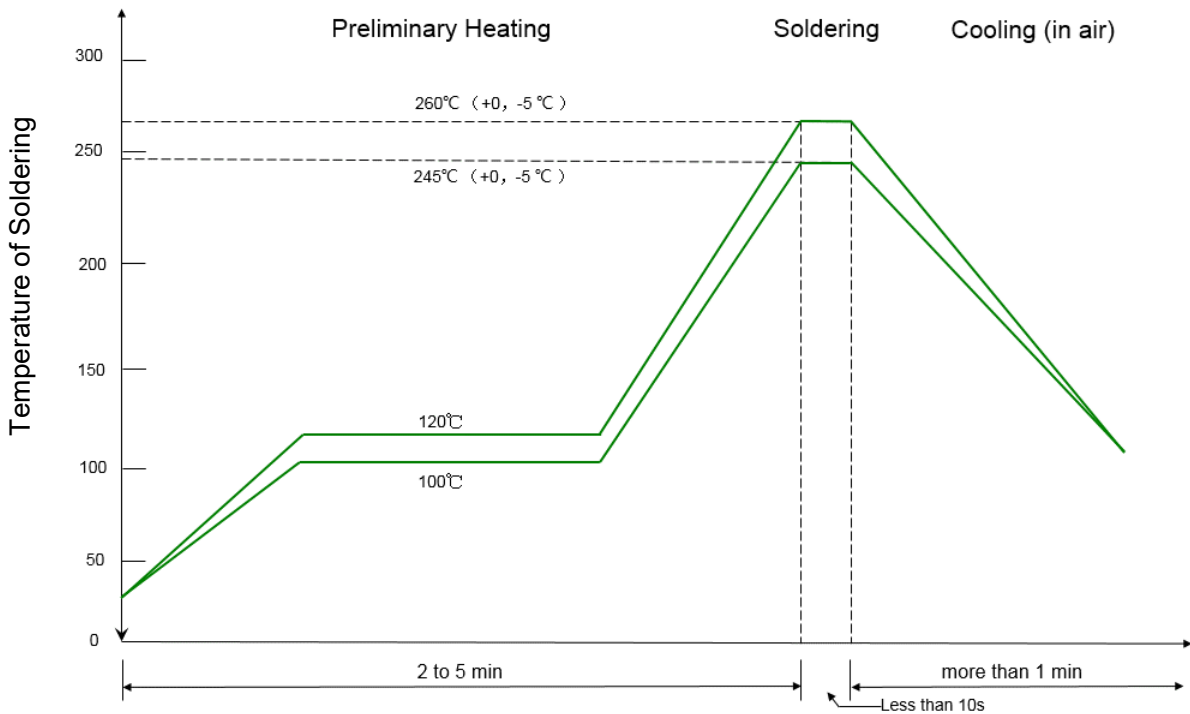


Fig8.ESD Clamping voltage

(IEC61000-4-2-8kV contact)

Solder Reflow Recommendation



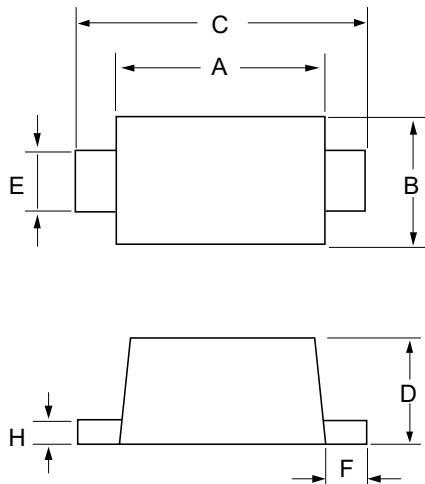
Remark: Pb free for 260°C; Pb for 245°C.

**PCB Design**

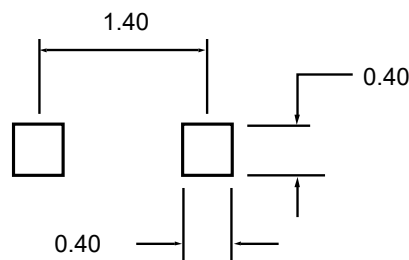
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- Do not use stubs, but place the cathode of the TVS diode directly on the signal trace.
- Do not make false economies and save copper for the ground connection.
- Place via holes to ground as close as possible to the anode of the TVS diode.
- Use as many via holes as possible for the ground connection.
- Keep the length of via holes in mind! The longer the more inductance they will hav

**Product dimension (SOD-523)**



Dim	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.043	0.051	1.10	1.30
B	0.028	0.035	0.70	0.90
C	0.059	0.067	1.50	1.70
D	0.020	0.028	0.50	0.70
E	0.010	0.014	0.25	0.35
F	0.006	0.010	0.15	0.25
H	0.0028	0.0079	0.07	0.20



Notes:

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

Unit: mm

**Ordering information**

Device	Package	MPQ
TAPING	SOD-523 (Pb-Free)	3000 / Tape & Reel

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