

ElectroStatic Discharged Protection Devices (ESD) Data Sheet

Description

The SZD22A15L01 is designed to protect power port and the chip Vbus interfaces. It has been specifically designed to protect sensitive components which are connected to power lines from overvoltage caused by electrostatic discharge (ESD), cable discharge events (CDE) and lightning.

This device integrate a high power transient voltage suppressor(TVS) and small package. It features solid-state silicon-avalanche technology for unmatched transient protection without device degradation. It offer superior electrical characteristics including fast response time ,low clamping voltage and no device degradation. This allows the designer maximum flexibility and reduces parts count.

The device may be used to meet the immunity requirements of IEC61000-4-2 (ESD), IEC61000-4-4 (EFT) , IEC61000-4-5 (Surge).



Contact : $\pm 30\text{kV}$
Air : $\pm 30\text{kV}$

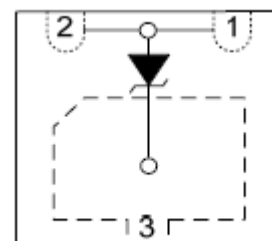


Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- DFN2020 surface mount package
- Working voltage: 15V
- Low leakage current
- Low operating and clamping voltages
- Lead Free/RoHS compliant
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking:1513-NLA

Applications

- USB 3.0/USB 2.0
- MHL/MIPI/MDDI
- HDMI, Video Port, eSATA
- Set Top Boxes, Game Consoles
- Smart Phones
- External Storage
- Ultrabooks, Notebooks
- Tablets, eReaders



Pin Configuration

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	Ppp	5500	W
ESD voltage (Contact discharge)	V _{ESD}	±30	kV
ESD voltage (Air discharge)		±30	
Storage & operating temperature range	T _{STG} ,T _J	-55~+150	°C

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				15	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1.0mA	16			V
Reverse leakage current	I _R	V _R =15V			1.0	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =130A		35	55	V
Peak Pulse Current(tp=8/20μs)	I _{PP}				130	A
ESD Clamping voltage (TLP)	V _C	I _{PP} =8.0A		17.5		V
ESD Clamping voltage (TLP)	V _C	I _{PP} =16A		18.5		V
ESD Dynamic Turn-on Resistance	R _{dy}			0.1		Ω
Off state junction capacitance	C _J	0Vdc,f=1MHz		1000	1200	pF

Typical Characteristics Curves

Figure 1. Pulse Waveforms

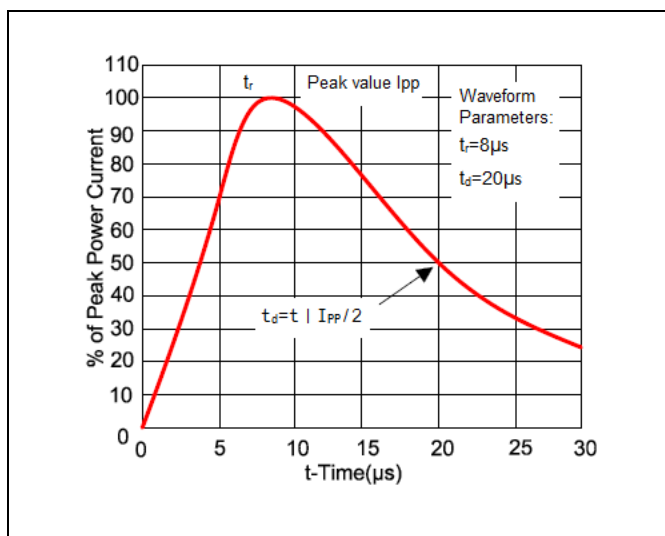


Figure 2. Clamping Voltage vs. Peak Pulse Current

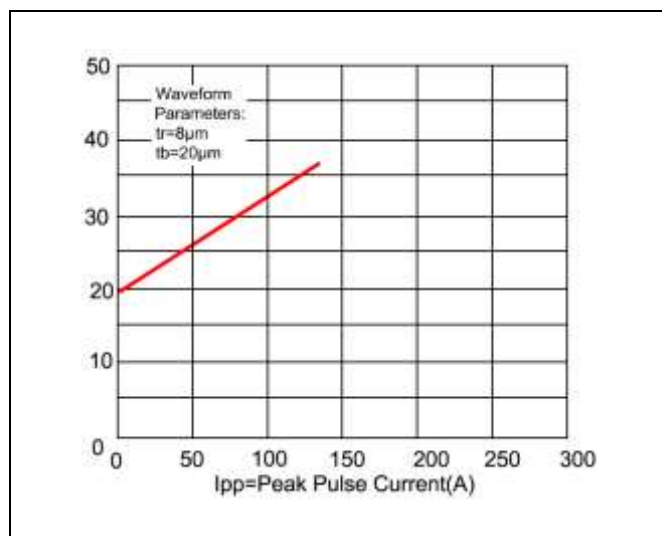


Figure 3. Capacitance vs. Reverse Voltage

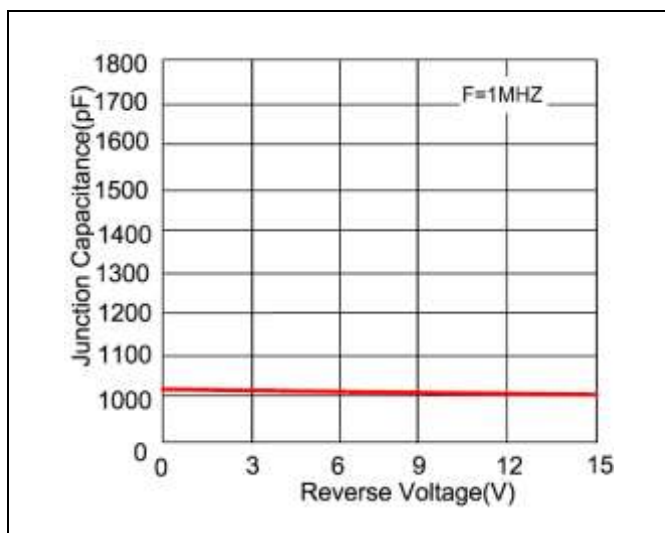
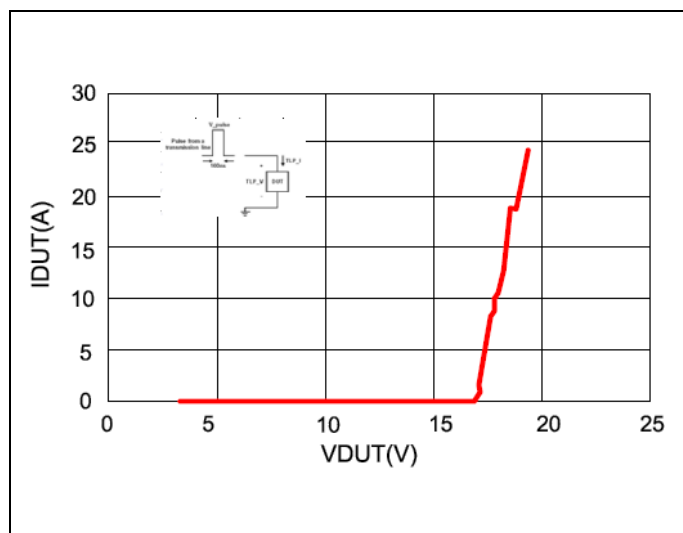
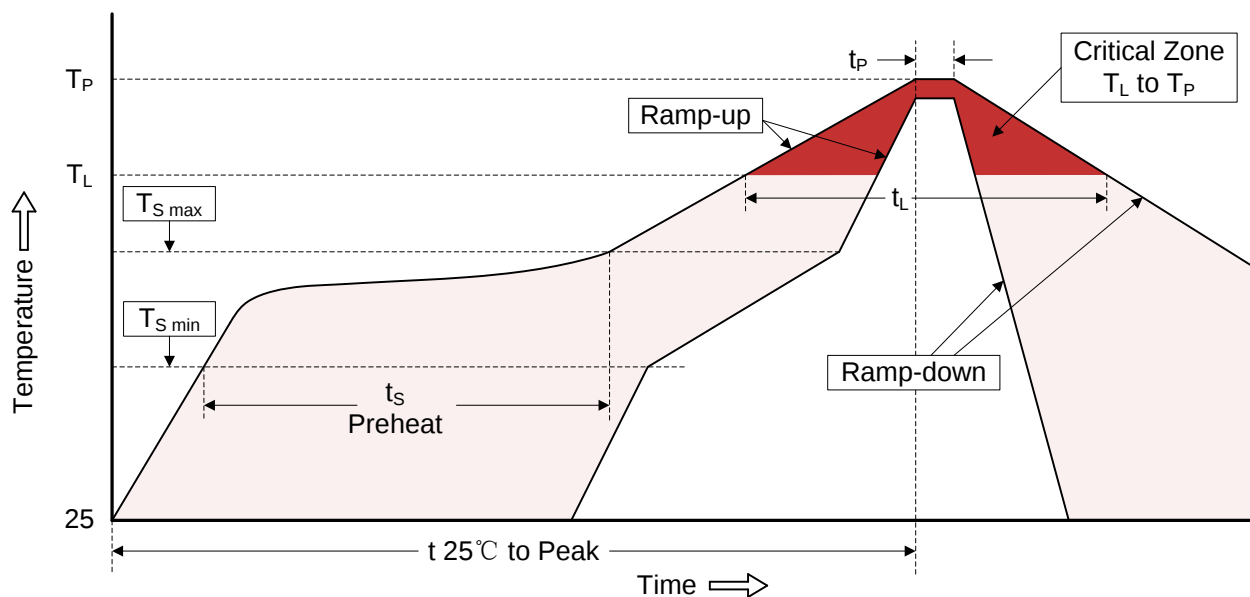


Figure 4. Transmission Line Pulsing (TLP) Measurement



Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S \min}$) -Temperature Max ($T_{S \max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S \max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Dimensions (DFN2020)

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.50	0.60	0.020	0.024
D	1.90	2.10	0.075	0.083
D1	1.40	1.60	0.055	0.063
E	1.90	2.10	0.075	0.083
E1	0.90	1.15	0.035	0.045
e	1.30 BSC		0.051 BSC	
L1	0.324	0.476	0.013	0.019
L2	0.20	0.30	0.008	0.012
k	0.20	0.45	0.008	0.018
h	0.30 BSC		0.012 BSC	

Packaging

Tape		Symbol	Dimension (mm)
		W	8.00±0.30
		P0	4.00±0.10
		P1	4.00±0.10
		P2	2.00±0.10
		D0	Φ1.50±0.10
		E	1.75±0.10
		F	3.50±0.10
		A0	2.25±0.1
		B0	2.25±0.1
		D	Φ178.0±2.0
		D2	Φ54.50±1
		W1	9.5±2
		W2	Φ12.30±1.5
		Quantity: 3000PCS	