ElectroStatic Discharged Protection Devices (ESD) Data Sheet

Description

The SZD22A30L01 is designed to protect voltage sensitive components from ESD and transient voltage events. 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.

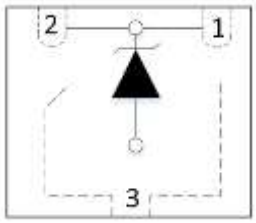
The device integrate a high power transient voltage suppressor(TVS) and small package. It features solid-state silicon-avalanche technology for unmatched transient protection without device degradation. It offer superior electrical characteristics including fast response time, low clamping voltage and 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 : ±30kV
Air : ±30kV

Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- DFN2020 surface mount package
- Working voltage: 30V
- 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: P30 004



Pin Configuration

Applications

- Power port
- I^2C bus protection

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	Ppp	9000	W
ESD voltage (Contact discharge)	V_{ESD}	±30	kV
ESD voltage (Air discharge)		±30	
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

Electrical Characteristics (T_J=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				30	V
Reverse breakdown voltage	V_{BR}	I_{BR}=1.0mA	31			V
Reverse leakage current	I_R	V_R=30V			1.0	μA
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=180A		50	70	V
Peak Pulse Current(tp=8/20μs)	I_{PP}				180	A
ESD Clamping voltage (TLP)	V_C	I_{PP}=8.0A		33		V
ESD Clamping voltage (TLP)	V_C	I_{PP}=16A		34		V
ESD Dynamic Turn-on Resistance	R_{dy}			0.12		Ω
Off state junction capacitance	C_J	0Vdc,f=1MHz		570	670	pF

Typical Characteristics Curves

Figure 1. Pulse Waveforms

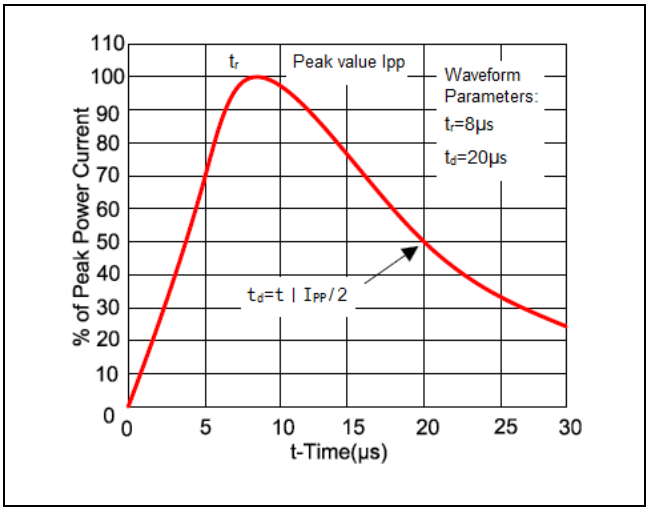


Figure 2. Clamping Voltage vs. Peak Pulse Current

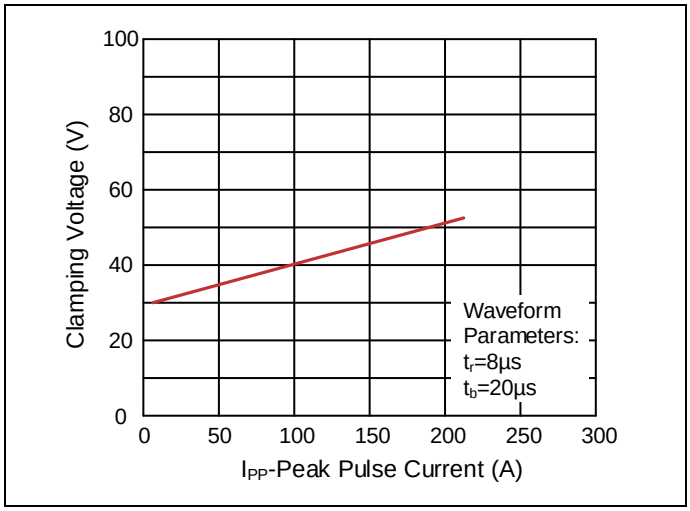


Figure 3. Capacitance vs. Reverse Voltage

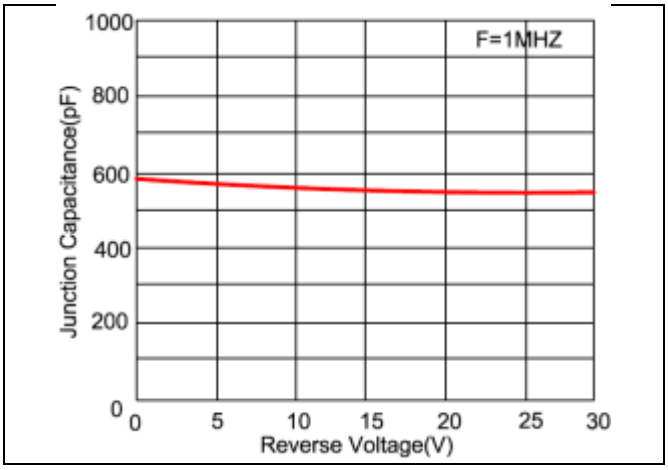
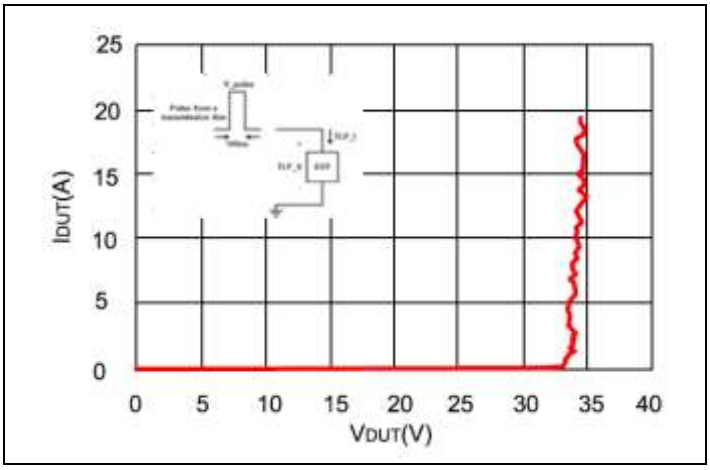
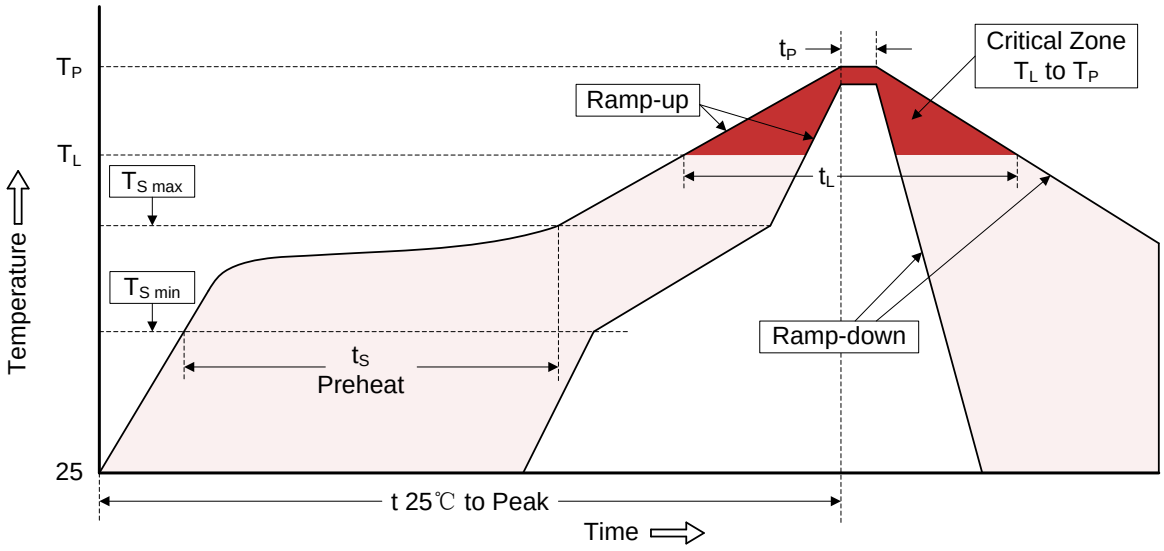


Figure 4.Transmission LinePulsing (TLP) Measurement



Recommended Soldering Conditions

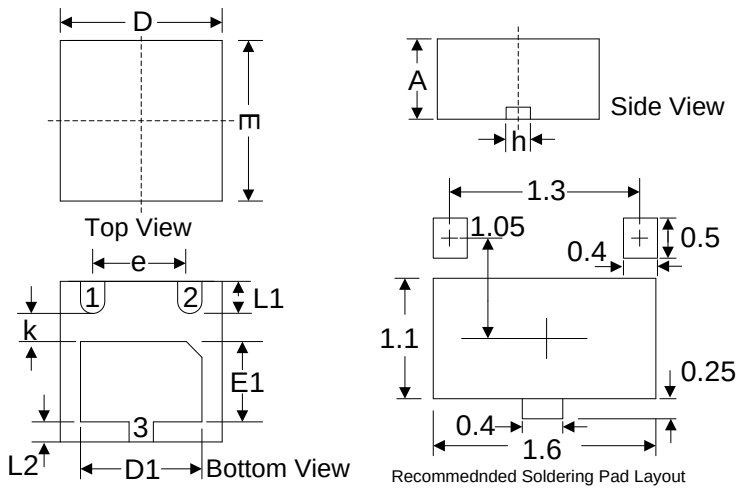
Reflow Soldering



Recommended Conditions

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

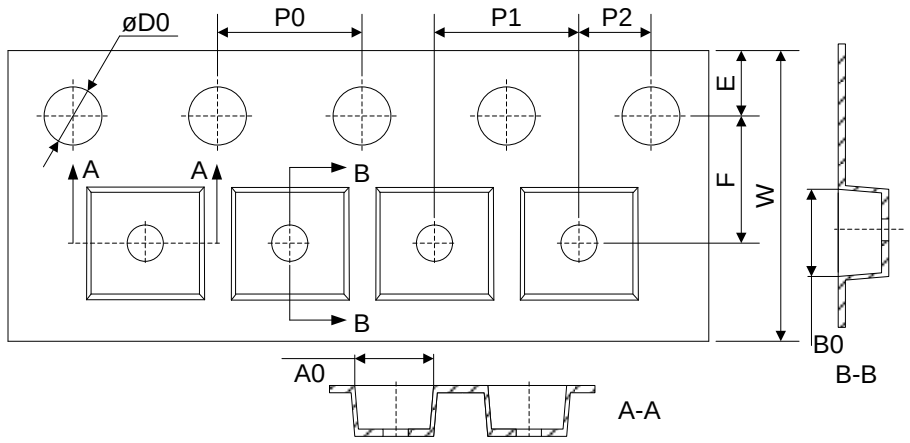
Dimensions (DFN2020)



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	

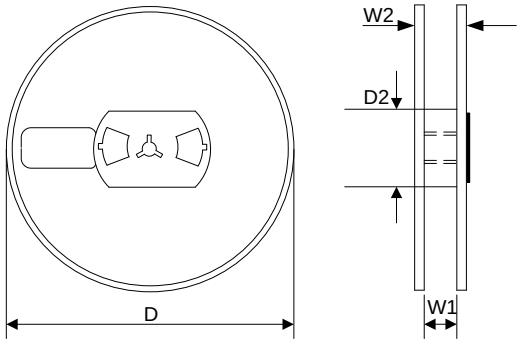
Packaging

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

Reel



D	Φ178.0±2.0
D2	Φ54.50±1
W1	9.5±2
W2	Φ12.30±1.5
Quantity: 3000PCS	