

DATA SHEET

**ELECTROSTATIC DISCHARGE
PROTECTION DEVICES**

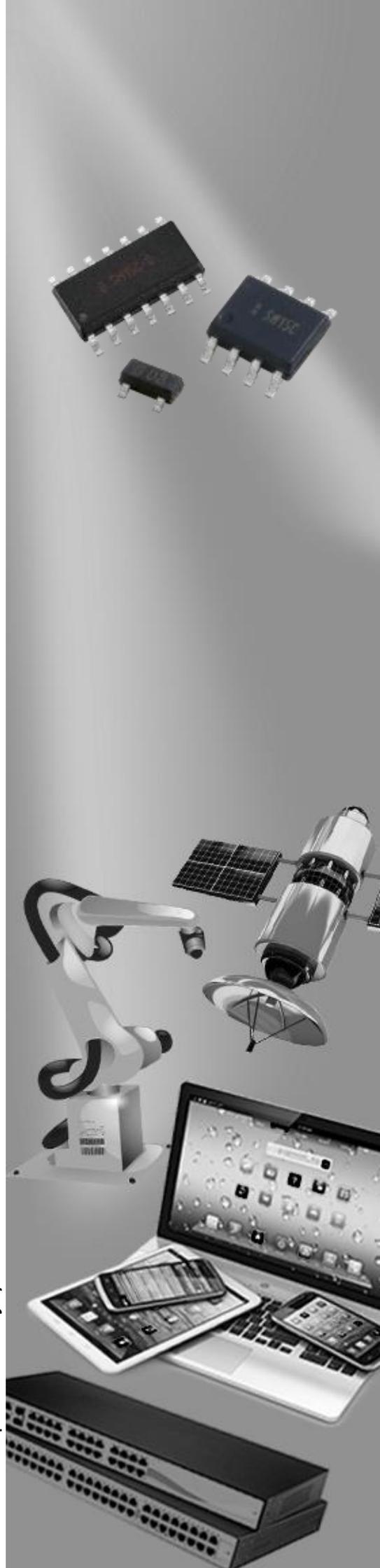
INDUSTRIAL / CONSUMER

SHD8A6.5L01

RoHS compliant & Halogen free



Product specification—July 01, 2023 V.1



Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The SHD8A6.5L01 is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computer, and PDAs. It offer superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs. It is designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD), lightning, electrical fast transients (EFT), and cable discharge events (CDE).

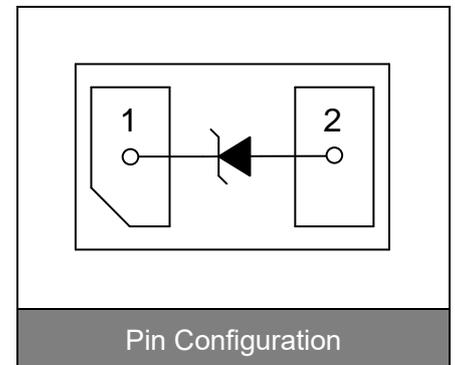


Contact: $\pm 30\text{kV}$
Air: $\pm 30\text{kV}$



Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOD882 surface mount package
- Working voltage: 6.5V
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology
- RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: K6



Applications

- Cellular Handsets & Accessories
- Notebooks & Handhelds
- Digital Cameras
- Personal Digital Assistants (PDAs)
- Portable Instrumentation

Maximum Ratings

Rating	Symbol	Value	Unit
ESD voltage (Contact discharge)	V_{ESD}	± 30	kV
ESD voltage (Air discharge)		± 30	
Storage & operating temperature range	$T_{\text{STG}}, T_{\text{J}}$	-55~+150	°C

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				6.5	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1.0mA	6.8			V
Reverse leakage current	I _R	V _R =6.5V			1.0	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =35A		18	25	V
Peak Pulse Current(tp=8/20μs)	I _{PP}				35	A
ESD Clamping voltage (TLP)	V _C	I _{PP} =8.0A		8.3		V
ESD Clamping voltage (TLP)	V _C	I _{PP} =16A		9.0		V
ESD Dynamic Turn-on Resistance	R _{dy}			0.11		Ω
Off state junction capacitance	C _J	0Vdc,f=1MHz		270	350	pF

Typical Characteristics Curves

Figure 1. Pulse Waveforms

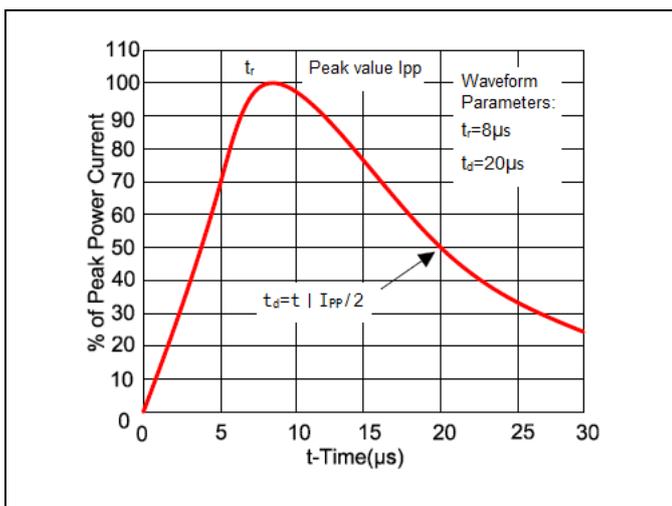


Figure 2. Clamping Voltage vs. Peak Pulse Current

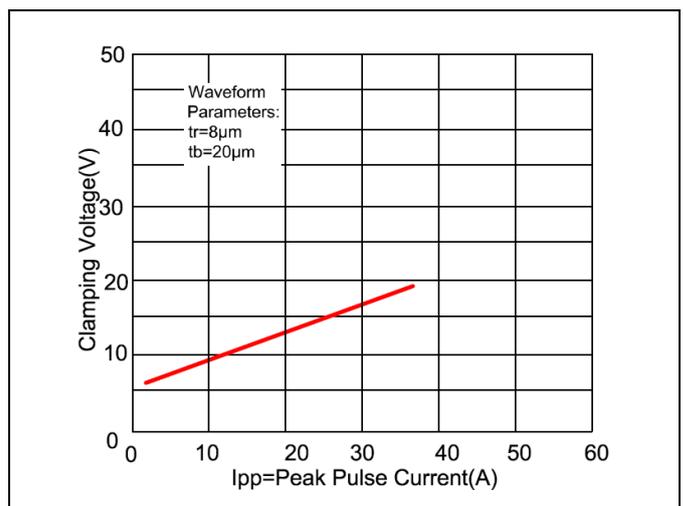


Figure 3. Capacitance vs. Reverse Voltage

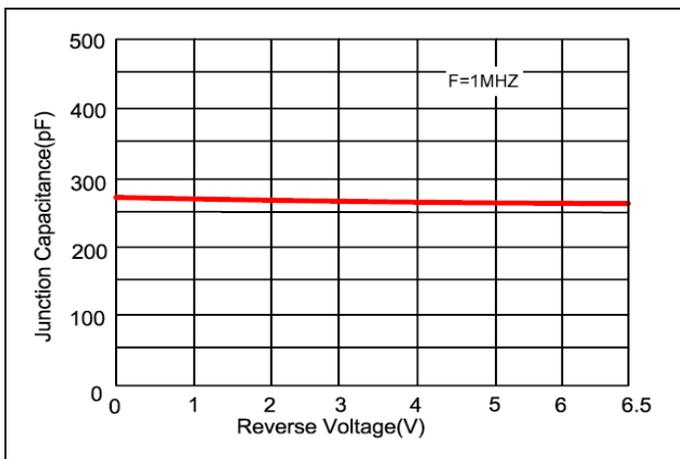
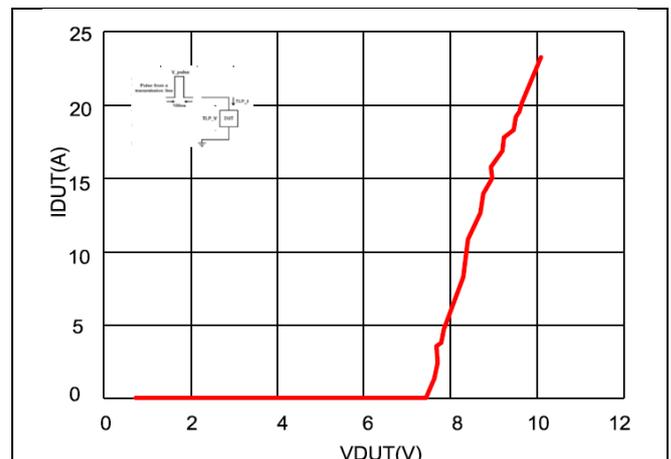
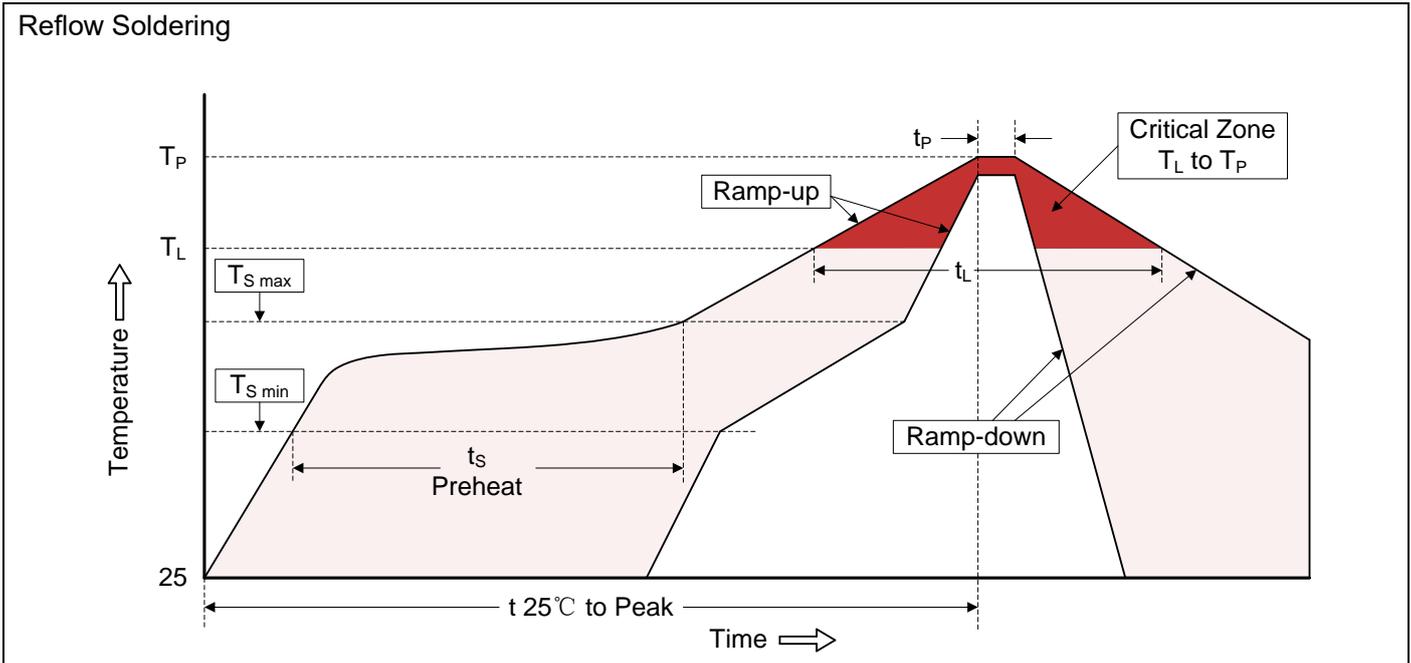


Figure 4. Transmission Line Pulsing (TLP) Measurement



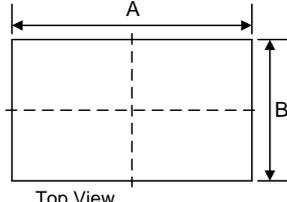
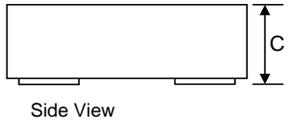
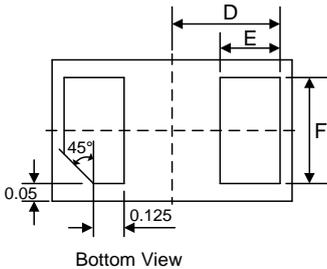
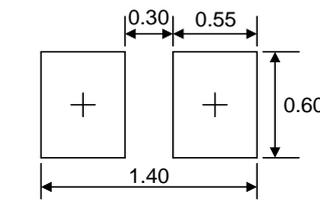
Recommended Soldering Conditions



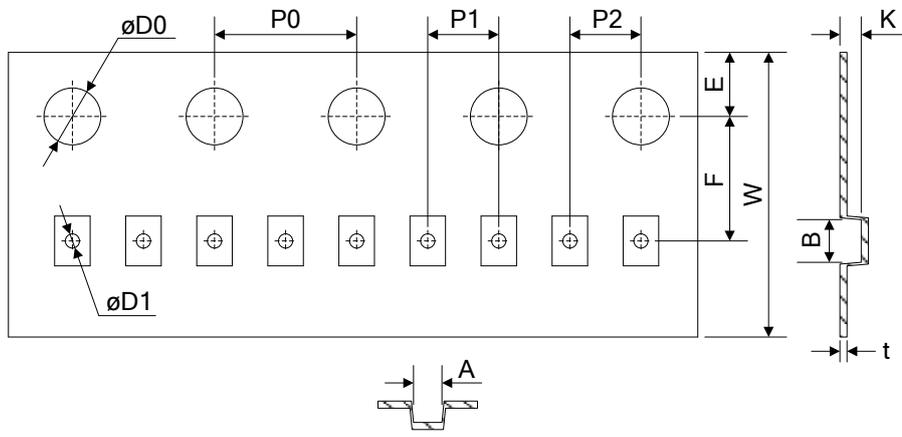
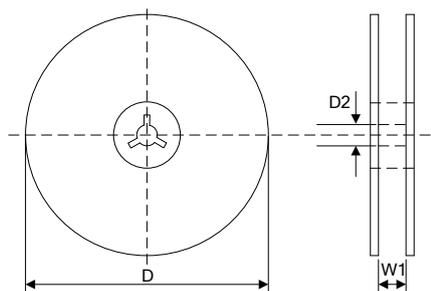
Recommended Conditions

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 (SOD882)

 <p>Top View</p>	Dimension (mm)					
	Millimeters		Inches			
 <p>Side View</p>	Min.	Max.	Min.	Max.		
	A	0.95	1.05	0.037	0.041	
 <p>Bottom View</p>	B	0.55	0.65	0.022	0.026	
	C	0.32	0.55	0.013	0.022	
 <p>Recommended Soldering Pad Layout</p>	D	0.45		0.018		
	E	0.20	0.30	0.008	0.012	
		F	0.45	0.55	0.018	0.022

Packaging

<p>Tape</p> 	Symbol	Dimension (mm)
	W	8.00±0.30
	P0	4.00±0.10
	P1	2.00±0.10
	P2	2.00±0.10
	D0	Φ1.55±0.10
	D1	Φ0.40±0.05
	E	1.75±0.10
	F	3.50±0.10
	A	0.75±0.10
	B	1.15±0.10
	K	0.60±0.05
	t	0.20±0.05
<p>Reel</p> 	D	Φ178.0±2.0
	D2	Φ13.00.
	W1	9.50
	Quantity: 10000PCS	

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