

ElectroStatic Discharged Protection Devices (ESD) Data Sheet

Description

The SKD8A12L01 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. It is designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge(ESD), electrical fast transients(EFT), and cable discharge events(CDE).

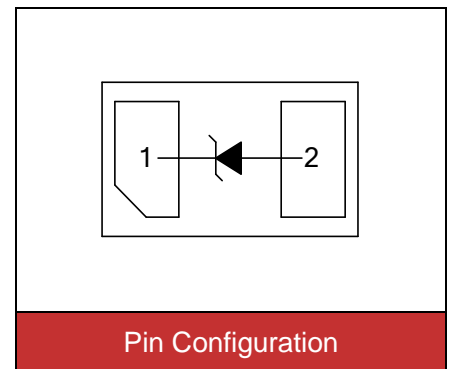


Contact : ±30kV
Air : ±30kV



Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOD882 surface mount package
- Working voltage: 12V
- 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: 12S



Applications

- Cellular Handsets & Accessories
- Personal Digital Assistants(PDAs)
- MP3 Players
- Digital Cameras

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20µs waveform)	P _{PP}	1100	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 ($T_J=25^{\circ}\text{C}$)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				12	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1.0\text{mA}$	13.3			V
Reverse leakage current	I_R	$V_R=12\text{V}$			1.0	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=30\text{A}$		35	45	V
Peak Pulse Current ($t_p=8/20\mu\text{s}$)	I_{PP}				30	A
ESD Clamping voltage (TLP)	V_C	$I_{PP}=8.0\text{A}$		19		V
ESD Clamping voltage (TLP)	V_C	$I_{PP}=16\text{A}$		22		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$			0.37		Ω
Off state junction capacitance	C_J	$0\text{Vdc}, f=1\text{MHz}$		50	70	pF

Typical Characteristics Curves

Figure 1. Pulse Waveforms

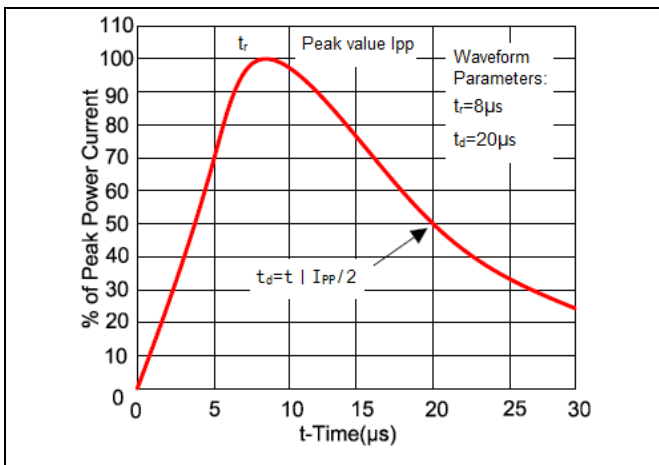


Figure 2. Clamping Voltage vs. Peak Pulse Current

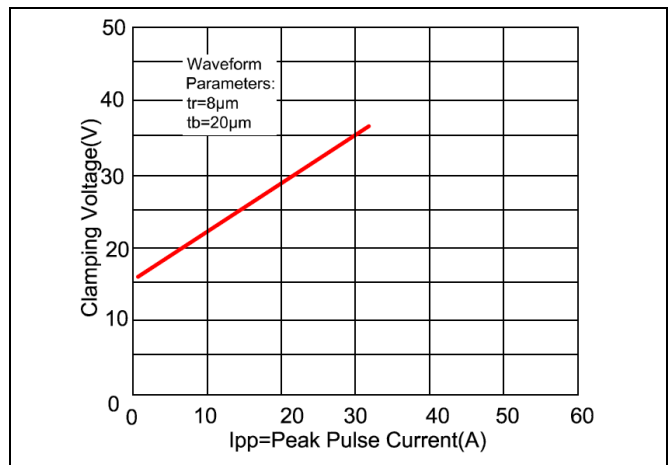


Figure 3. Capacitance vs. Reverse Voltage

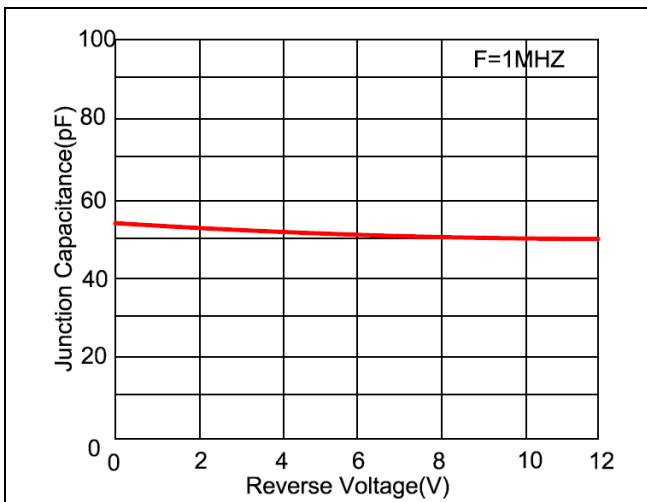
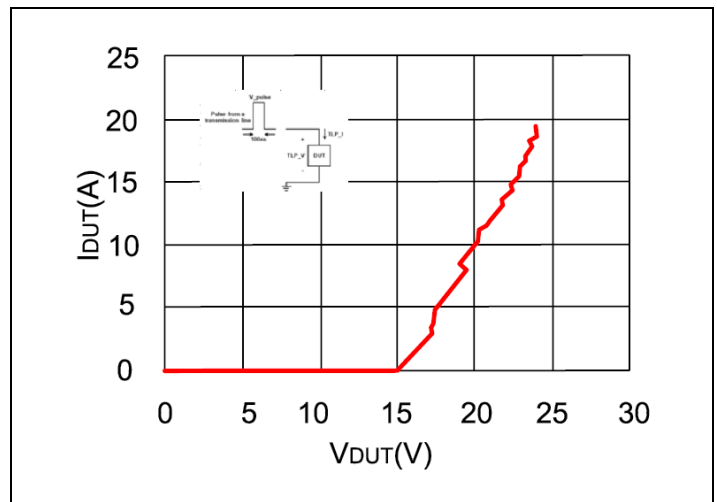
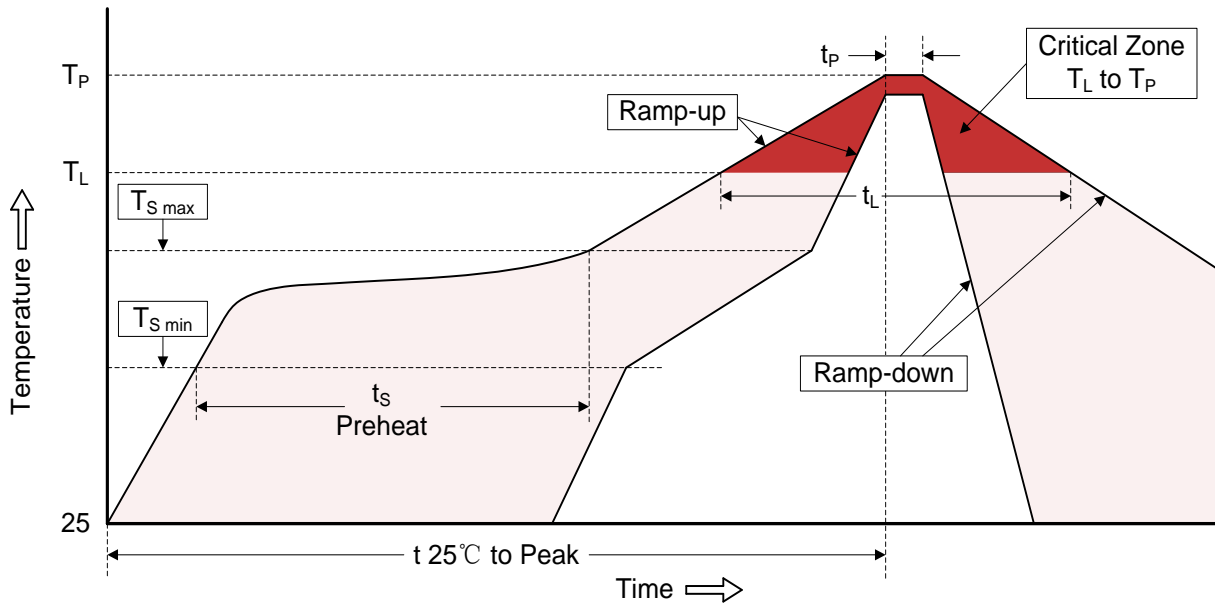


Figure 4. Transmission Line Pulsing (TLP) Measurement



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 (SOD882)

	Dimension (mm)				
	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	A	0.95	1.05	0.037	0.041
B	0.55	0.65	0.022	0.026	
C	0.32	0.55	0.013	0.022	
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	