

# DATA SHEET

**ELECTROSTATIC DISCHARGE  
PROTECTION DEVICES**

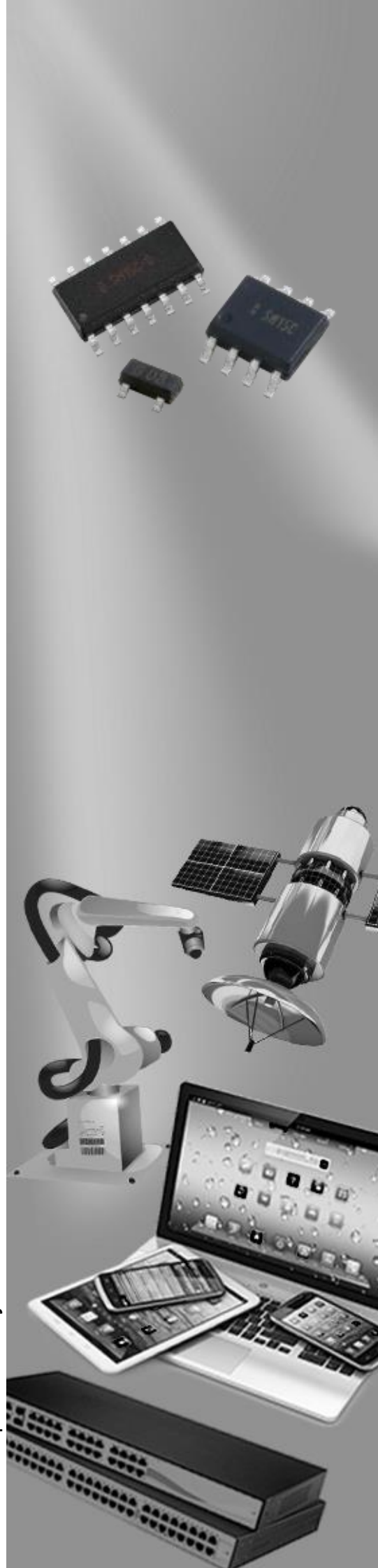
**INDUSTRIAL / CONSUMER**

LBD8C03L01

RoHS compliant & Halogen free



Product specification—June 30, 2023 V.1



## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

The LBD8C03L01 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).

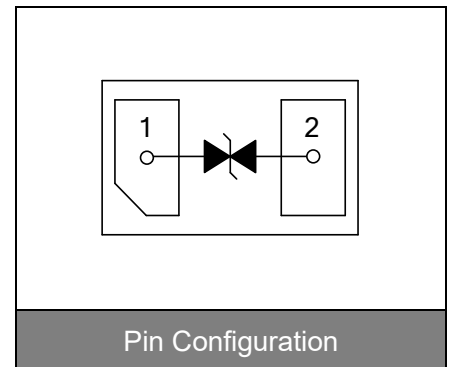


Contact:  $\pm 30\text{kV}$   
Air:  $\pm 30\text{kV}$



### Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOD882 surface mount package
- Working voltage: 3.3V
- 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: 3E



### Applications

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

### Maximum Ratings

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

**Electrical Characteristics (T<sub>J</sub>=25°C)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				3.3	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1.0mA	3.8			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =3.3V			1.0	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =8.0A		10	15	V
ESD Clamping voltage (TLP)	V <sub>C</sub>	I <sub>PP</sub> =8.0A		6.0		V
ESD Clamping voltage (TLP)	V <sub>C</sub>	I <sub>PP</sub> =16A		8.0		V
Peak Pulse Current(tp=8/20μs)	I <sub>PP</sub>				8	A
ESD Dynamic Turn-on Resistance	R <sub>dynamic</sub>			0.22		Ω
Off state junction capacitance	C <sub>J</sub>	0Vdc,f=1MHz		20	30	pF

**Typical Characteristics Curves**

Figure 1. Pulse Waveforms

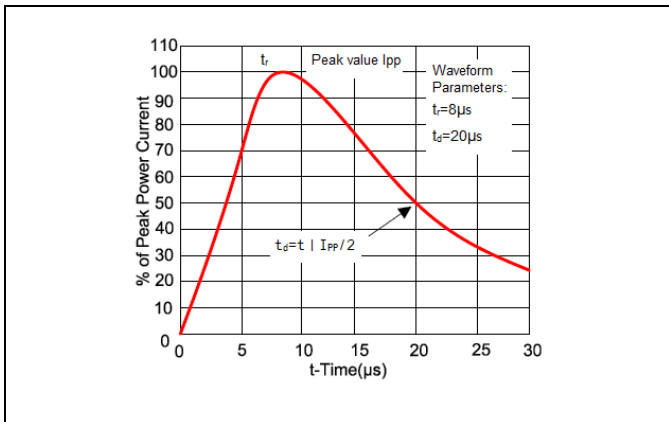


Figure 2. Clamping Voltage vs. Peak Pulse Current

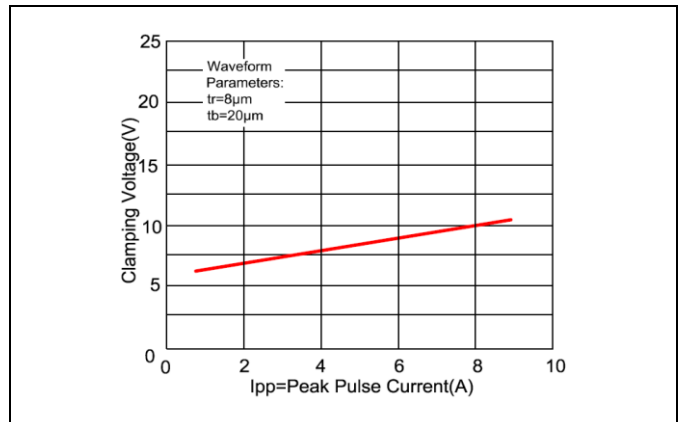


Figure 3. Capacitance vs. Reverse Voltage

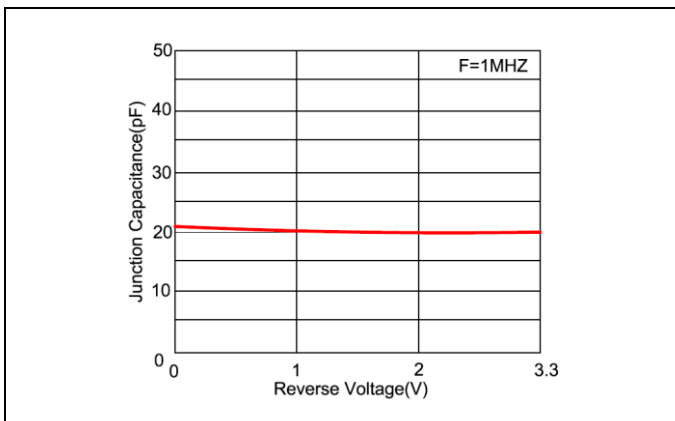
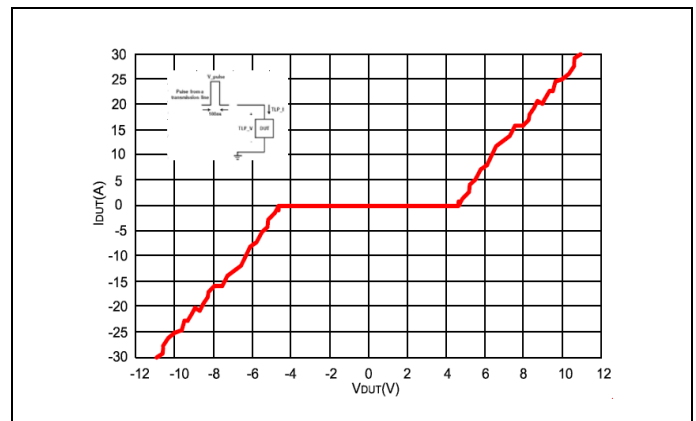
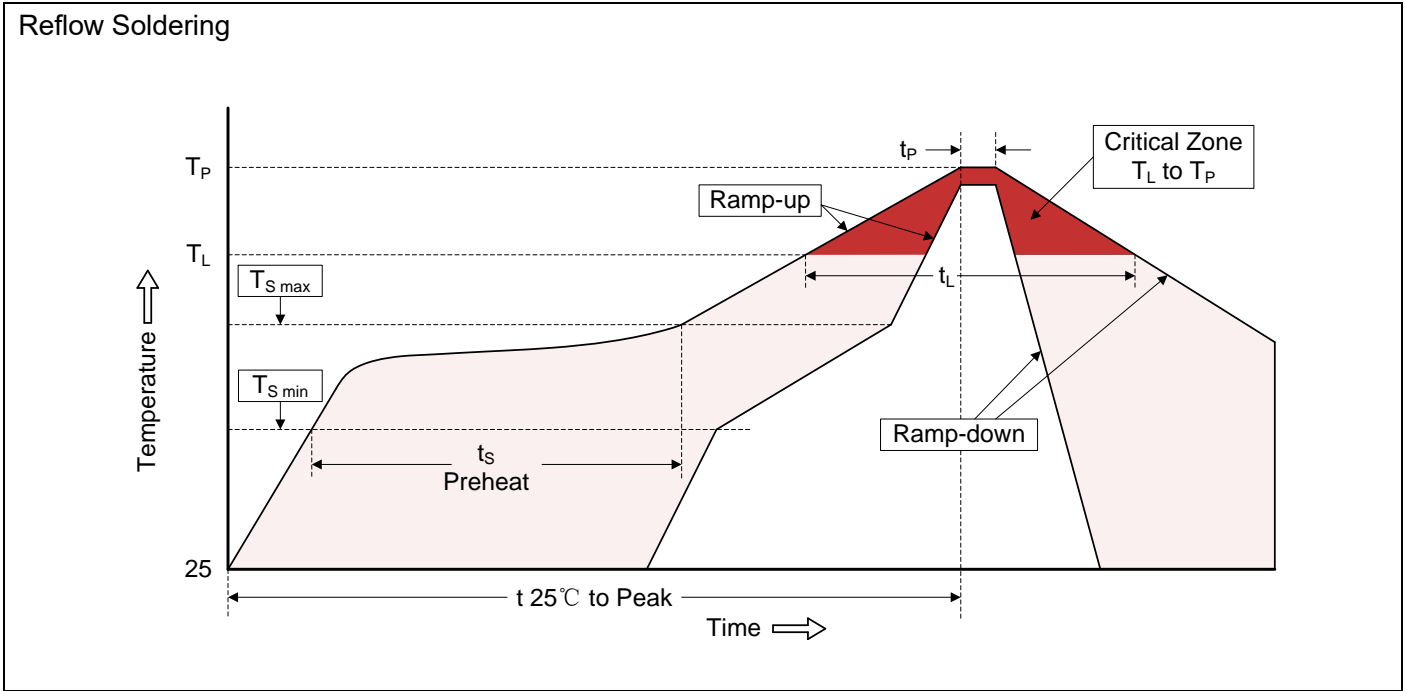


Figure 4. Transmission LinePulsing (TLP) Measurement



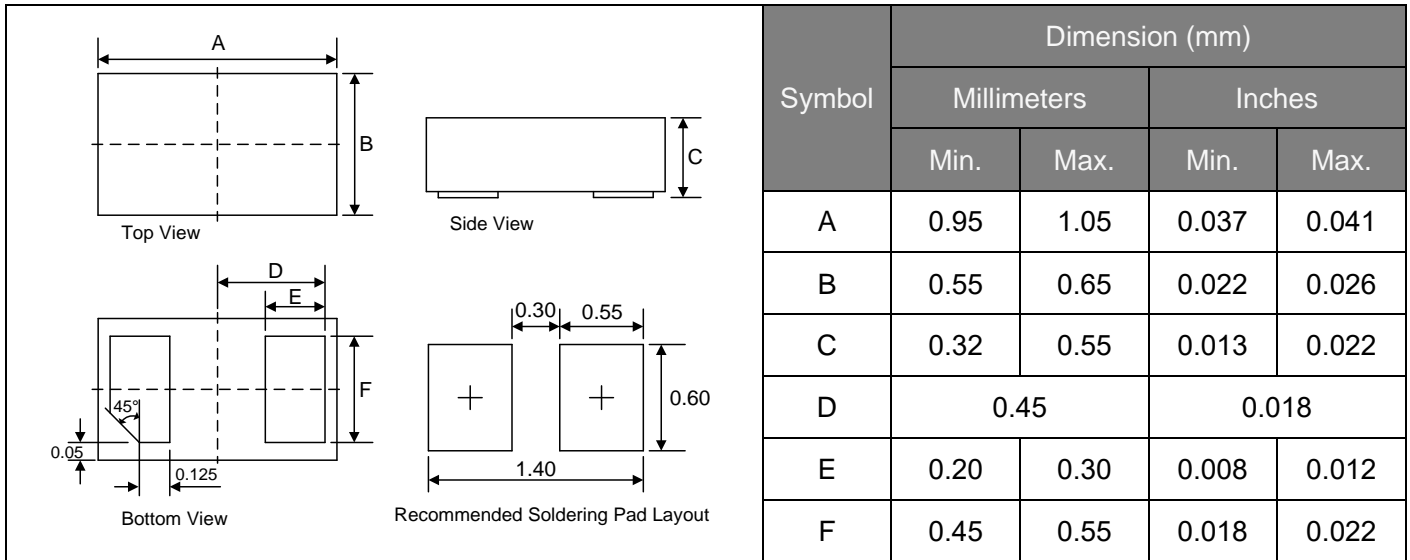
**Recommended Soldering Conditions**



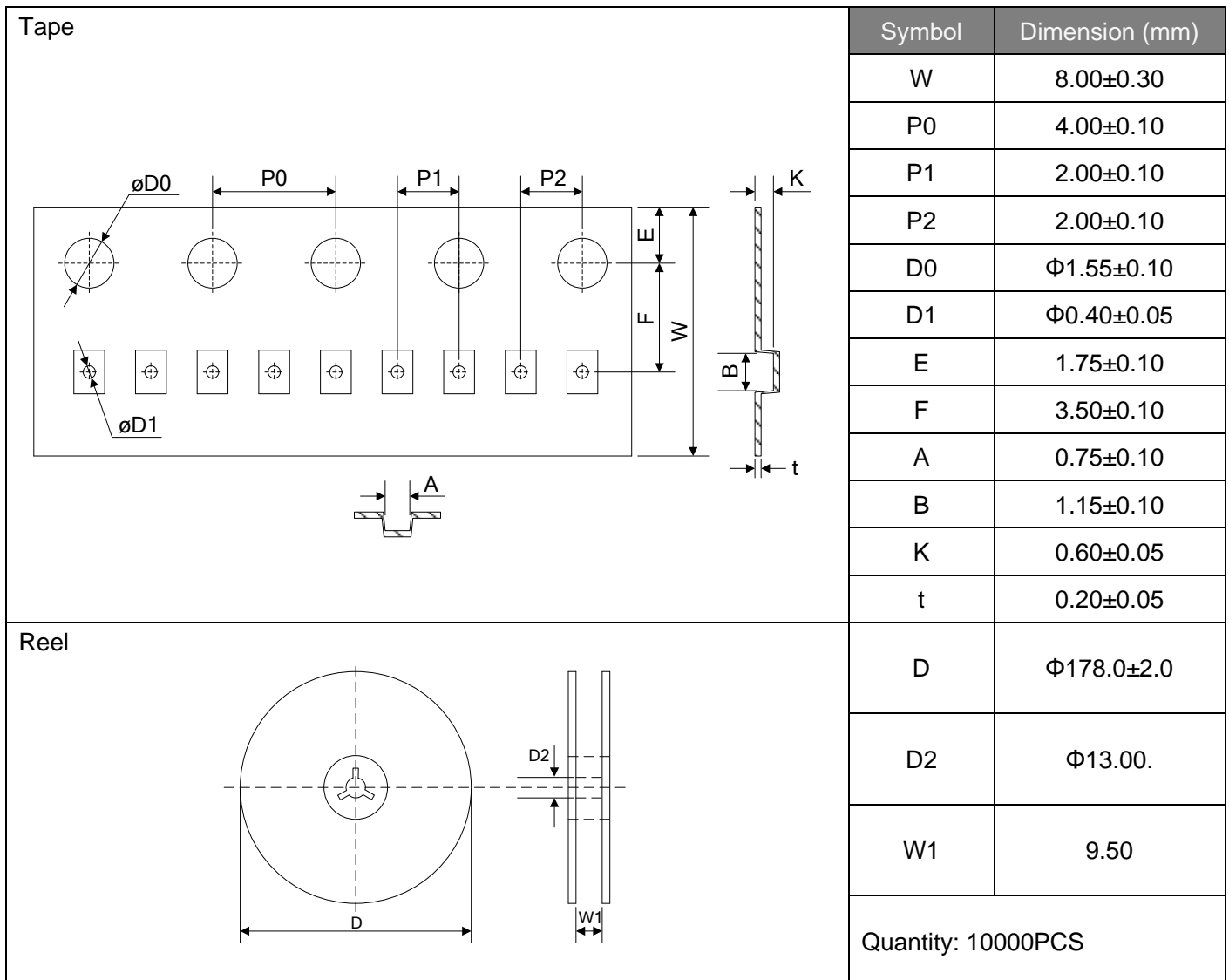
**Recommended Conditions**

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)**



**Packaging**



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