

# DATA SHEET

**ELECTROSTATIC DISCHARGE  
PROTECTION DEVICES**

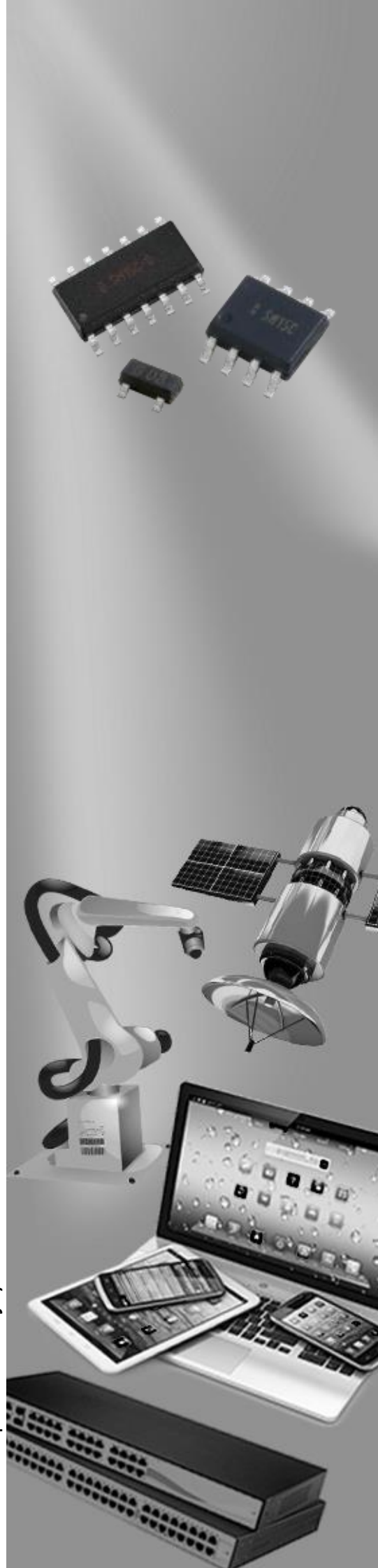
**INDUSTRIAL / CONSUMER**

SJD16AXXL01 SERIES

RoHS compliant & Halogen free



Product specification—July 02, 2023 V.4



## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's SJD16AXXL01 series are designed to protect power port and the chip us 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.

These devices 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 offers 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 series devices 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 :  $\pm 30\text{kV}$

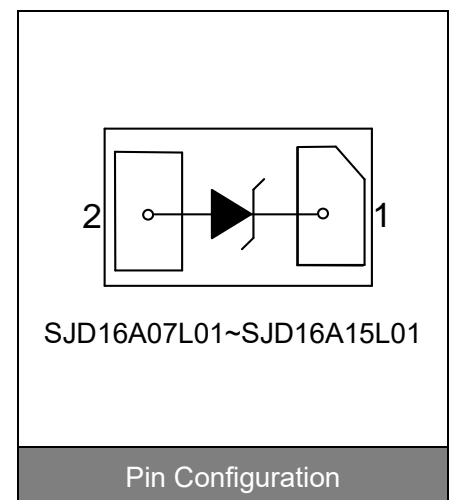


### Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- DFN1610 surface mount package
- Protects power line
- Working voltage: 7V, 10V, 12V, 15V,
- SJD16A07L01~SJD16A15L01, Cathode rays on the Pin1
- Low leakage current
- Low clamping voltage
- 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

### Applications

- Power port
- I<sup>2</sup>C bus protection



## Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=10/1000µs waveform)	P <sub>pp</sub>	120	W
Peak pulse power(tp=8/20µs waveform) SJD16A07L01~SJD16A15L01	P <sub>pp</sub>	2000	W
ESD voltage (Contact discharge)	V <sub>ESD</sub>	±30	kV
ESD voltage (Air discharge)		±30	
Storage & operating temperature range	T <sub>STG</sub> , T <sub>J</sub>	-55~+150	°C

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

SJD16A07L01(Marking: J07)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				7	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1.0mA	7.3			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =7.0V			1.0	µA
Clamping voltage (tp=8/20µs)	V <sub>C</sub>	I <sub>PP</sub> =80A		30		V
Peak Pulse Current(tp=8/20µs)	I <sub>PP</sub>				80	A
Off state junction capacitance	C <sub>J</sub>	0Vdc, f=1MHz Between I/O pins and GND		650		pF

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

SJD16A10L01(Marking: J10)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				10	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1.0mA	11			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =10V			1.0	µA
Clamping voltage (tp=8/20µs)	V <sub>C</sub>	I <sub>PP</sub> =60A		35		V
Peak Pulse Current(tp=8/20µs)	I <sub>PP</sub>				60	A
Off state junction capacitance	C <sub>J</sub>	0Vdc, f=1MHz Between I/O pins and GND		400		pF

## SJD16A12L01 (Marking: J12)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				12	V
Reverse breakdown voltage	$V_{BR}$	$I_{BR}=1.0mA$	13			V
Reverse leakage current	$I_R$	$V_R=12V$			1.0	$\mu A$
Clamping voltage (tp=8/20 $\mu s$ )	$V_C$	$I_{PP}=47A$		43		V
Peak Pulse Current(tp=8/20 $\mu s$ )	$I_{PP}$				47	A
Off state junction capacitance	$C_J$	0Vdc, f=1MHz Between I/O pins and GND		365		pF

## SJD16A15L01(Marking: J15)

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	$\mu A$
Clamping voltage (tp=8/20 $\mu s$ )	$V_C$	$I_{PP}=45A$		45		V
Peak Pulse Current(tp=8/20 $\mu s$ )	$I_{PP}$				45	A
Off state junction capacitance	$C_J$	0Vdc, f=1MHz Between I/O pins and GND		300		pF

### Typical Characteristics Curves

Figure 1. Power Derating Curve

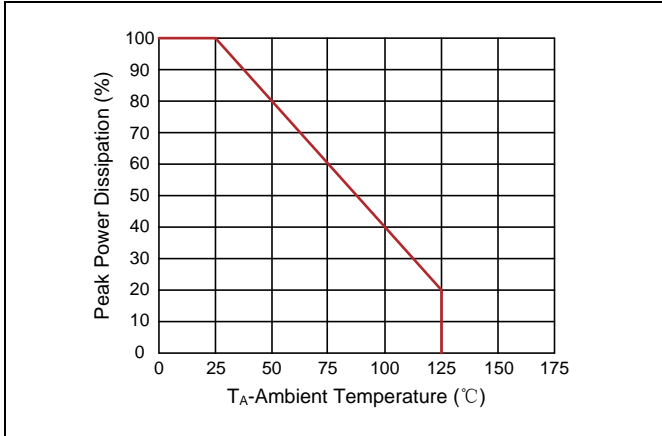


Figure 2. 8/20µs Pulse Waveforms

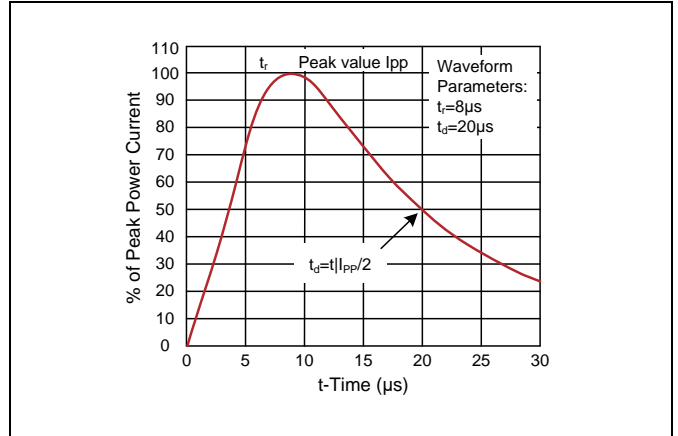


Figure 3. Clamping Voltage vs. Peak Pulse Current

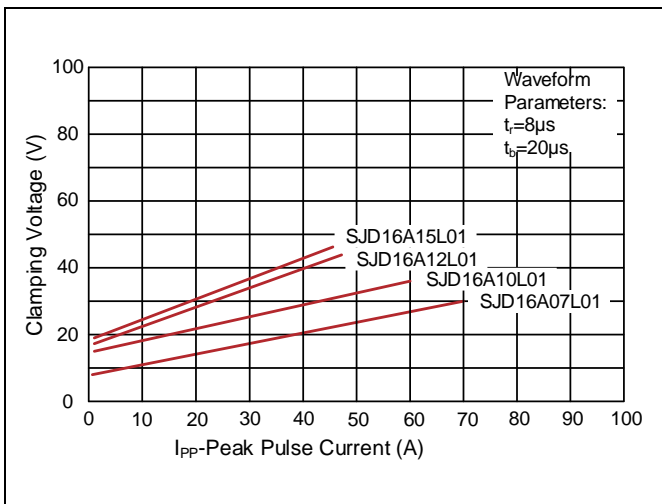


Figure 4. ESD Clamping (8kV Contact IEC61000-4-2)

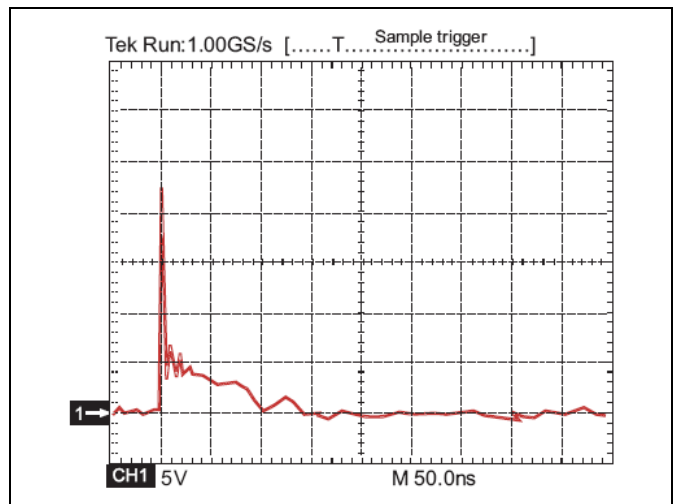


Figure 5. 10/1000µs Pulse Waveform

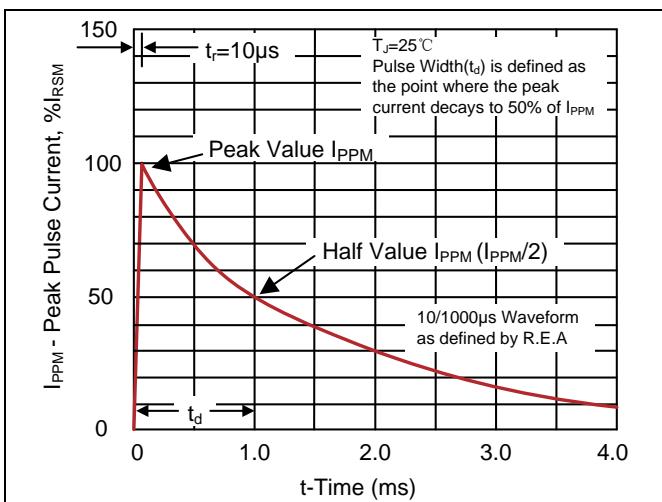
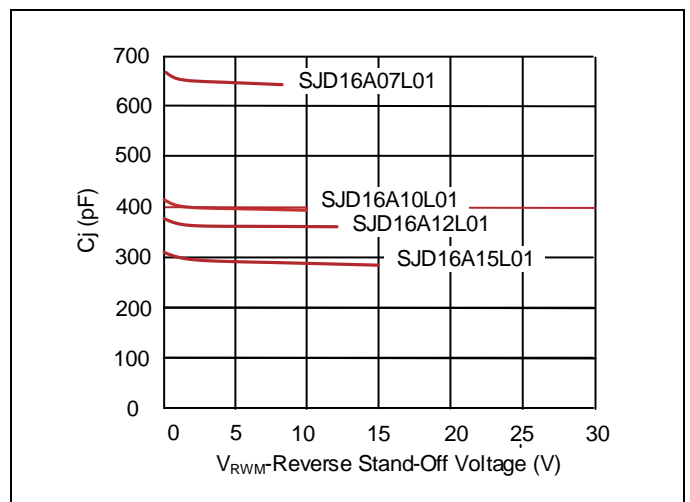
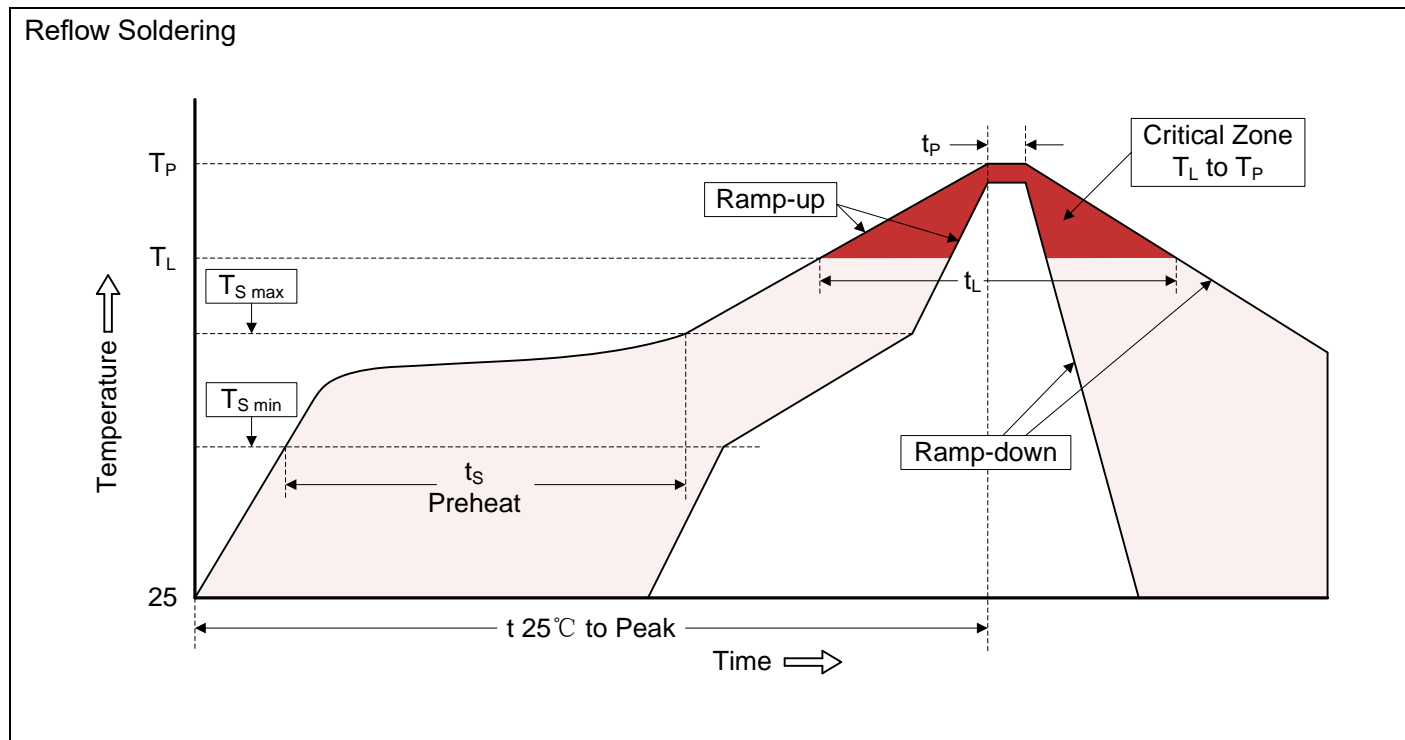


Figure 6. Typical Junction Capacitance



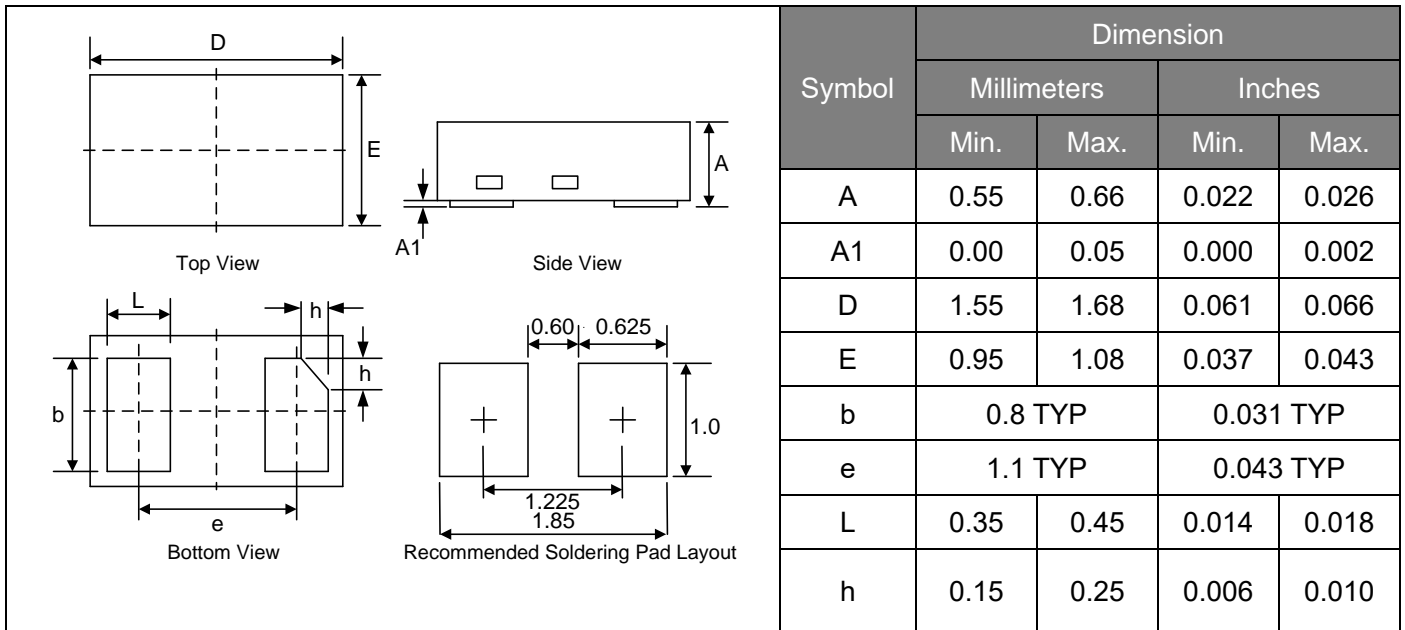
Recommended Soldering Conditions



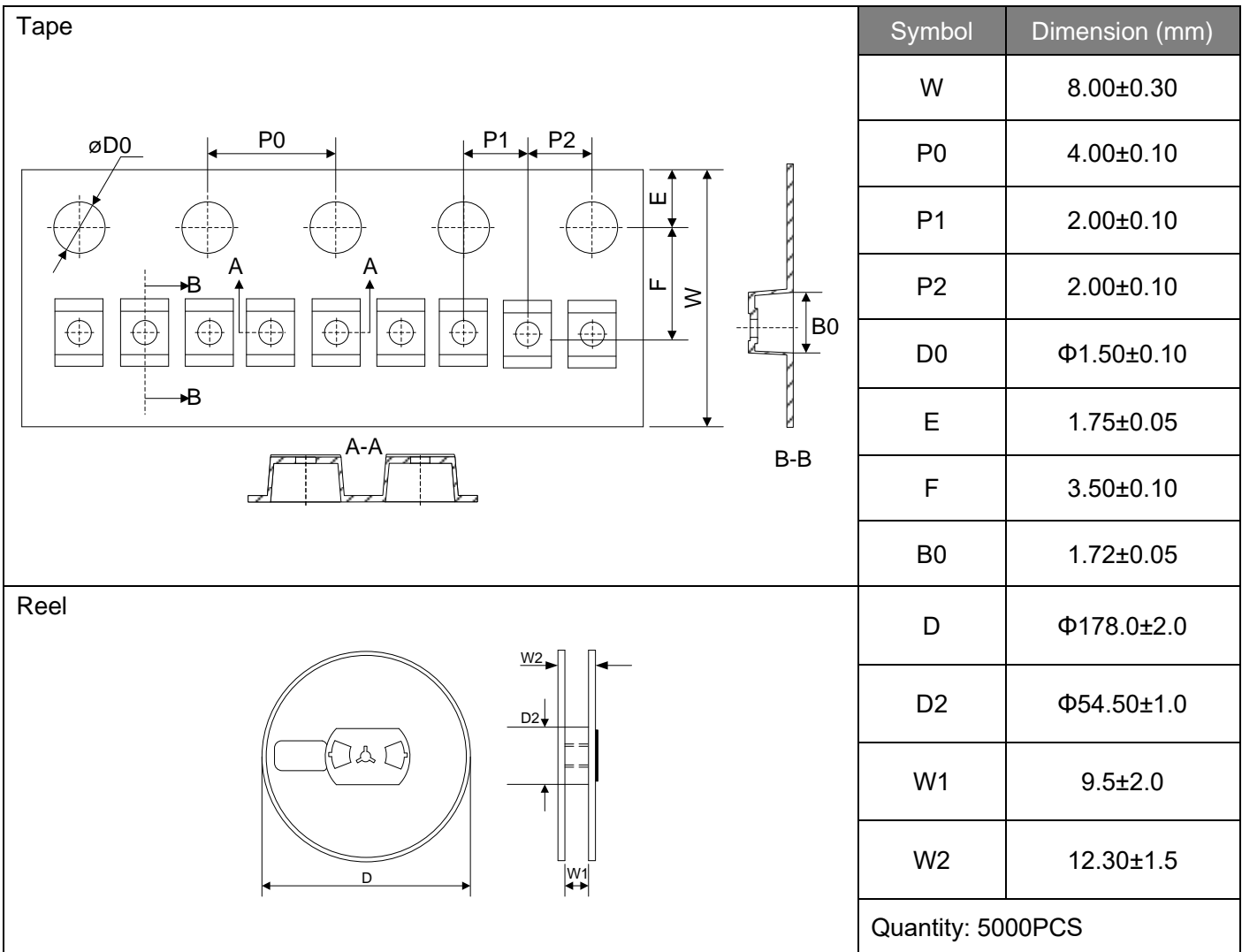
Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat -Temperature Min (TS min) -Temperature Max (TS max) -Time (min to max) (ts)	150°C 200°C 60-180 seconds
TS max to TL -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (TL) -Time (tL)	217°C 60-150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual Peak Temperature (tP)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

**Dimensions (DFN1610)**



**Packaging**



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