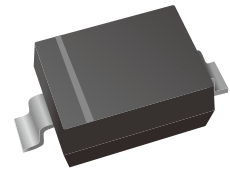


ESD Protection Diddes

Features

- IEC 61000-4-2 (ESD)
 - ±30kV Contact Discharge
 - ±30kV Air Discharge
- 3000W Peak pulse Power (8/20us)
- IEC 61000-4-4 EFT Protection
 - 40A (5/50ns)
- Protects one directional I/O line
- Transient protection for high-speed data lines
- Low clamping voltage
- Low leakage current
- Lead free in comply with EU RoHS 2011/65/EU directives



Mechanical Data

- Case: SOD-323
- Polarity: Color band denotes cathode end
- Epoxy UL: 94V-0
- Interfaces
 - USB 2.0/1.1
 - GPIO
 - Ethernet 10/100/1000 Mbps
 - Audio
 - Pushbuttons
- End Equipment
 - Industrial and Serve Robots
 - Laptops and Desktops
 - TV and Monitors
 - Wearables
 - Handheld-wireless Systems

Ordering Information

Part Number	Marking	Shipping	Reel
LTES05A01HA-TR3	5U	3000PCS Tape&Reel	7 inches
LTES05A01HA-TR12	5U	12000PCS Tape&Reel	13 inches

Absolute Maximum Rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min	Max	Unit
Peak pulse power (tp=8/20us)@25°C	P _{pk}		3000	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		180	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}		±30	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}		±30	kV
Junction temperature	T _J		125	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L		260	°C

Electrical Characteristics

At TA = 25°C unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	V _{RWM}				5	V
Reverse Breakdown Voltage	V _{BR}	I _T =1mA	5.5			V
Forward Voltage	V _F	I _F =10 mA	0.7		1.2	V
Reverse Leakage Current	I _R	V _{RWM} =5V			1	μA
Clamping Voltage	V _C	I _{PP} =1A; tp=8/20us			6.8	V
		I _{PP} =100A; tp=8/20us			10.0	V
		I _{PP} =180A; tp=8/20us			15.5	V
Junction Capacitance	C _J	I/O to GND; VR=0V; f=1MHz		490		pF

Characteristics Curve

Fig.1 Clamping voltage vs Peak pulse current

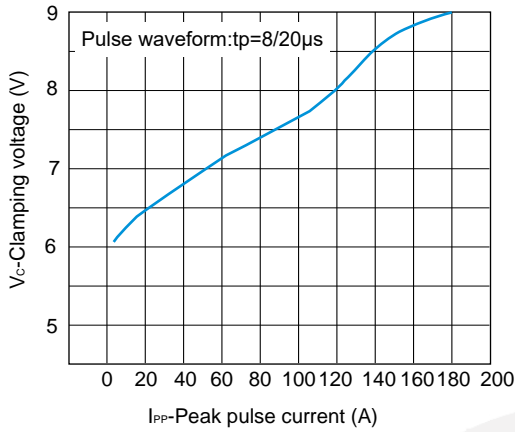


Fig.2 Peak pulse power derating curve

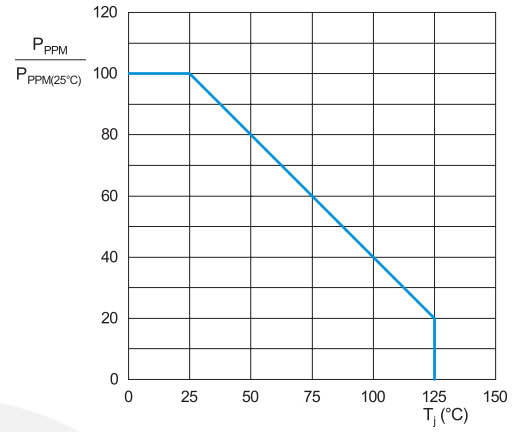


Fig. 3 Pulse waveform

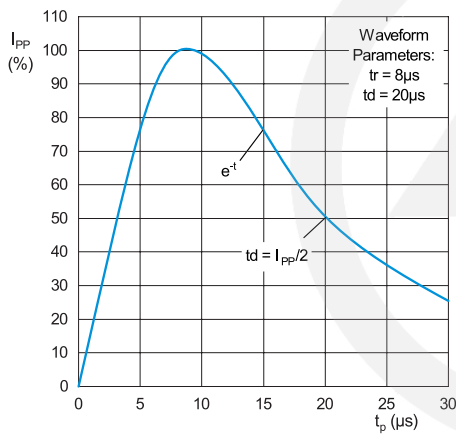
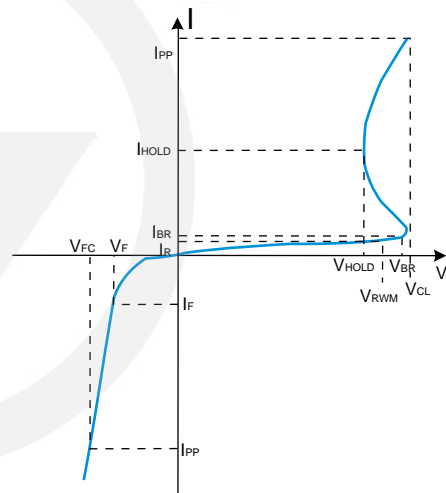


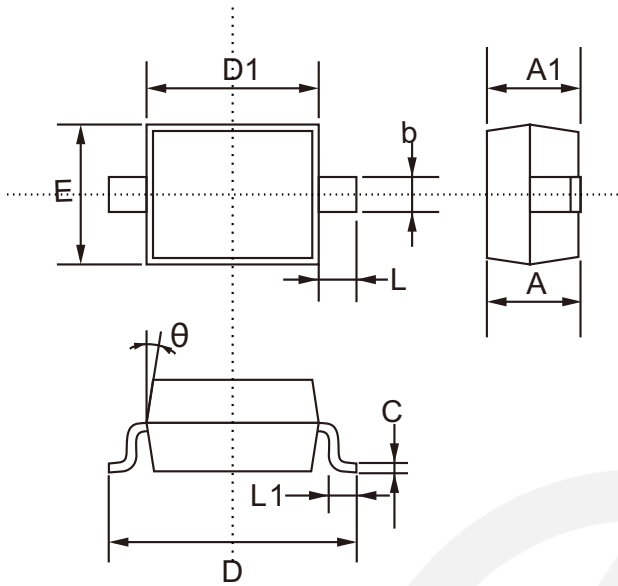
Fig.4 Parameters





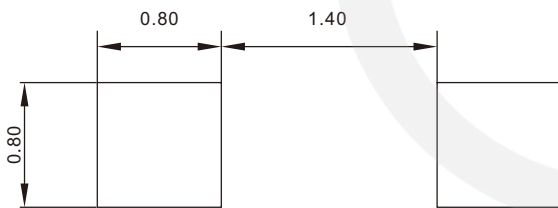
SOD-323 Package Outline

Unit: mm



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.800	1.100
A1	0.800	0.900
b	0.250	0.400
C	0.080	0.177
D	2.300	2.800
D1	1.400	1.800
E	1.150	1.400
L1	0.100	0.400
L	0.475 TYP.	
θ	8°	

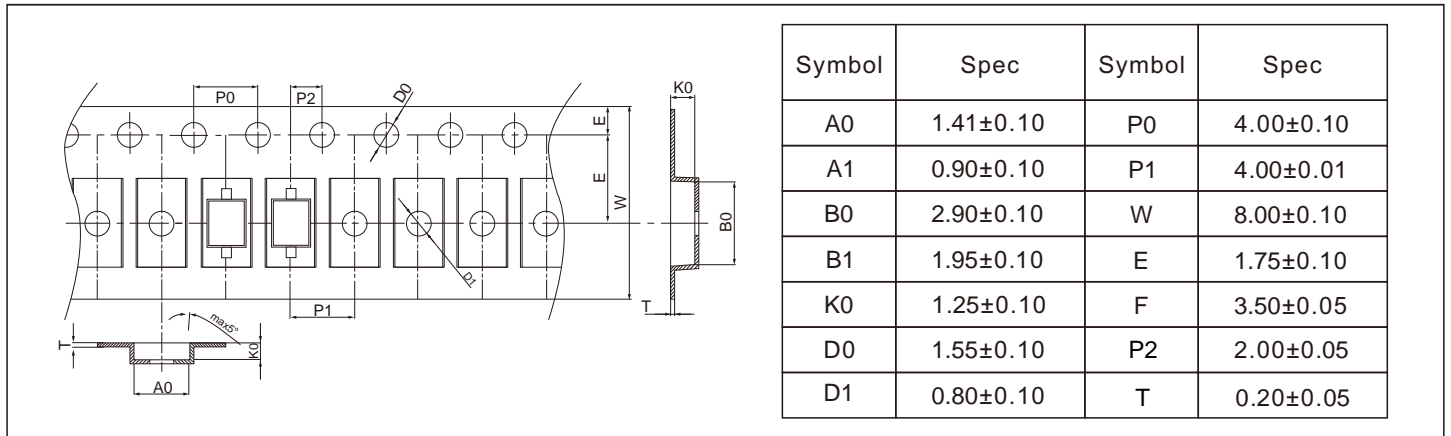
SOD-323 Suggested Pad Layout



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$
 3. The pad layout is for reference purpose only.

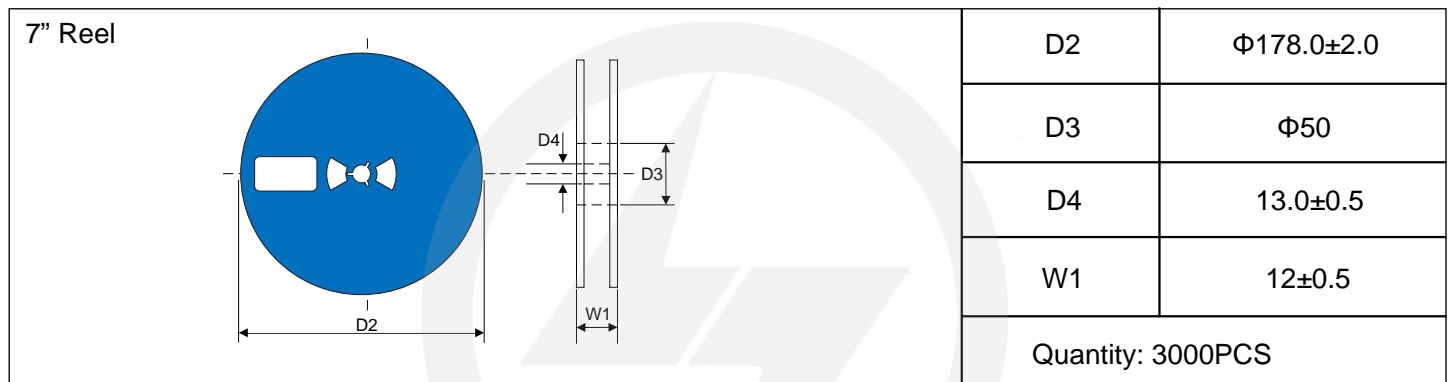
Carrier Tape Dimensions

Unit : mm



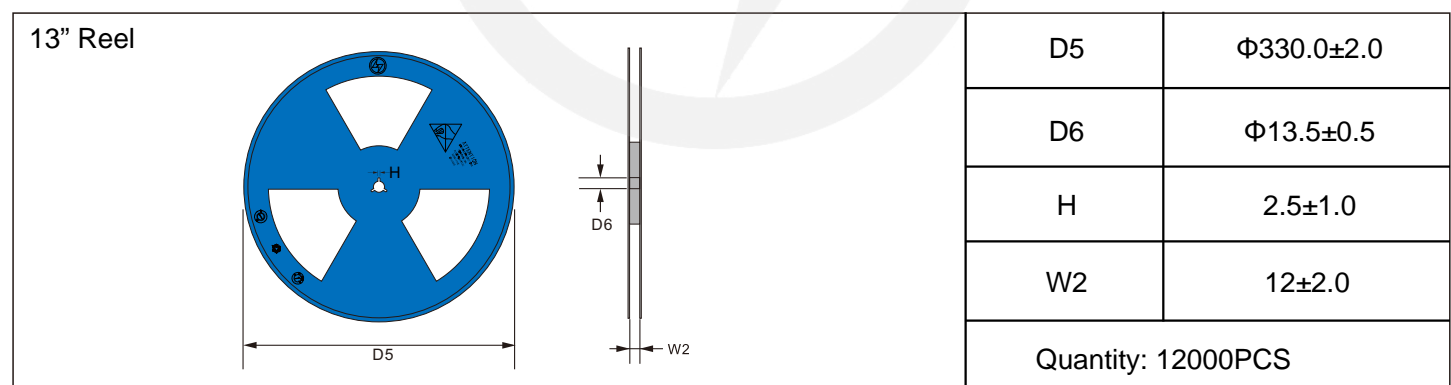
Reel Dimensions

Unit : mm

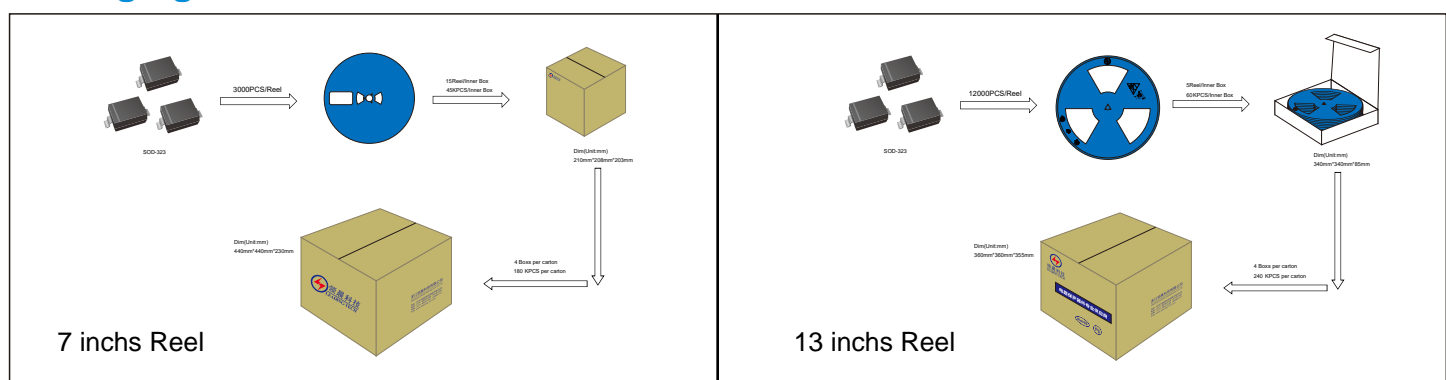


Reel Dimensions

Unit : mm



Packaging





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})	150°C
-Temperature Max (T _{S max})	200°C
-Time (min to max) (t _s)	60-180 seconds
T _{S max} to T _L	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature (T _L)	217°C
-Time (t _L)	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.

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Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision content	Revision Reason	Revision Person	Note
01	2024.9.6	2024.9.6	3.0	New File	/	Ding	
02	2025.06.12	2025.06.12	3.1	Update packaging information	/	Ding	