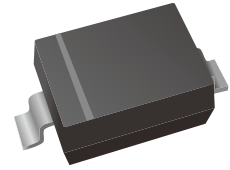


## Unidirectional TVS Diodes

### Features

- IEC61000-4-2 (ESD)  $\pm 30\text{kV}$  (air),  $\pm 30\text{kV}$  (contact)
- IEC61000-4-4 (EFT) 40A (5/50 $\mu\text{s}$ )
- 350 Watts Peak Pulse Power per (tp=8/20 $\mu\text{s}$ )
- Protects one I/O line (bidirectional)
- Low clamping voltage
- Working voltages :3.3V~36V
- Low leakage current
- Lead free in comply with EU RoHS 2011/65/EU directives



### Mechanical Data

- Case:SOD-323
- Flammability Rating: UL 94V-0
- Polarity: Color band denotes cathode end
- Approx. Weight:4.7mg

### Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Networking and Telecom
- Serial and Parallel Ports
- Peripherals

### Ordering Information

| Part Number     | Shipping           | Reel      |
|-----------------|--------------------|-----------|
| LTESxxA01G-TR3  | 3000PCS Tape&Reel  | 7 inches  |
| LTESxxA01G-TR12 | 12000PCS Tape&Reel | 13 inches |

### Absolute Maximum Ratings

| Symbol           | Parameter                              | Value         | Unit               |
|------------------|--|---------------|--------------------|
| $V_{\text{ESD}}$ | ESD per IEC 61000-4-2 (Air)            | $\pm 30$      | kV                 |
|                  | ESD per IEC 61000-4-2 (Contact)        | $\pm 30$      |                    |
| $P_{\text{PP}}$  | Peak Pulse Power (8/20 $\mu\text{s}$ ) | 350           | W                  |
| $T_{\text{OPT}}$ | Operating Temperature                  | -55/+150      | $^{\circ}\text{C}$ |
| $T_{\text{STG}}$ | Storage Temperature                    | -55/+150      | $^{\circ}\text{C}$ |
| $T_{\text{L}}$   | Lead Soldering Temperature             | 260 (10 sec.) | $^{\circ}\text{C}$ |



**Electrical Characteristics** (TA=25°C unless otherwise specified)

| PART NUMBER | DEVICE MARKING | V <sub>RWM</sub><br>(V)<br>(max.) | V <sub>B</sub><br>(V)<br>(min.) | I <sub>T</sub><br>(mA) | V <sub>C@1A</sub><br>(V)<br>(max.) <sup>*1</sup> | V <sub>C</sub> <sup>*1</sup><br>(V)<br>(max.) (@A) | I <sub>R</sub><br>(μA)<br>(max.) | C <sub>T</sub> <sup>*2</sup><br>(pF)<br>(max.) |     |
|-------------|----------------|-----------------------------------|---------------------------------|------------------------|--|--|----------------------------------|--|-----|
| LTES03A01G  | 03W            | 3.3                               | 4                               | 1                      | 6.5  | 14   | 20                               | 40   | 450 |
| LTES05A01G  | 05W            | 5                                 | 6                               | 1                      | 9.8  | 18   | 17                               | 10   | 300 |
| LTES08A01G  | 08W            | 8                                 | 8.5                             | 1                      | 10.5   | 24   | 15                               | 1  | 240 |
| LTES12A01G  | 12W            | 12                                | 13.3                            | 1                      | 19   | 32   | 11                               | 1  | 130 |
| LTES15A01G  | 15W            | 15                                | 16.7                            | 1                      | 24   | 38   | 10                               | 1  | 120 |
| LTES18A01G  | 18W            | 18                                | 20.0                            | 1                      | 29   | 45   | 9                                | 1  | 100 |
| LTES20A01G  | 20W            | 20                                | 22.3                            | 1                      | 35   | 50   | 8                                | 1  | 90  |
| LTES24A01G  | 24W            | 24                                | 26.7                            | 1                      | 43   | 52   | 7                                | 1  | 80  |
| LTES36A01G  | 36W            | 36                                | 40                              | 1                      | 60   | 75   | 5                                | 1  | 60  |

\*1: Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

\*2: V<sub>R</sub>=0V f=1MHz



Characteristic Curves

Fig.1 8/20us Waveform per IEC61000-4-5

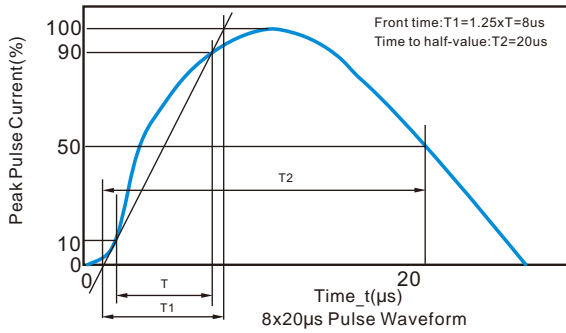


Fig.2 Contact Discharge Current Waveform per IEC 61000-4-2

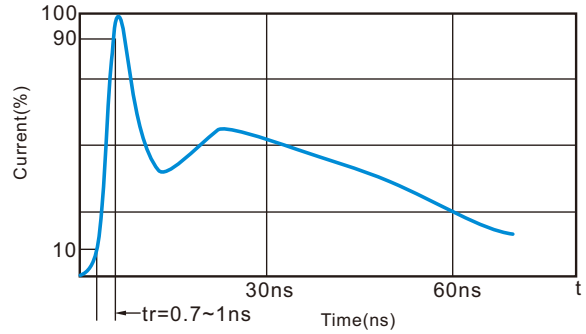


Fig.3 Voltage vs Capacitance

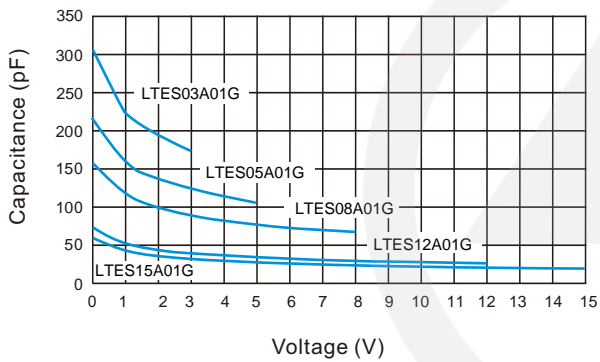


Fig.4 Voltage vs Capacitance

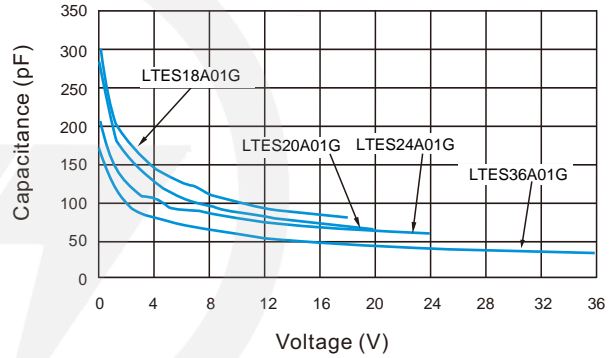


Fig.5 Clamping Voltage vs Peak Pulse Current

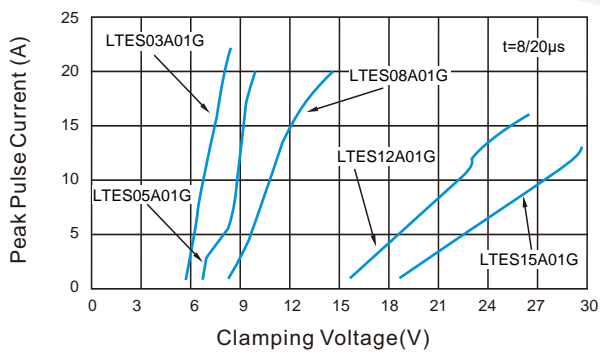
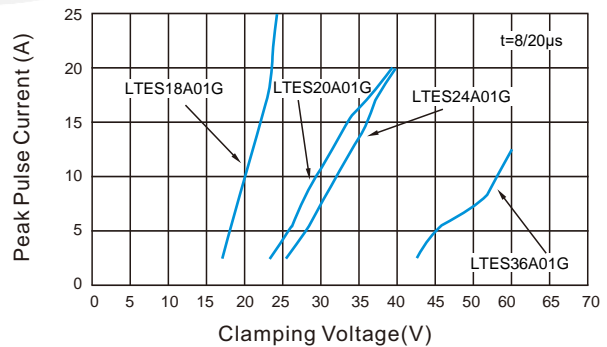
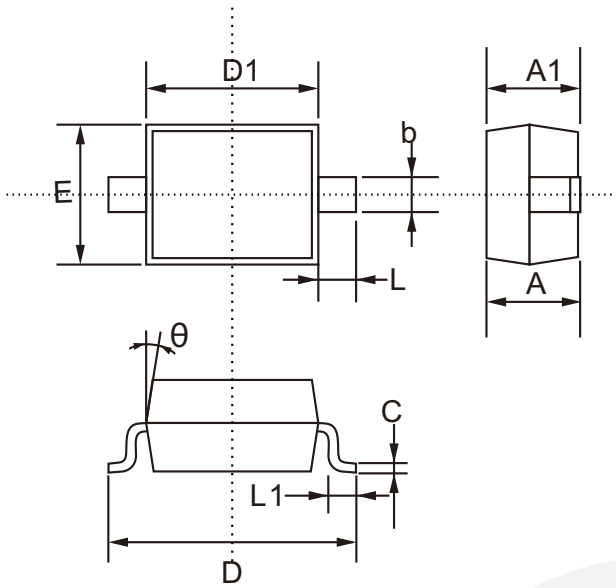


Fig.6 Clamping Voltage vs Peak Pulse Current



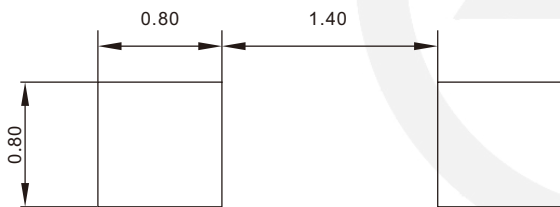
**SOD-323 Package Outline**

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. |       |
| $\theta$ | 8°         |       |

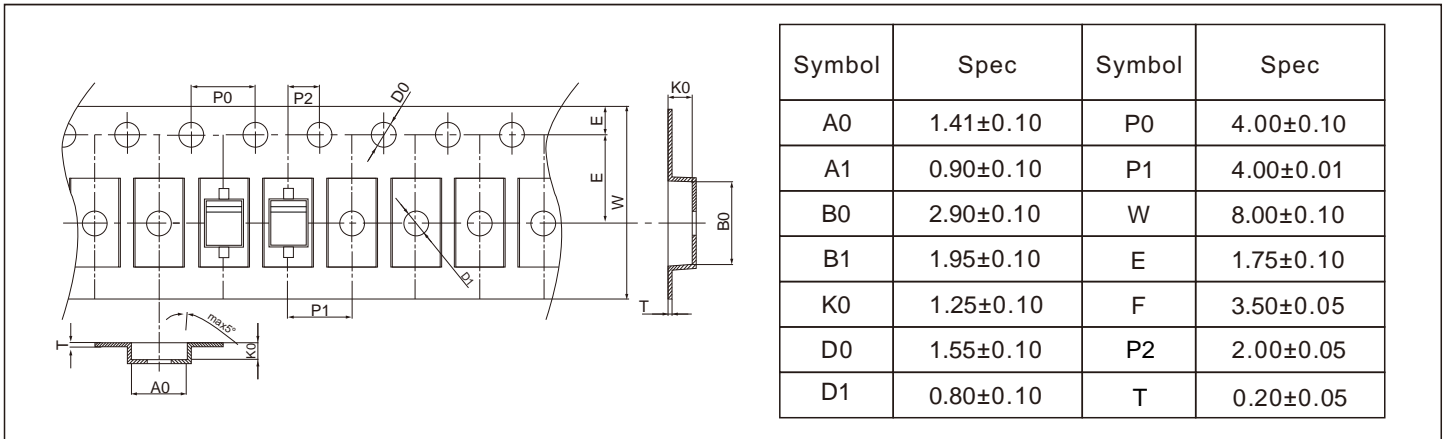
**SOD-323 Suggested Pad Layout**



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

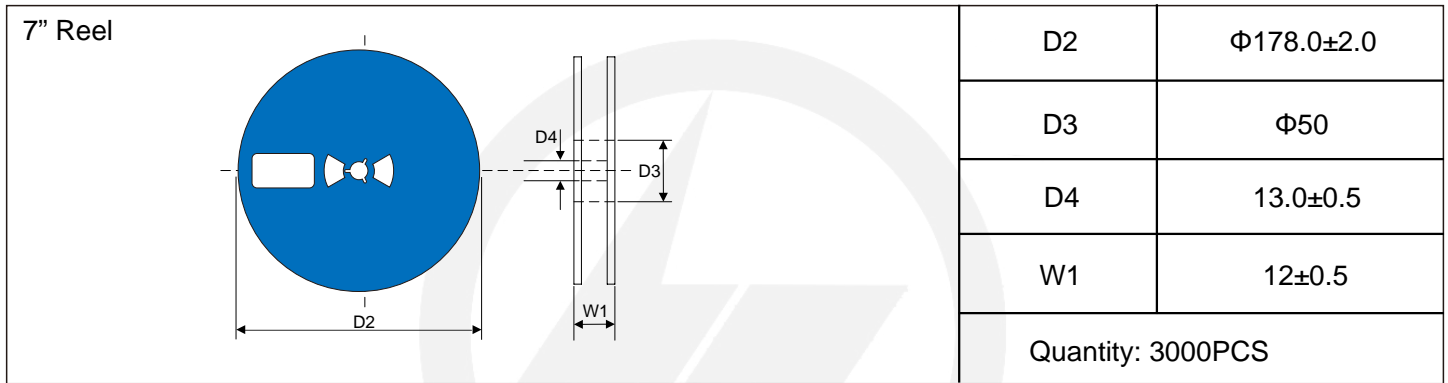
**Carrier Tape Dimensions**

Unit : mm



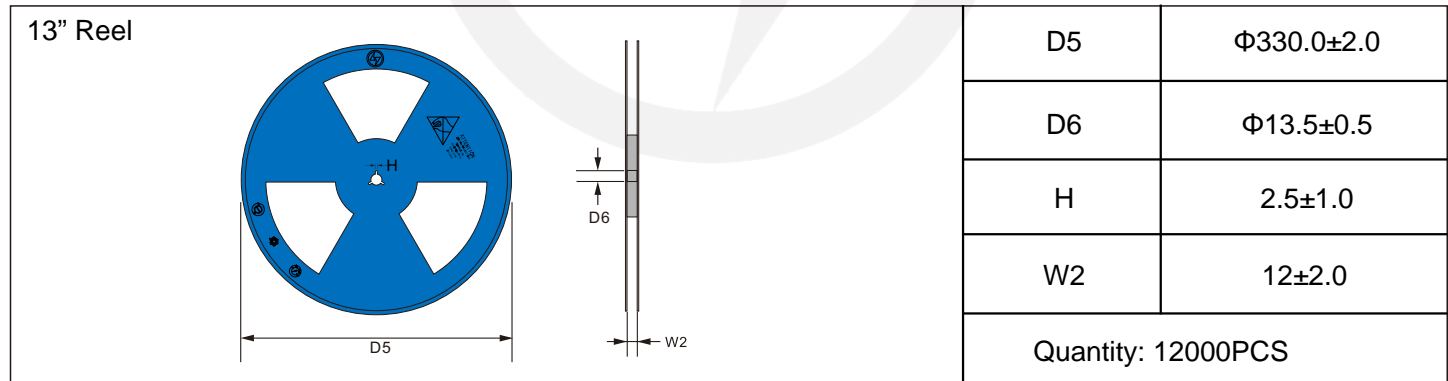
**Reel Dimensions**

Unit : mm

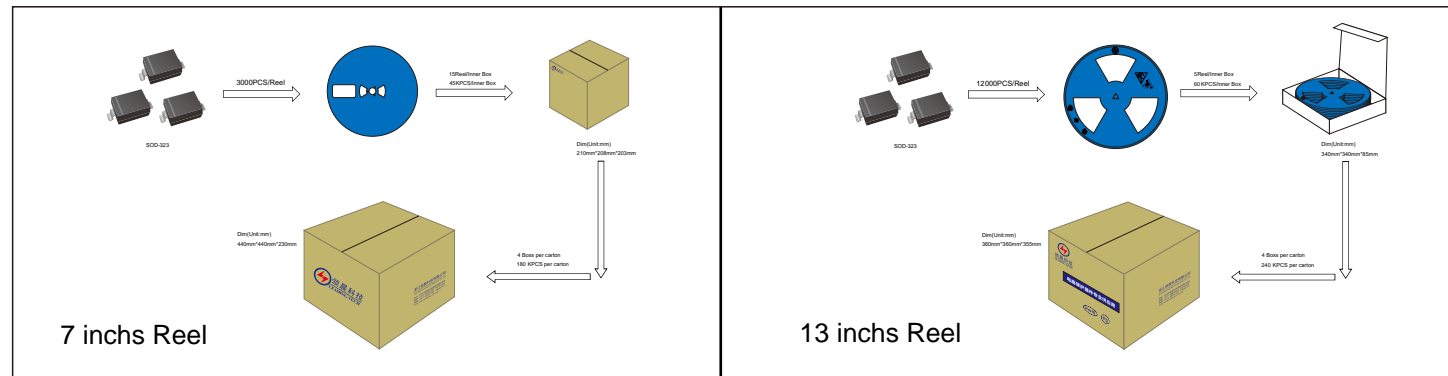


**Reel Dimensions**

Unit : mm

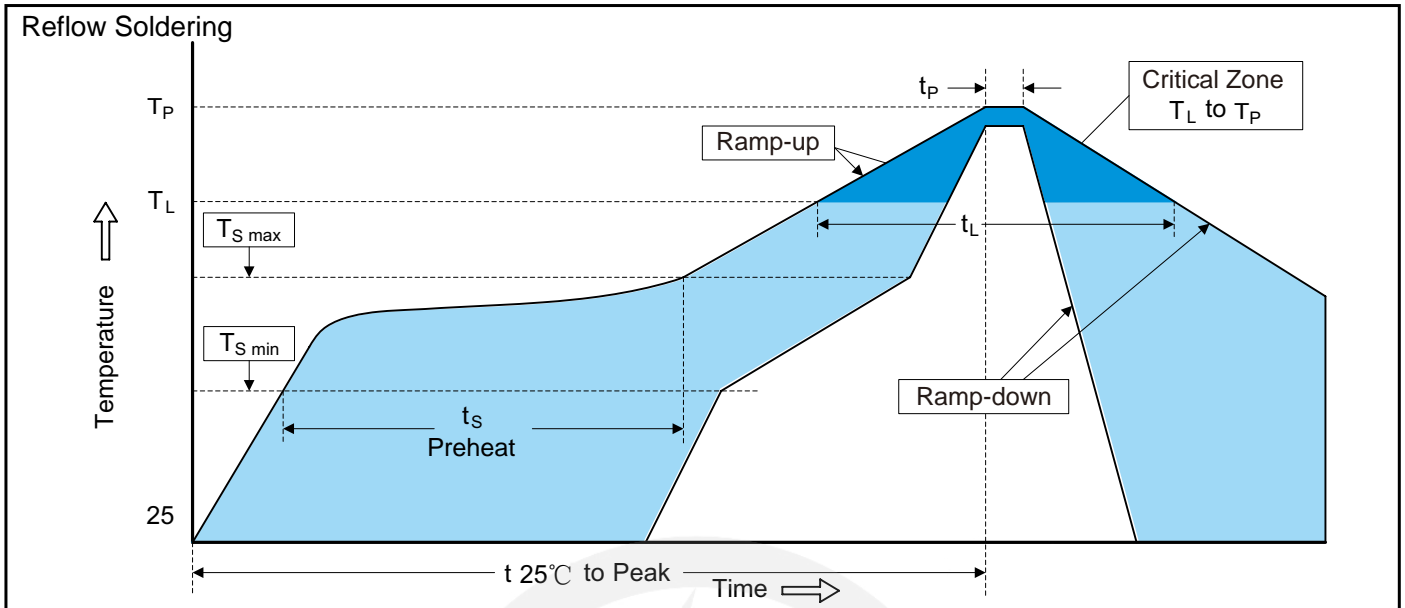


**Packaging**





## Recommended Soldering Conditions



### Recommended Conditions

| Profile Feature  | Pb-Free Assembly |
|--|------------------|
| Average ramp-up rate (T <sub>L</sub> to T <sub>P</sub> )     | 3°C/second max.  |
| Preheat  |                  |
| -Temperature Min (T <sub>S min</sub> )                       | 150°C            |
| -Temperature Max (T <sub>S max</sub> )                       | 200°C            |
| -Time (min to max) (t <sub>s</sub> )                         | 60-180 seconds   |
| T <sub>S max</sub> to T <sub>L</sub>                         |                  |
| -Ramp-up Rate  | 3°C/second max.  |
| Time maintained above:                                       |                  |
| -Temperature (T <sub>L</sub> )                               | 217°C            |
| -Time (t <sub>L</sub> )                                      | 60-150 seconds   |
| Peak Temperature (T <sub>P</sub> )                           | 260°C            |
| Time within 5°C of actual Peak Temperature (t <sub>p</sub> ) | 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         | 2024.04.16              | 2024.04.16     | 3.0     | New File         | /               | Ding            |      |
| 02         | 2025.10.22              | 2025.10.22     | 3.1     | Add Weight       | /               | Ding            |      |