

# DATA SHEET

**ELECTROSTATIC DISCHARGE  
PROTECTION DEVICES**

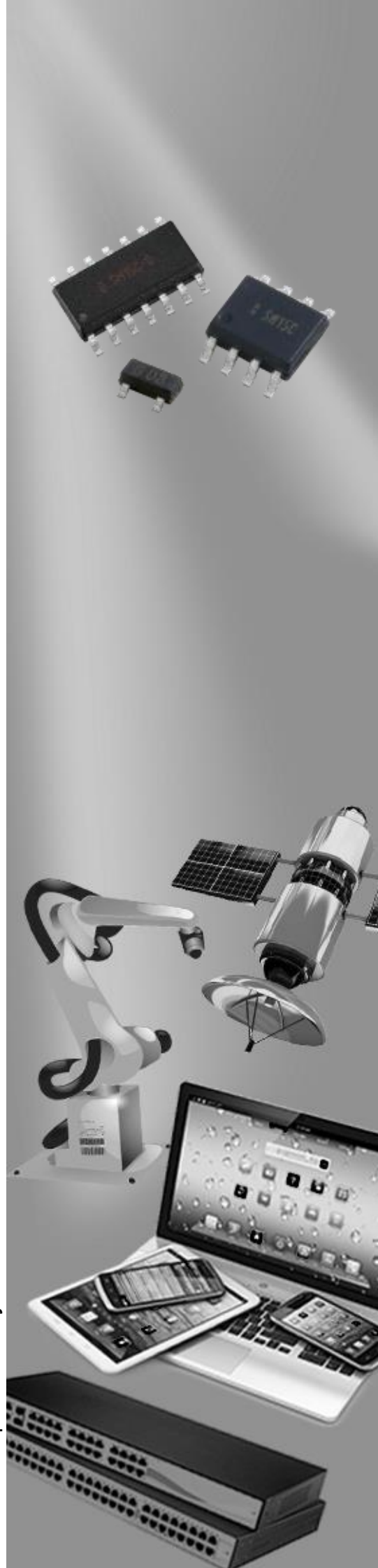
**INDUSTRIAL / CONSUMER**

SDD32A05L01

RoHS compliant & Halogen free



Product specification— June 30, 2023 V.2



## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's SDD32A05L01 is designed to protect low 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).

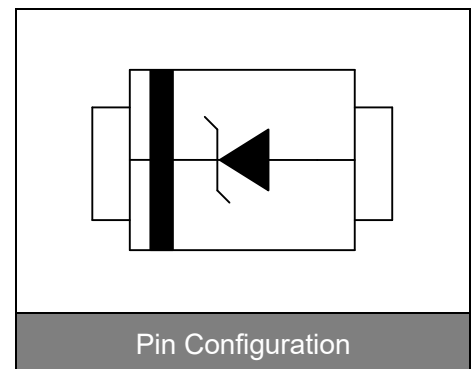


Contact :  $\pm 30\text{kV}$   
Air :  $\pm 30\text{kV}$



### Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOD-323 surface mount package
- Protects one I/O line
- Peak power dissipation of 320W under 8/20 $\mu\text{s}$  waveform
- Working voltage: 5V
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- Lead Free/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: 05W



### Applications

- Cellular handsets & Accessories
- Cordless phones
- Personal digital assistants (PDAs)
- Notebooks & Handhelds
- Portable instrumentation
- Digital cameras
- Peripherals

### Maximum Ratings

| Rating                                             | Symbol         | Value    | Unit |
|----------------------------------------------------|----------------|----------|------|
| Peak pulse power ( $t_p=8/20\mu\text{s}$ waveform) | $P_{PP}$       | 320      | W    |
| ESD voltage (Contact discharge)                    | $V_{ESD}$      | $\pm 30$ | kV   |
| ESD voltage (Air discharge)                        |                | $\pm 30$ |      |
| 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                    | $V_{RWM}$ |                              |      |      | 5    | V             |
| Reverse breakdown voltage                    | $V_{BR}$  | $I_{BR}=1\text{mA}$          | 6    |      |      | V             |
| Reverse leakage current                      | $I_R$     | $V_R=5\text{V}$              |      |      | 10   | $\mu\text{A}$ |
| Clamping voltage ( $t_p=8/20\mu\text{s}$ )   | $V_C$     | $I_{PP}=1\text{A}$           |      |      | 9.8  | V             |
| Peak pulse current ( $t_p=8/20\mu\text{s}$ ) | $I_{PP}$  |                              |      |      | 19   | A             |
| Off state junction capacitance               | $C_J$     | $0\text{Vdc}, f=1\text{MHz}$ |      |      | 350  | pF            |

## Typical Characteristics Curves

Figure 1. Power Derating Curve

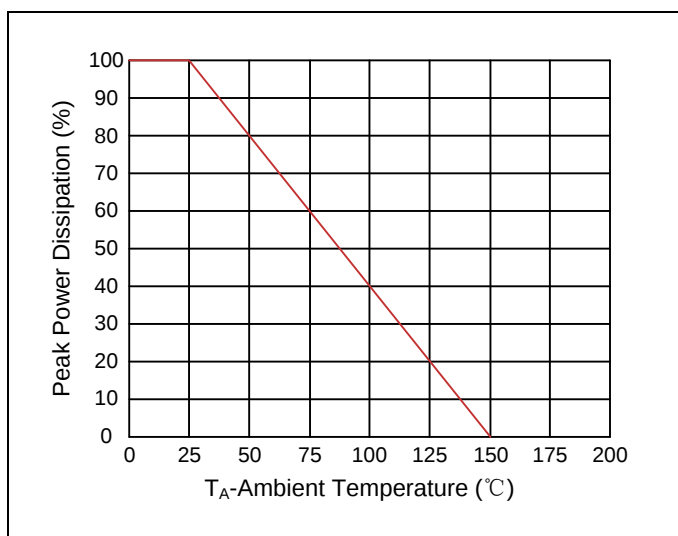


Figure 2. Pulse Waveform

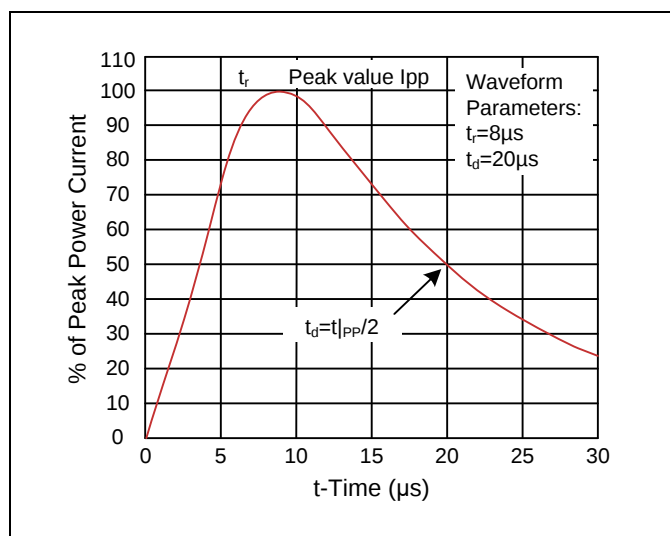
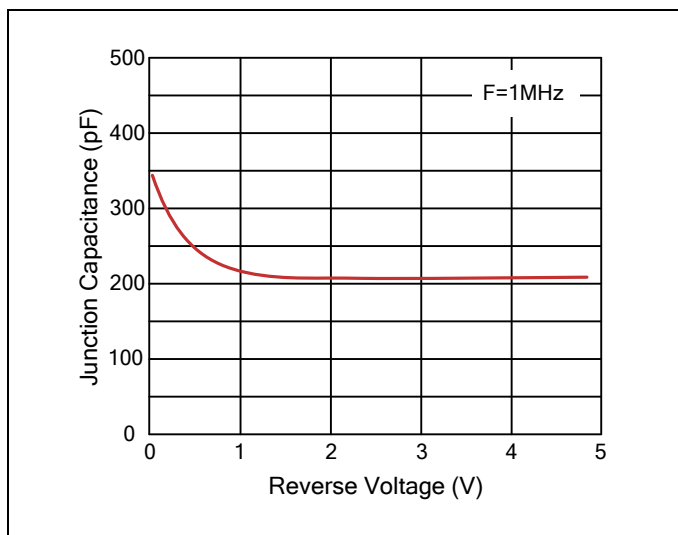
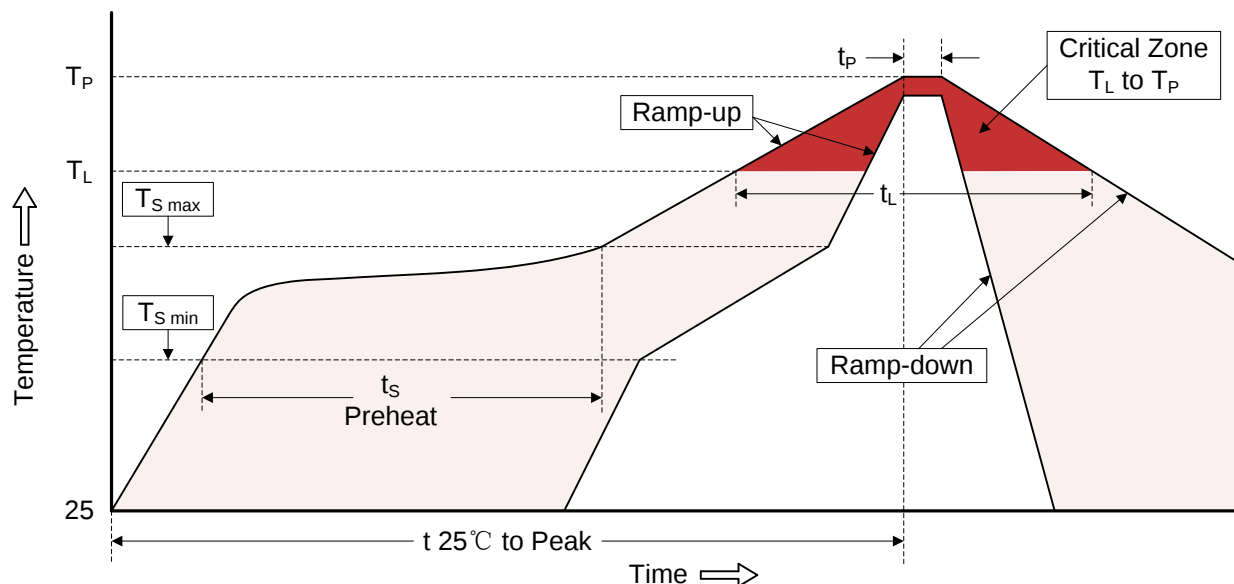


Figure 3. Capacitance vs. Reverse Voltage



## Recommended Soldering Conditions

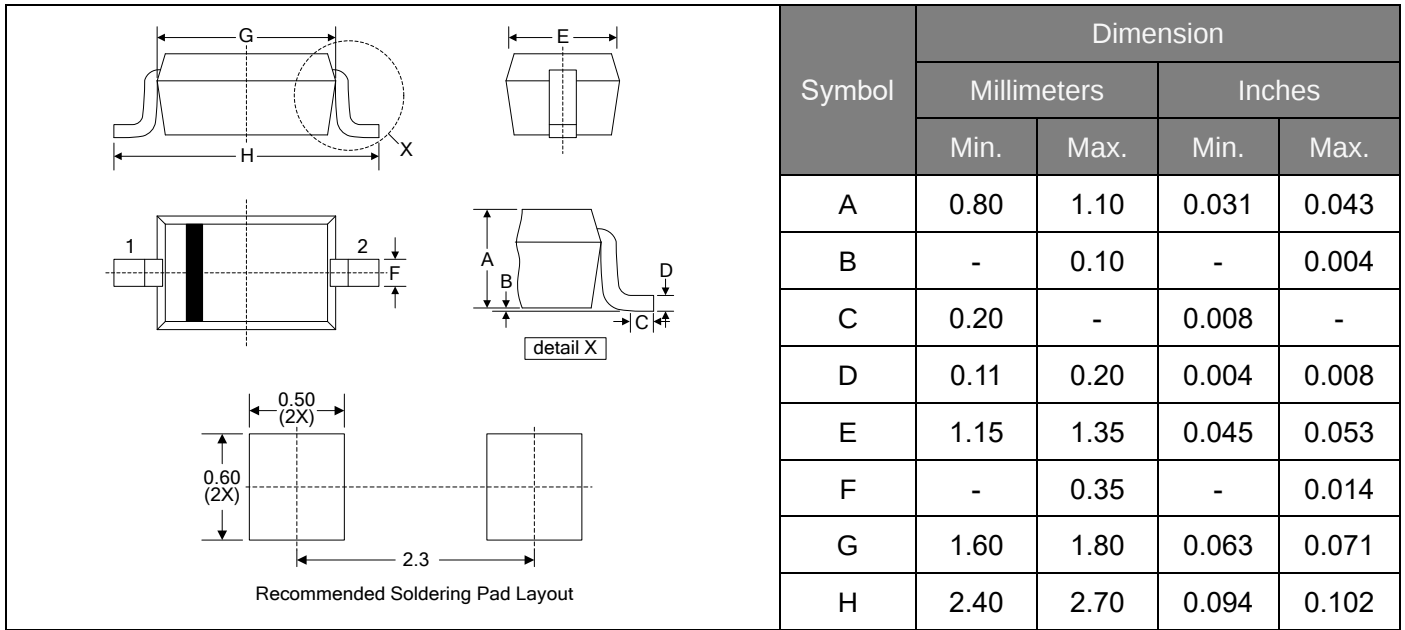
### Reflow Soldering



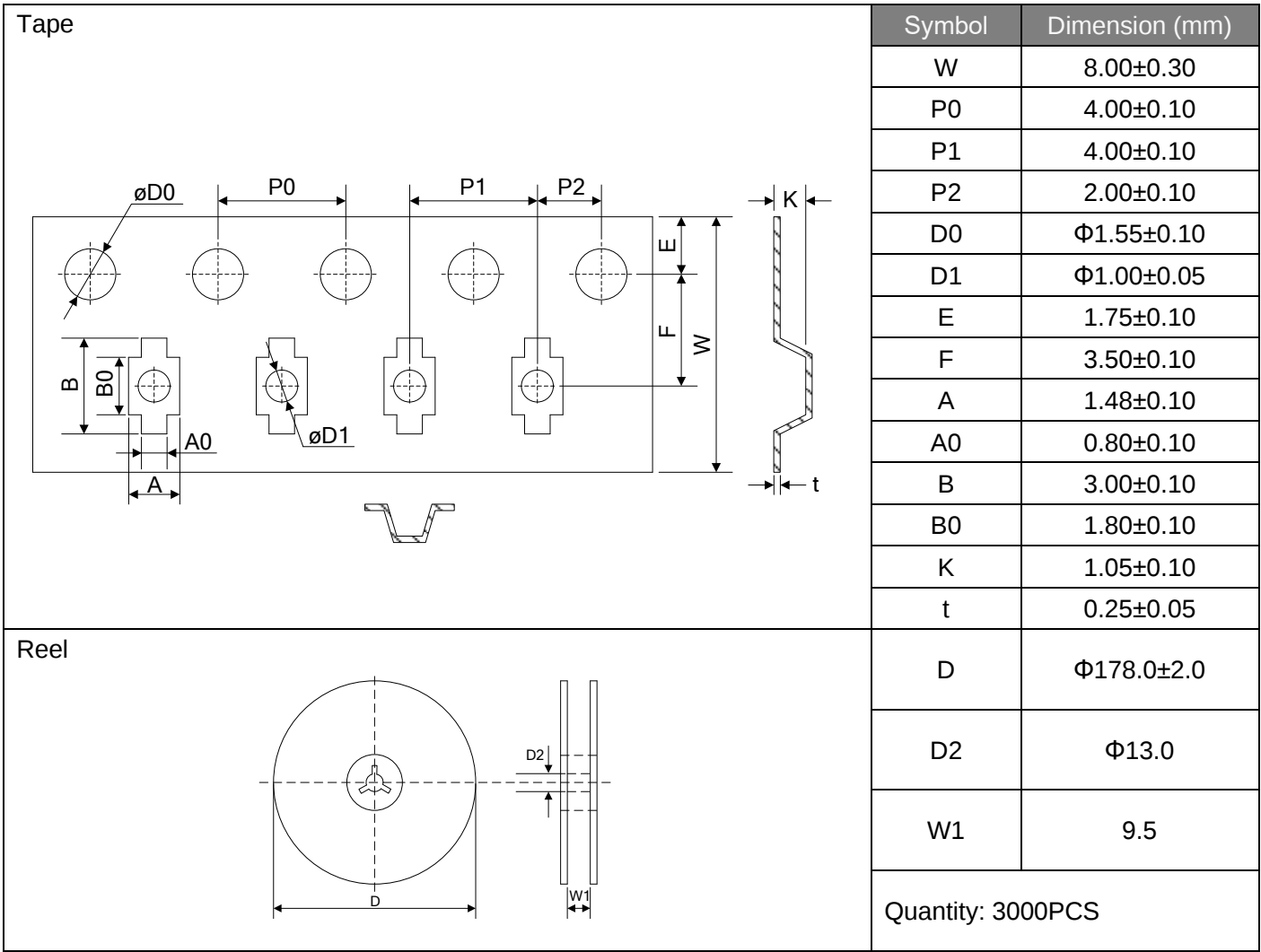
### Recommended Condition

| Profile Feature                                                                                                                                                                                         | Pb-Free Assembly                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Average ramp-up rate ( $T_L$ to $T_P$ )                                                                                                                                                                 | 3°C/second max.                  |
| Preheat <ul style="list-style-type: none"> <li>-Temperature Min (<math>T_{S\ min}</math>)</li> <li>-Temperature Max (<math>T_{S\ max}</math>)</li> <li>-Time (min to max) (<math>t_s</math>)</li> </ul> | 150°C<br>200°C<br>60-180 seconds |
| $T_{S\ max}$ to $T_L$ <ul style="list-style-type: none"> <li>-Ramp-up Rate</li> </ul>                                                                                                                   | 3°C/second max.                  |
| Time maintained above: <ul style="list-style-type: none"> <li>-Temperature (<math>T_L</math>)</li> <li>-Time (<math>t_L</math>)</li> </ul>                                                              | 217°C<br>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 (SOD-323)



Packaging



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