



**THE DATASHEET OF
SFD52A07L01**



DATA SHEET

**ELECTROSTATIC DISCHARGE
PROTECTION DEVICES**

INDUSTRIAL / CONSUMER

SFD52AXXL01 SERIES

RoHS compliant & Halogen free



Product specification—June 30, 2023 V.2



Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The SFD52AxxL01 of Transient Voltage Suppressors (TVS) are designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computer, and PDAs. They offer superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs. They are 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).

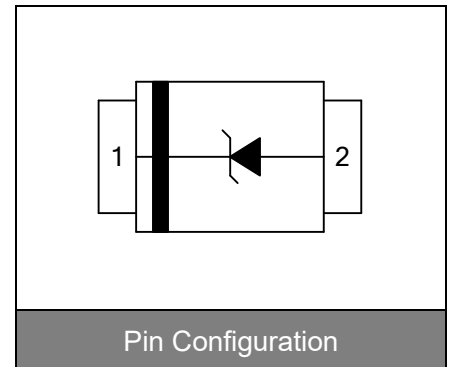


Contact : $\pm 30\text{kV}$
Air : $\pm 30\text{kV}$



Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOD-523 surface mount package
- Protects one I/O line
- Working voltage: 5V,7V
- Low leakage current
- Low operating and clamping voltages
- 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



Applications

- Cellular handsets & Accessories
- Cordless phones
- Personal digital assistants (PDAs)
- Notebooks & Handhelds
- Portable instrumentation
- Digital cameras
- Peripherals
- MP3 players

Maximum Ratings

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

Electrical Characteristics (T_J=25°C)

SFD52A05L01 (Marking: BG)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|------------------|----------------------|------|------|------|------|
| Reverse stand-off voltage | V _{RWM} | | | | 5.0 | V |
| Reverse breakdown voltage | V _{BR} | I _{BR} =1mA | 6.0 | | | V |
| Reverse leakage current | I _R | V _R =5V | | | 1.0 | μA |
| Clamping voltage (tp=8/20μs) | V _C | I _{PP} =1A | | | 9.8 | V |
| Clamping voltage (tp=8/20μs) | V _C | I _{PP} =18A | | | 25.0 | V |
| Peak pulse current (tp=8/20μs) | I _{PP} | | | | 18 | A |
| Off state junction capacitance | C _J | 0Vdc,f=1MHz | | 200 | | pF |

SFD52A07L01 (Marking: BH)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|------------------|----------------------|------|------|------|------|
| Reverse stand-off voltage | V _{RWM} | | | | 7.0 | V |
| Reverse breakdown voltage | V _{BR} | I _{BR} =1mA | 7.5 | | | V |
| Reverse leakage current | I _R | V _R =7V | | | 1.0 | μA |
| Clamping voltage (tp=8/20μs) | V _C | I _{PP} =1A | | | 12.0 | V |
| Clamping voltage (tp=8/20μs) | V _C | I _{PP} =16A | | | 25.0 | V |
| Peak pulse current (tp=8/20μs) | I _{PP} | | | | 16 | A |
| Off state junction capacitance | C _J | 0Vdc,f=1MHz | | 190 | | pF |

Typical Characteristics Curves

Figure 1. Power Derating Curve

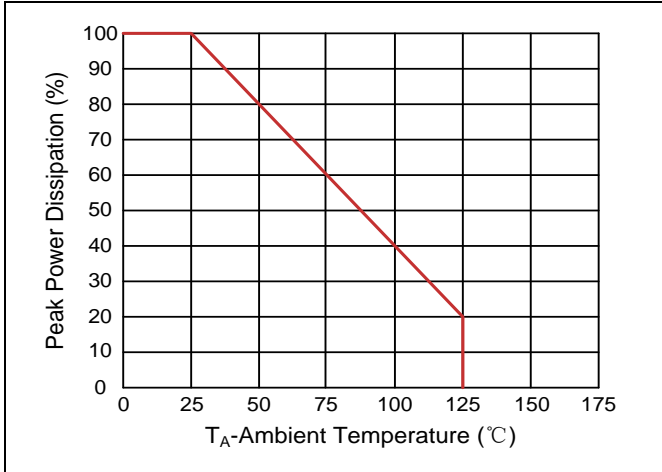


Figure 2. Pulse Waveforms

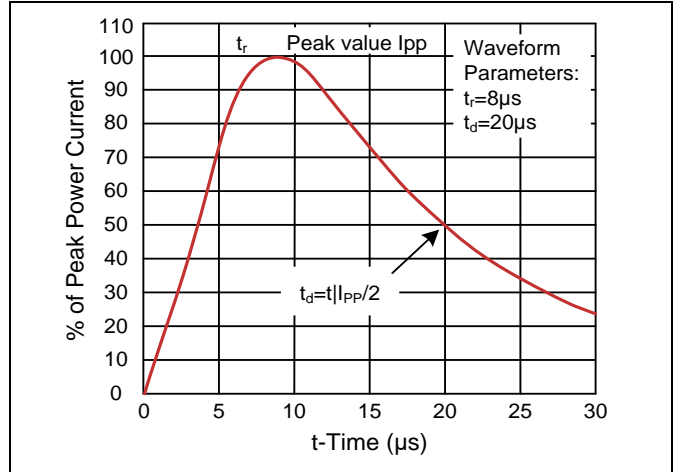
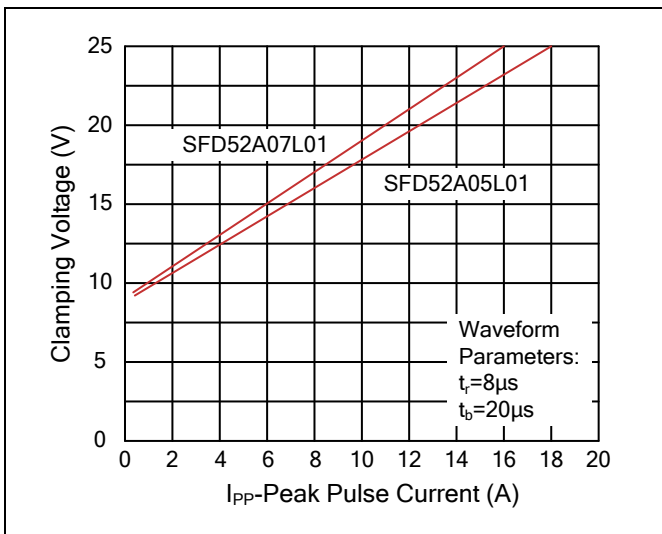
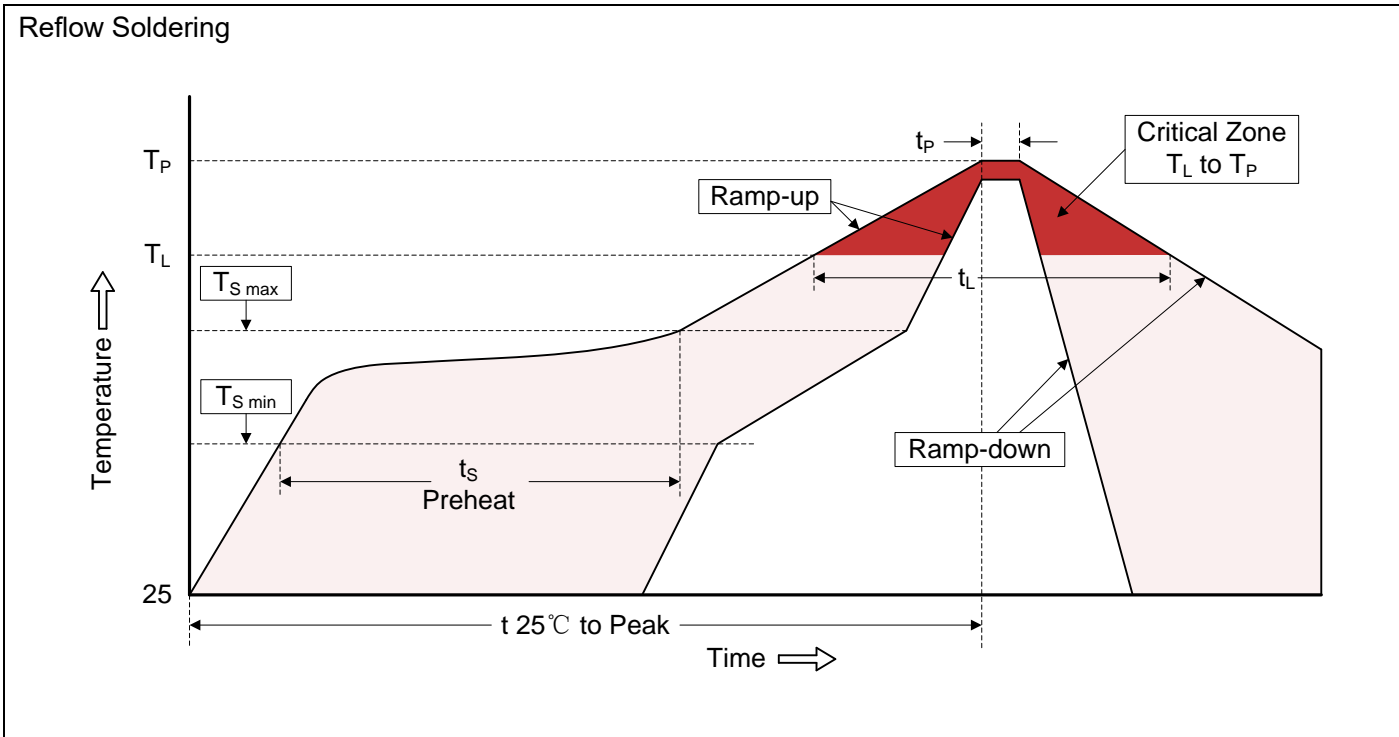


Figure 3. Clamping Voltage vs. Peak Pulse Current



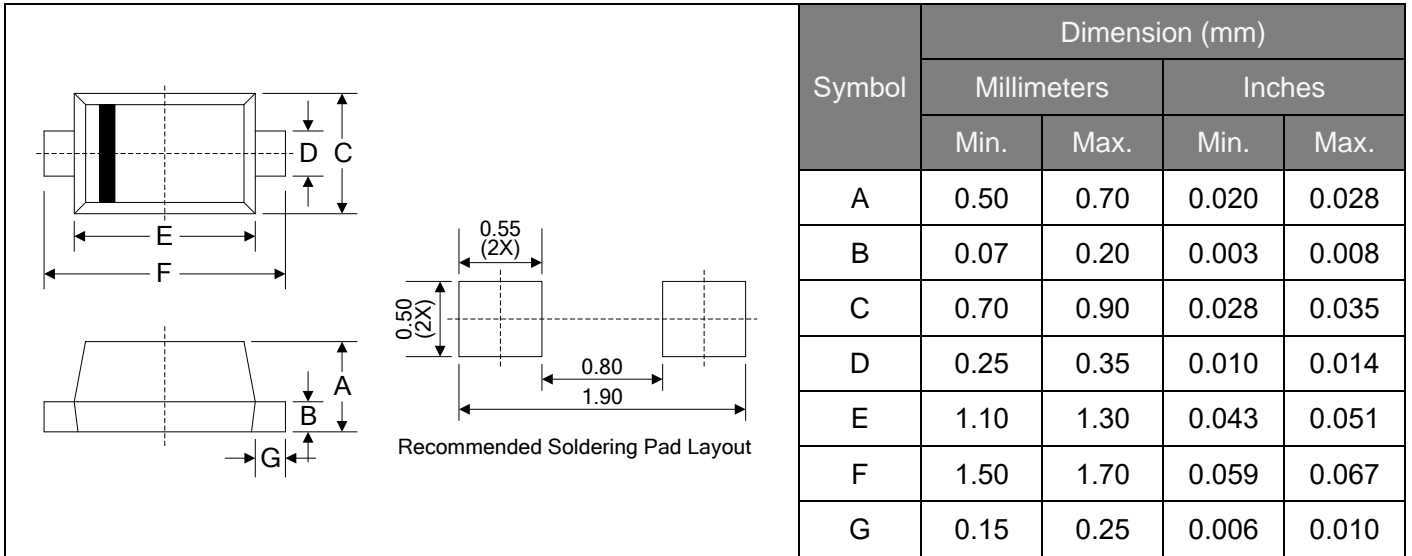
Recommended Soldering Conditions



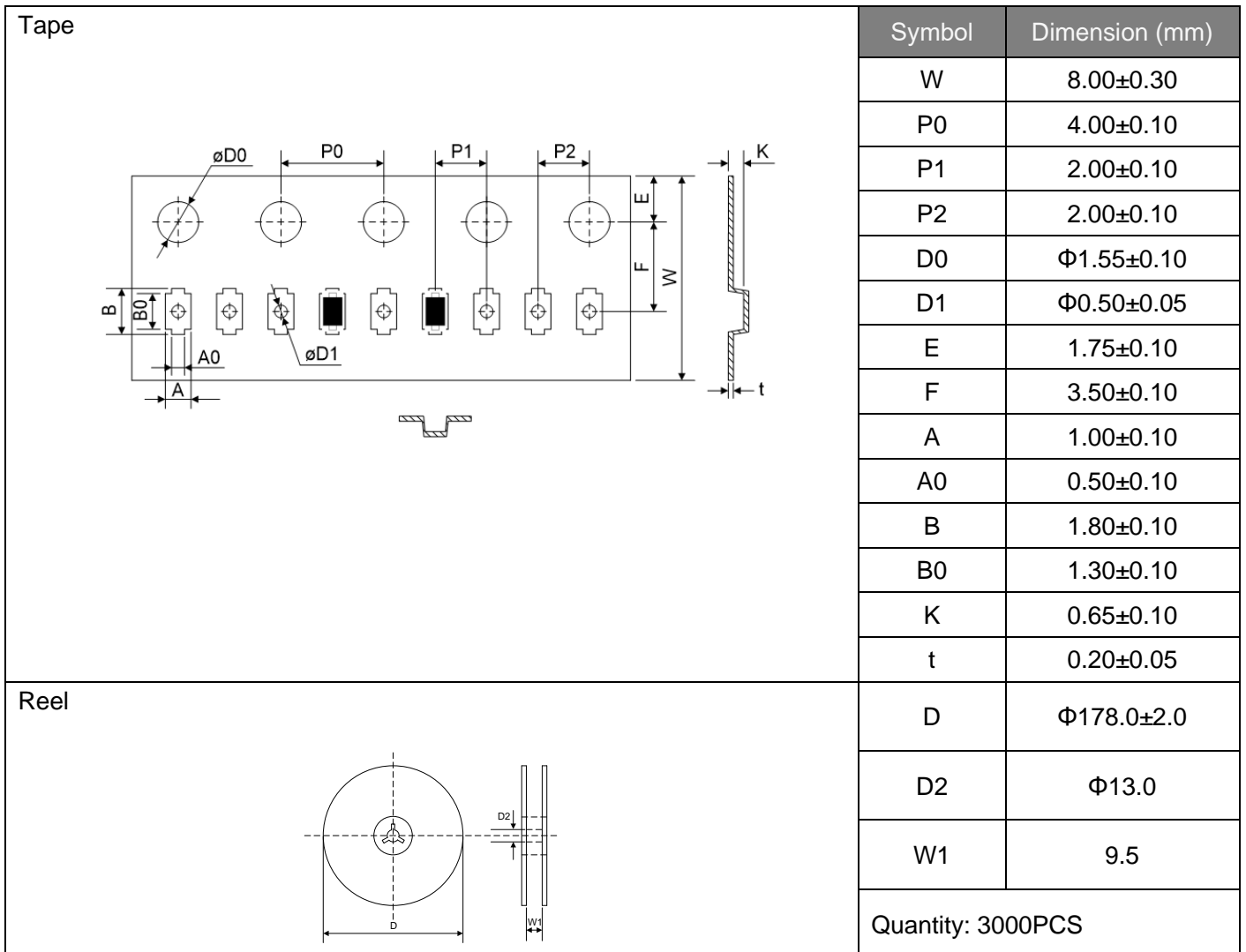
Recommended Conditions

| 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 (SOD-523)



Packaging



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