Innovative Service Around the Globe YAGEO

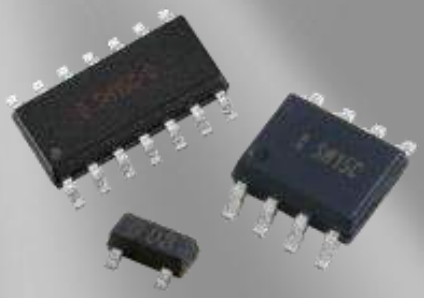
DATA SHEET

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

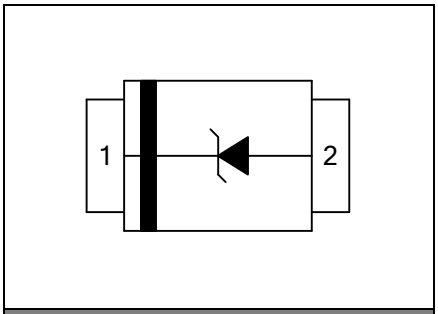
Description

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 : ±30kV
Air : ±30kV

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℃
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020



Pin Configuration

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_{STG} ,T_J	-55~+150	℃

Electrical Characteristics (T_J=25℃)

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

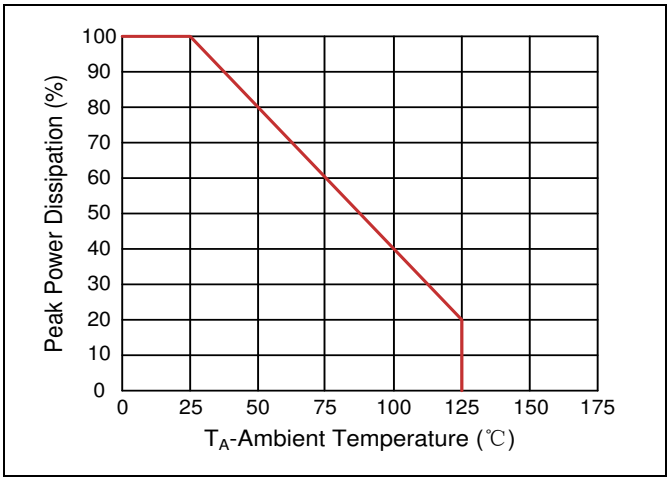


Figure 2. Pulse Waveforms

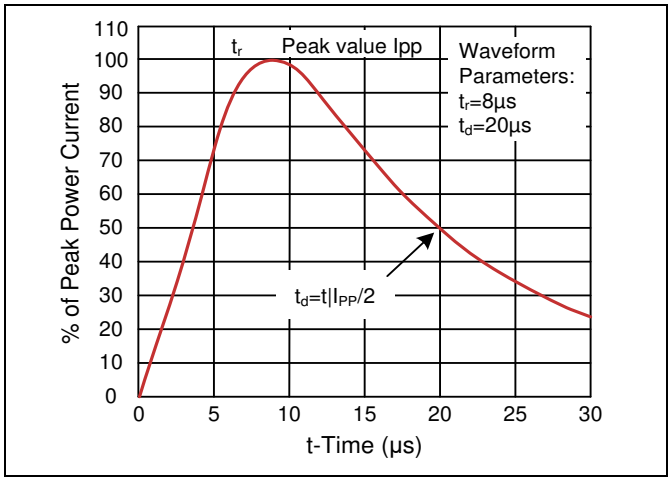
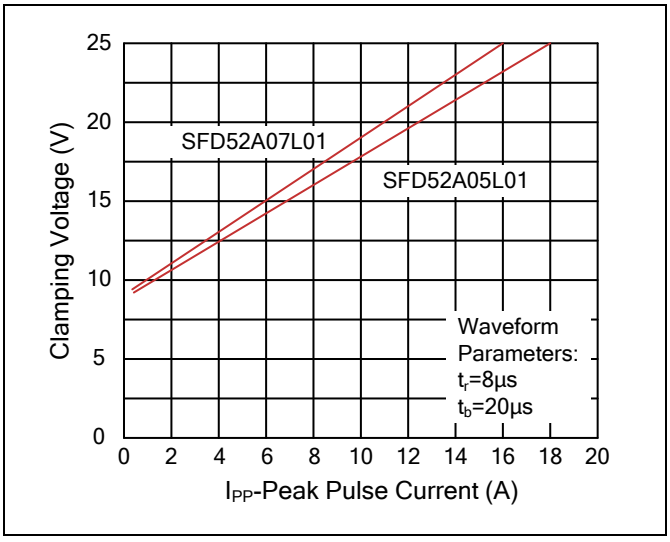
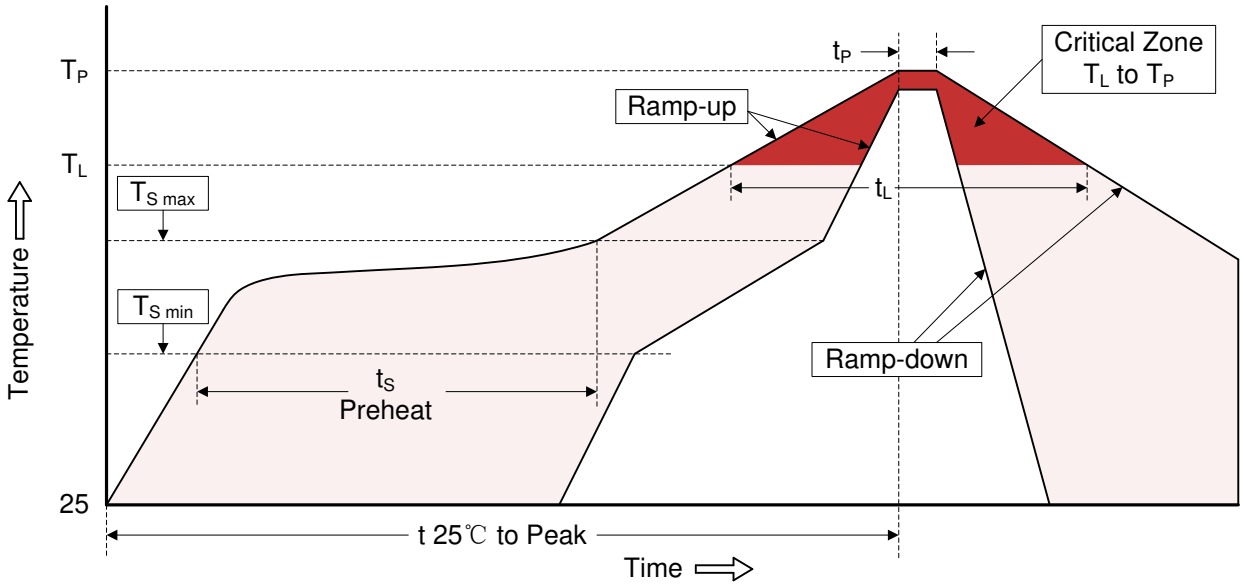


Figure 3. Clamping Voltage vs. Peak Pulse Current



Recommended Soldering Conditions

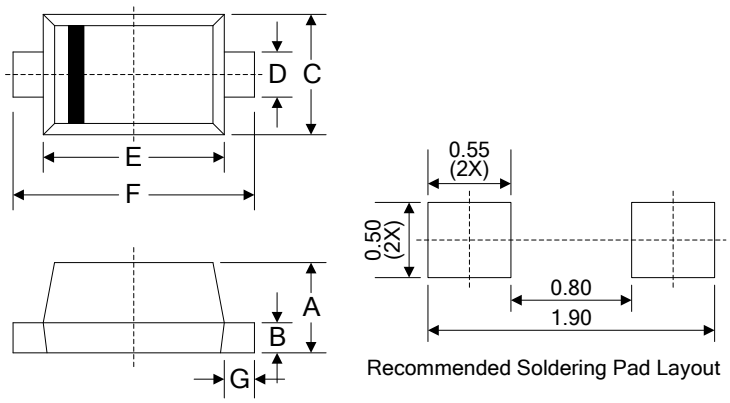
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (ts)	150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

Dimensions (SOD-523)

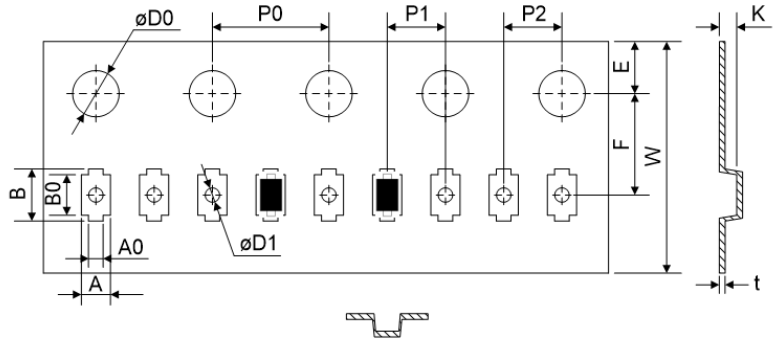


Recommended Soldering Pad Layout

Symbol	Dimension (mm)			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.50	0.70	0.020	0.028
B	0.07	0.20	0.003	0.008
C	0.70	0.90	0.028	0.035
D	0.25	0.35	0.010	0.014
E	1.10	1.30	0.043	0.051
F	1.50	1.70	0.059	0.067
G	0.15	0.25	0.006	0.010

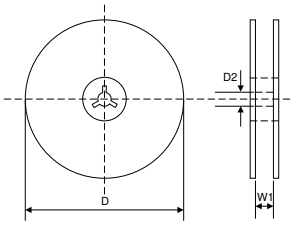
Packaging

Tape



Symbol	Dimension (mm)
W	8.00±0.30
P0	4.00±0.10
P1	2.00±0.10
P2	2.00±0.10
D0	Φ1.55±0.10
D1	Φ0.50±0.05
E	1.75±0.10
F	3.50±0.10
A	1.00±0.10
A0	0.50±0.10
B	1.80±0.10
B0	1.30±0.10
K	0.65±0.10
t	0.20±0.05

Reel



D	Φ178.0±2.0
D2	Φ13.0
W1	9.5
Quantity: 3000PCS	

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