Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

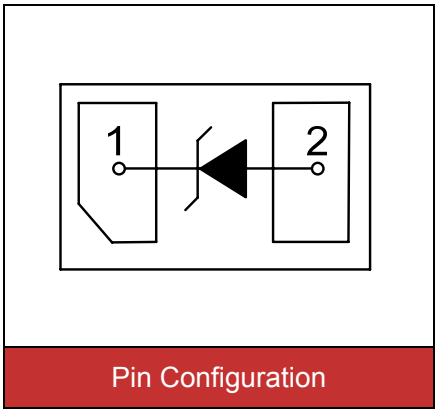
Brightking's SJD16A07L01 is designed to protect power port and the chip Vbus interfaces. It has been specifically designed to protect sensitive components which are connected to power lines from overvoltage caused by electrostatic discharge (ESD),cable discharge events (CDE) and lightning.

These devices integrate a high power transient voltage suppressor(TVS) and small package. It features solid-state silicon-avalanche technology for unmatched transient protection without device degradation. It offers superior electrical characteristics including fast response time, low clamping voltage and no device degradation. This allows the designer maximum flexibility and reduces parts count.

The series devices may be used to meet the immunity requirements of IEC61000-4-2 (ESD), IEC61000-4-4 (EFT) , IEC61000-4-5 (Surge).

Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- DFN1610 surface mount package
- Protects power line
- Working voltage: 7V
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270℃
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: J07



Pin Configuration

Applications

- Power port
- I^2C bus protection

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse current (tp=8/20μs waveform)	I_{PP}	70	A
Peak pulse power (tp=10/1000μs waveform)	Ppp	120	W
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℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				7	V
Reverse breakdown voltage	V_{BR}	I_{BR}=1mA	7.3			V
Reverse leakage current	I_R	V_R=7V			1	μA
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=1A			20	V
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=70A			35	V
Off state junction capacitance	C_J	0Vdc,f=1MHz Between I/O pins and GND		800	1000	pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

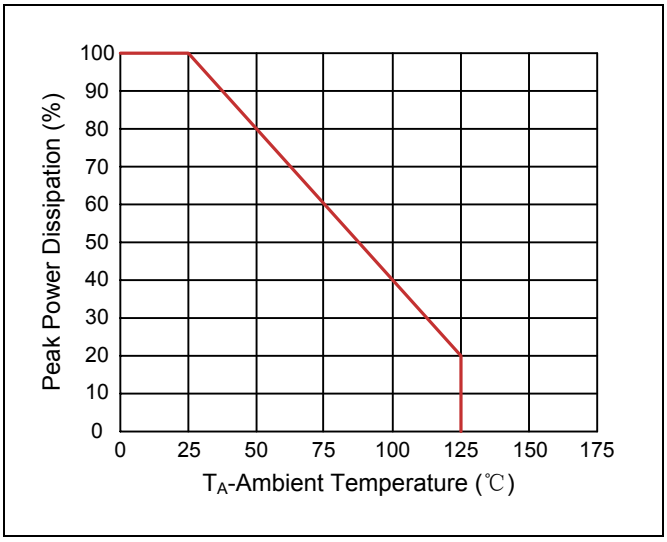


Figure 2. Pulse Waveforms

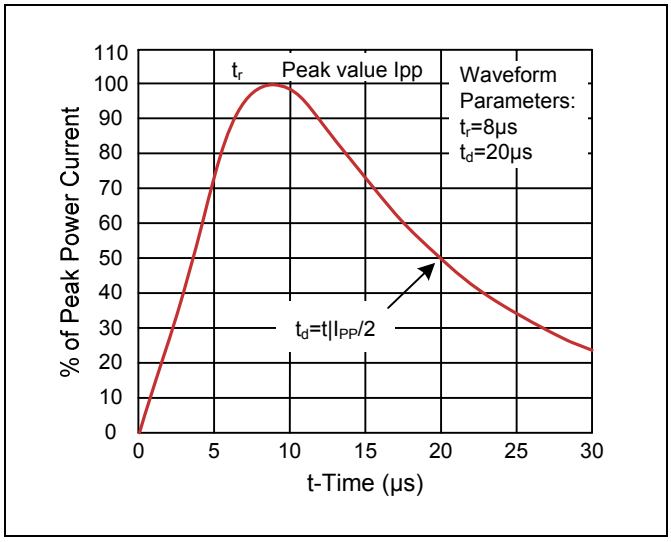
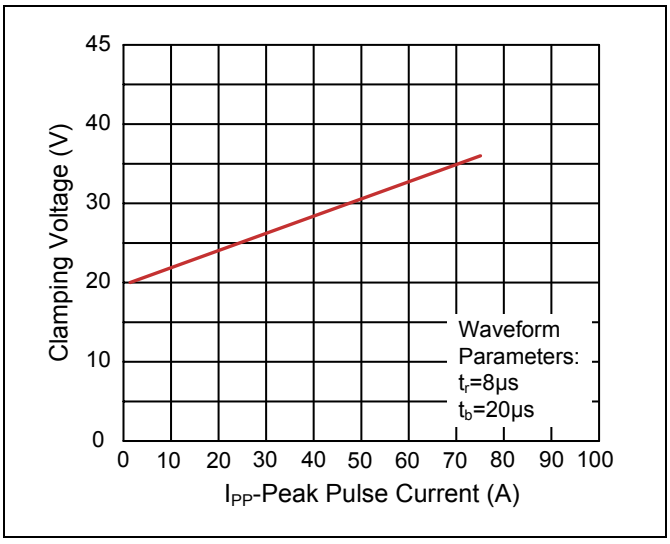
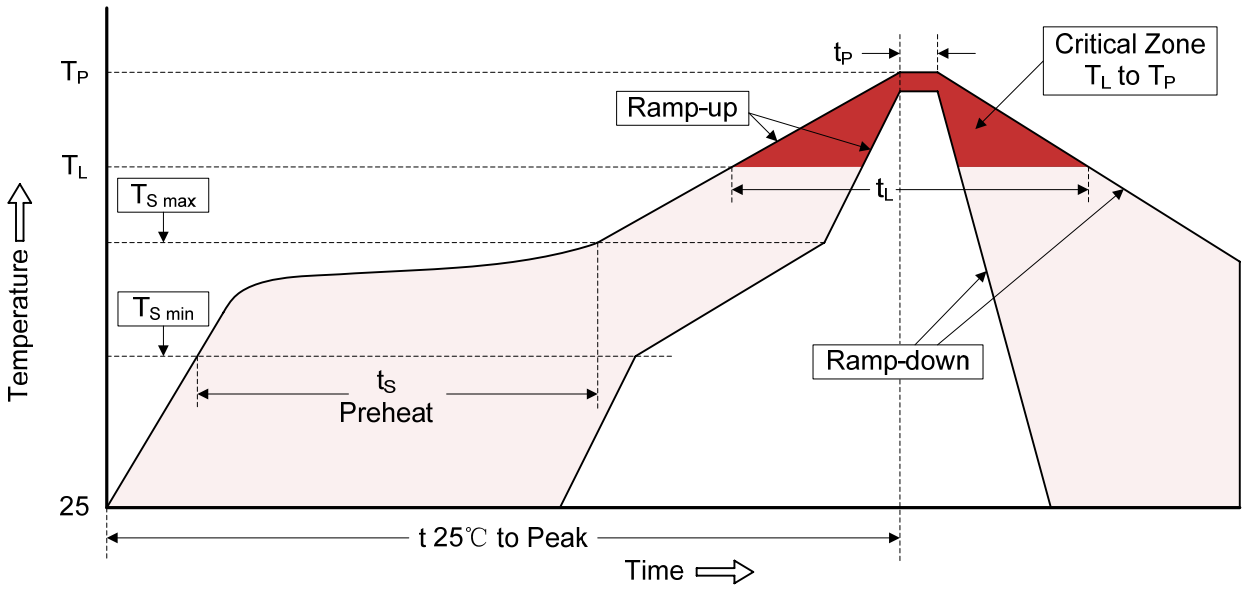


Figure 3. Clamping Voltage vs. Peak Pulse Current



Recommended Soldering Conditions

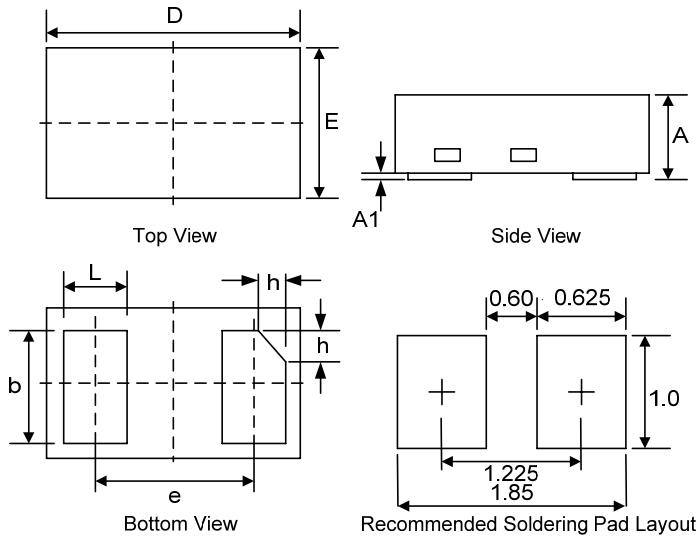
Reflow Soldering



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.

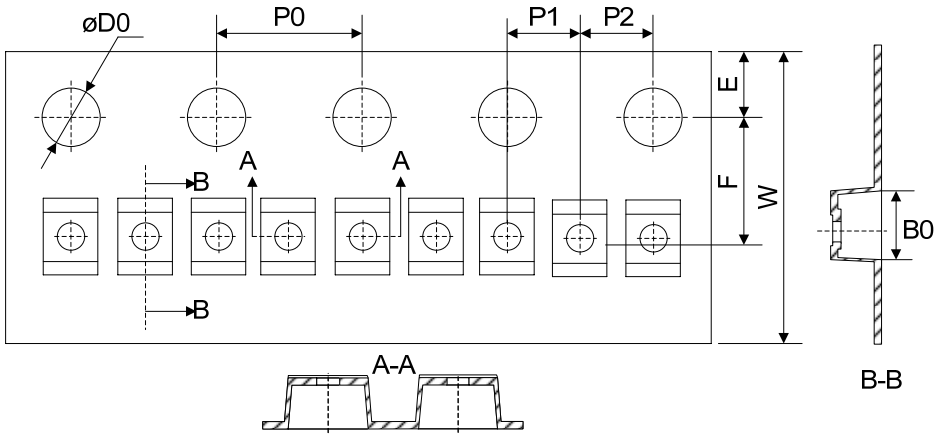
Dimensions (DFN-1610)



Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.55	0.66	0.022	0.026
A1	0.00	0.05	0.000	0.002
D	1.55	1.68	0.061	0.066
E	0.95	1.08	0.037	0.043
b	0.8 TYP		0.031 TYP	
e	1.1 TYP		0.043 TYP	
L	0.35	0.45	0.014	0.018
h	0.15	0.25	0.006	0.010

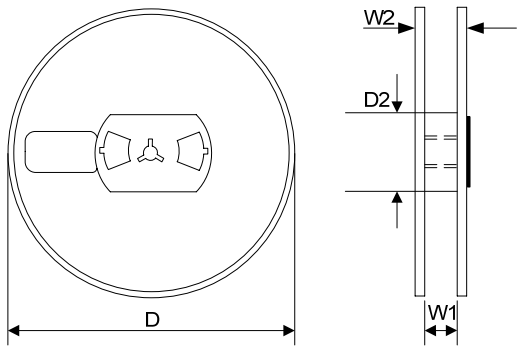
Packaging

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	Φ1.50±0.10
E	1.75±0.05
F	3.50±0.10
B0	1.72±0.05

Reel



D	Φ178.0±2.0
D2	Φ54.50±1.0
W1	9.5±2.0
W2	12.30±1.5
Quantity: 5000PCS	