

## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's SDD32A12L01 is designed to protect 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).

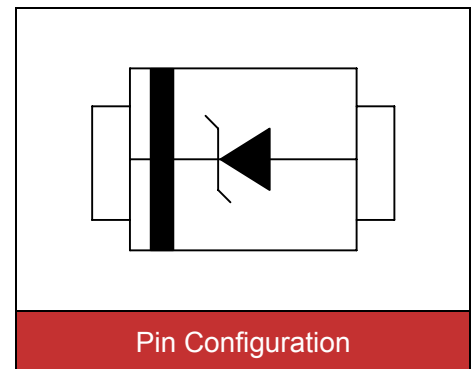


Contact :  $\pm 8\text{kV}$   
Air :  $\pm 15\text{kV}$



### Features

- IEC61000-4-2 ESD 15KV Air, 8KV 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: 12V
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270 $^{\circ}\text{C}$
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: 12W



### Applications

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>● Cellular handsets &amp; Accessories</li> <li>● Cordless phones</li> <li>● Personal digital assistants (PDAs)</li> <li>● Notebooks &amp; Handhelds</li> </ul> | <ul style="list-style-type: none"> <li>● Portable instrumentation</li> <li>● Digital cameras</li> <li>● Peripherals</li> <li>● MP3 players</li> </ul> |
|---|---|

### Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20 $\mu\text{s}$ waveform)	$P_{PP}$	320	W
ESD voltage (Contact discharge)	$V_{ESD}$	$\pm 8$	kV
ESD voltage (Air discharge)		$\pm 15$	
Storage & operating temperature range	$T_{STG}, T_J$	-55~+150	$^{\circ}\text{C}$

Electrical Characteristics ( $T_J=25^{\circ}\text{C}$ )

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				12	V
Reverse breakdown voltage	$V_{BR}$	$I_{BR}=1\text{mA}$	13.3			V
Reverse leakage current	$I_R$	$V_R=12\text{V}$			1	$\mu\text{A}$
Clamping voltage ( $t_p=8/20\mu\text{s}$ )	$V_C$	$I_{PP}=1\text{A}$			19	V
Off state junction capacitance	$C_J$	$0\text{Vdc}, f=1\text{MHz}$			150	pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

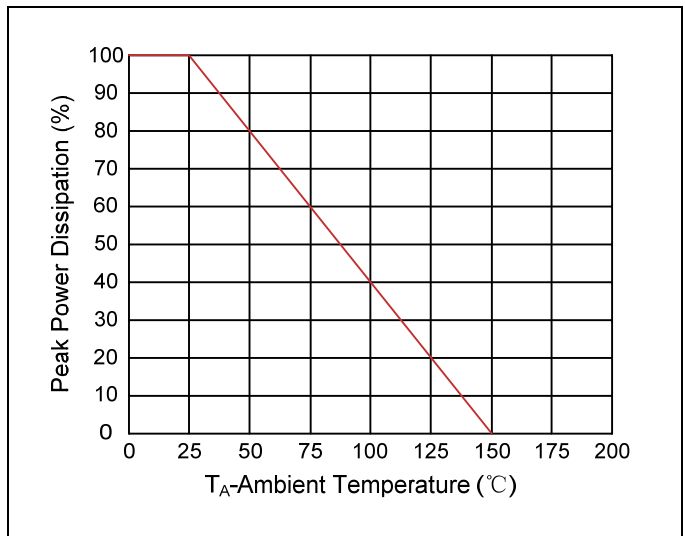


Figure 2. Pulse Waveform

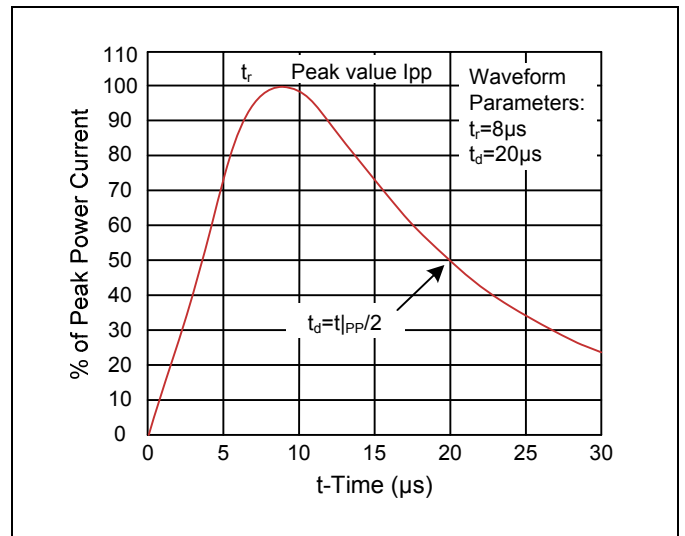
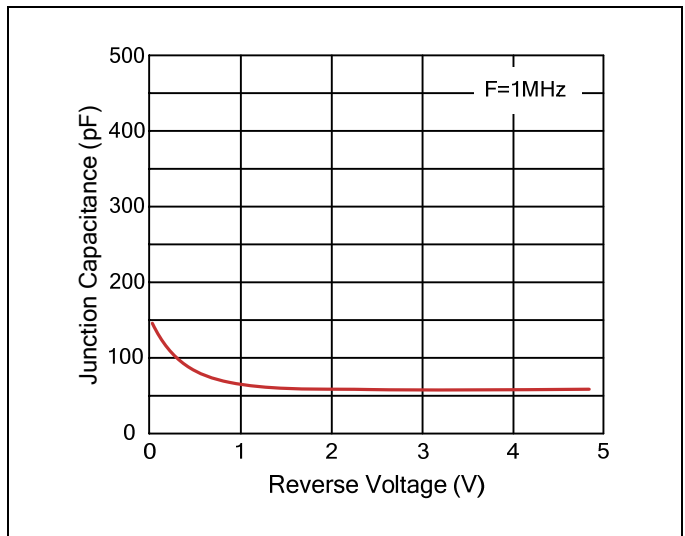
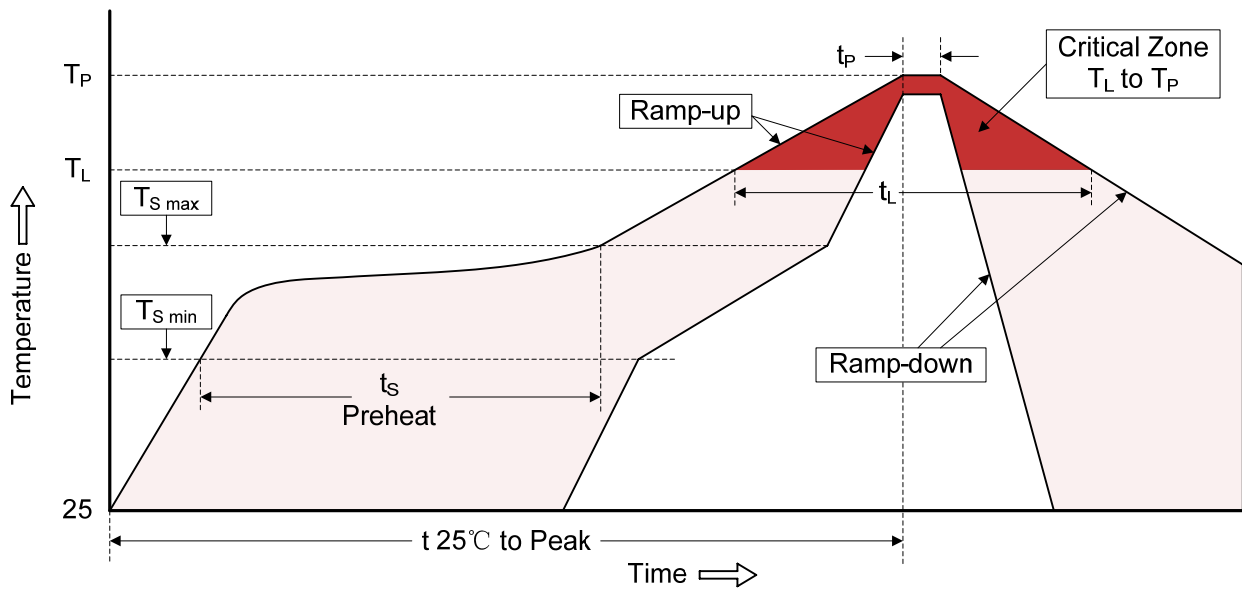


Figure 3. Capacitance vs. Reverse Voltage



Recommended Soldering Conditions

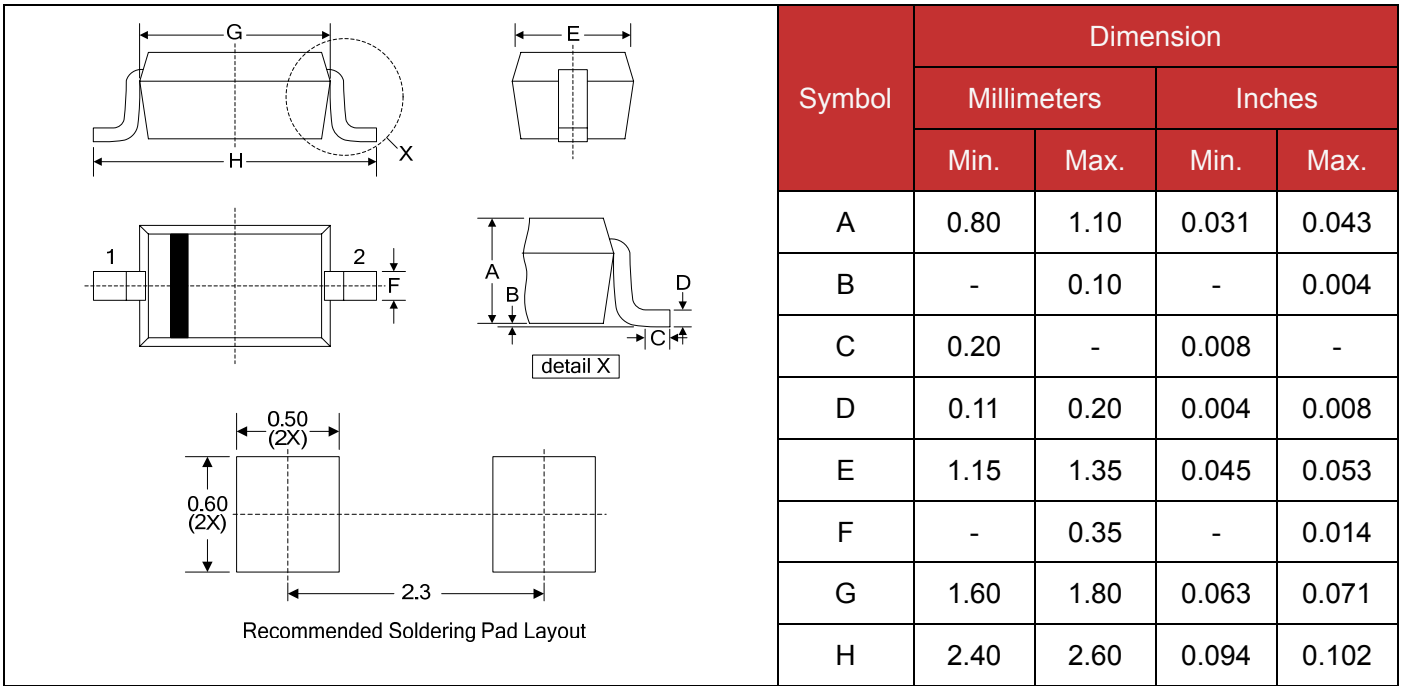
Reflow Soldering



Recommended Condition

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat -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-323)



Packaging

