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PRODUCT DATASHEET

Electro-Static Discharge

JED323-xxV-C ESD

## Features

- Package: SOD-323
- 300W peak pulse power (8/20 $\mu$ s)
- Protects one data or power lines
- Ultra low leakage: nA level
- Operating voltage: 3.3V,5V,8V,12V,24,36V
- Ultra low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30$ kV
    - Contact discharge:  $\pm 30$ kV
- RoHS compliant

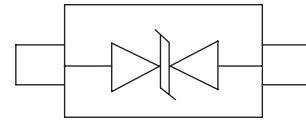
## Pin Description



## Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals
- Pagers Peripherals
- Desktop and Servers

## Schematic Diagram



## Limiting Values( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

Symbol	Parameter	Conditions	Value	Unit
V <sub>ESD</sub>	Electrostatic Discharge Voltage	IEC 61000-4-2;Contact Discharge	$\pm 30$	kV
		IEC 61000-4-2;Air Discharge	$\pm 30$	kV
P <sub>PK</sub>	Peak Pulse Power	t <sub>P</sub> =8/20 $\mu$ s	300	W
T <sub>J</sub>	Operating Temperature Range	-	-55 to +125	$^\circ\text{C}$
T <sub>stg</sub>	Storage Temperature Range	-	-55 to +150	$^\circ\text{C}$

## Electrical Characteristics( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

Part NO.	JED323-3.3V-C					
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage	T <sub>A</sub> =25 $^\circ\text{C}$	-	-	3.3	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>T</sub> =1mA	3.8	-	-	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =3.3V	-	-	1.0	$\mu\text{A}$
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A(8x20 $\mu$ s pulse)	-	-	6	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =25A(8x20 $\mu$ s pulse)	-	-	12	V
I <sub>pp</sub>	Peak Pulse Current	t <sub>P</sub> =8/20 $\mu$ s	-	-	25	A
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V,f=1 MHz,Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	100	pF

Part NO.	JED323-5V-C					
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage	T <sub>A</sub> =25°C	-	-	5	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>T</sub> =1mA	6	-	-	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =5V	-	-	1.0	μA
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A(8x20μs pulse)	-	-	8	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =20A(8x20μs pulse)	-	-	15	V
I <sub>pp</sub>	Peak Pulse Current	t <sub>p</sub> =8/20μs	-	-	20	A
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V,f=1 MHz,Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	80	pF

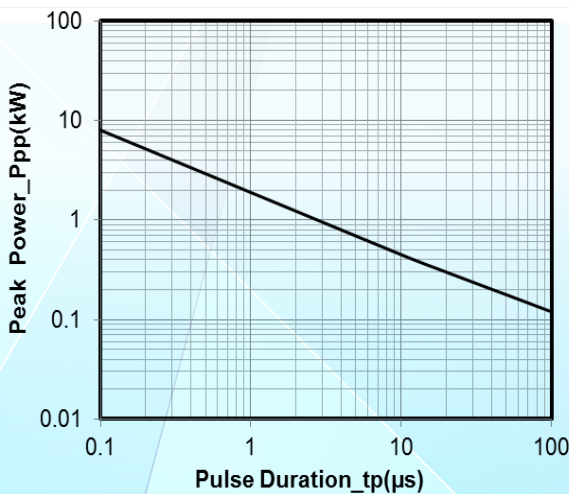
Part NO.	JED323-8V-C					
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage	T <sub>A</sub> =25°C	-	-	8	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>T</sub> =1mA	8.5	-	-	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =8V	-	-	0.5	μA
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A(8x20μs pulse)	-	-	13	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =18A(8x20μs pulse)	-	-	17	V
I <sub>pp</sub>	Peak Pulse Current	t <sub>p</sub> =8/20μs	-	-	18	A
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V,f=1 MHz,Pin 1 to Pin 3 or Pin 2 to Pin 3	-	-	60	pF

Part NO.	JED323-12V-C					
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage	T <sub>A</sub> =25°C	-	-	12	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>T</sub> =1mA	13.3	-	-	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =12V	-	-	0.5	μA
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A(8x20μs pulse)	-	-	18	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =12A(8x20μs pulse)	-	-	25	V
I <sub>pp</sub>	Peak Pulse Current	t <sub>p</sub> =8/20μs	-	-	12	A
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V,f=1 MHz,Pin 1 to Pin 3 or Pin 2 to Pin 3	-	32	-	pF

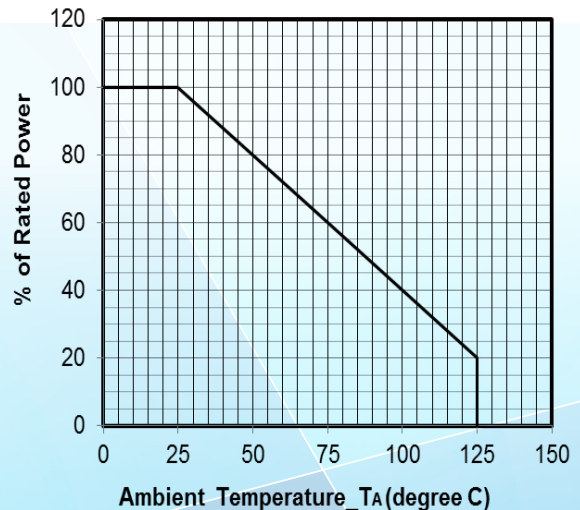
Part NO.	JED323-24V-C					
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage	T <sub>A</sub> =25°C	-	-	24	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>T</sub> =1mA	27	-	-	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =24V	-	-	0.2	μA
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A(8x20μs pulse)	-	-	40	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =5A(8x20μs pulse)	-	-	60	V
I <sub>pp</sub>	Peak Pulse Current	t <sub>p</sub> =8/20μs	-	-	5	A
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V,f=1 MHz,Pin 1 to Pin 3 or Pin 2 to Pin 3	-	15	-	pF

Part NO.	JED23-36V-C					
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V <sub>RWM</sub>	Reverse Working Voltage	T <sub>A</sub> =25°C	-	-	36	V
V <sub>BR</sub>	Breakdown Voltage	I <sub>T</sub> =1mA	38	-	-	V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> =36V	-	-	0.2	μA
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =1A(8x20μs pulse)	-	-	50	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> =4.5A(8x20μs pulse)	-	-	75	V
I <sub>pp</sub>	Peak Pulse Current	t <sub>p</sub> =8/20μs	-	-	4	A
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> =0V,f=1 MHz,Pin 1 to Pin 3 or Pin 2 to Pin 3	-	12	-	pF

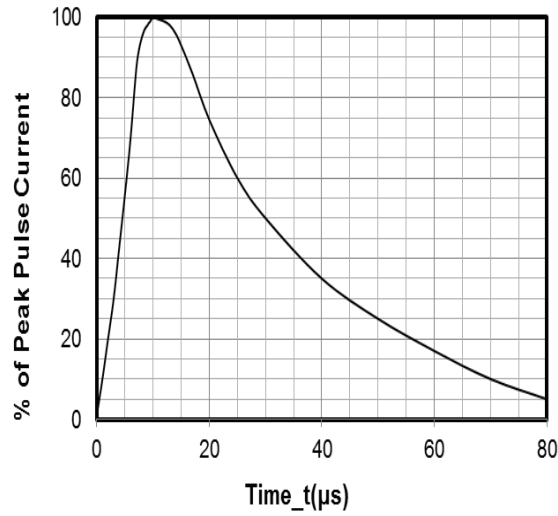
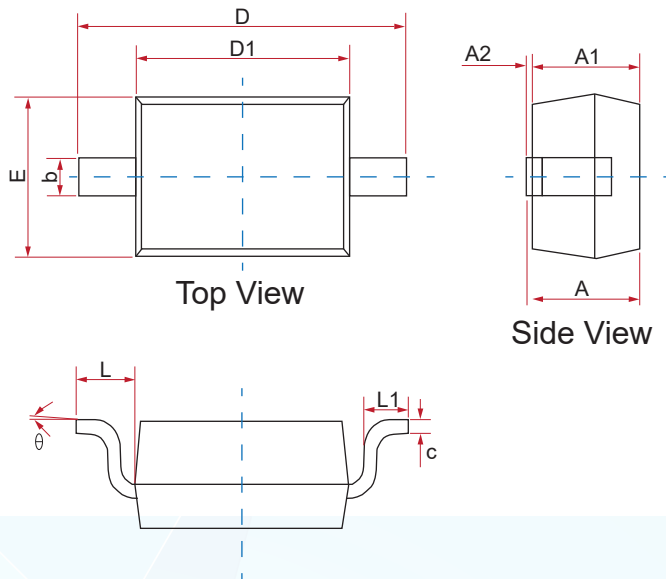
### Typical Characteristics



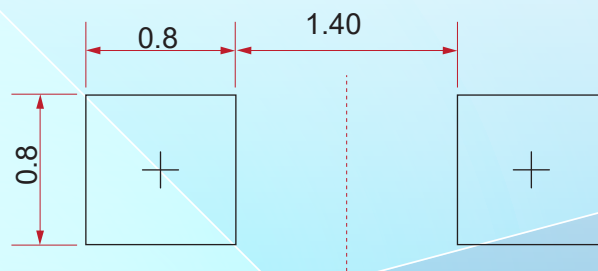
Peak Pulse Power vs. Pulse Time



Power Derating Curve


**8 X 20  $\mu$ s Pulse Waveform**
**Physical Dimensions(mm.)**


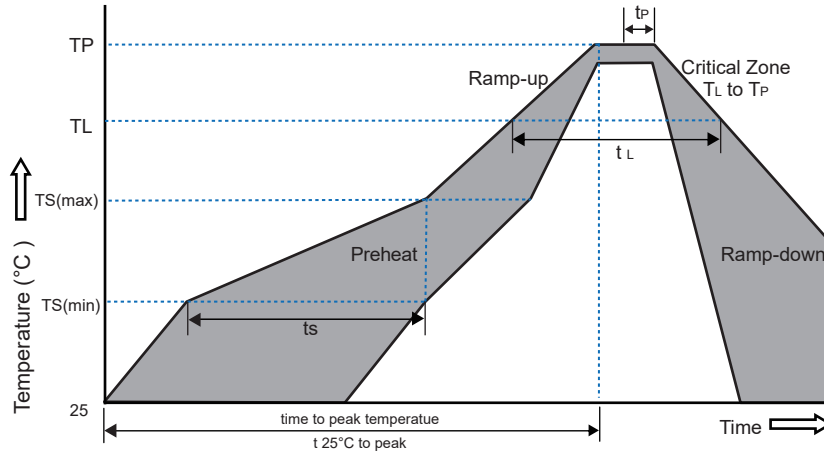
Symbol	Dimensions In Millimeters		
	Min	Nom	Max
A	0.800	--	1.100
A1	0.800	--	0.900
A2	0.000	--	0.100
b	0.250	--	0.400
c	0.080	--	0.177
D1	1.600	1.700	1.800
D	2.300	--	2.800
E	1.150	--	1.400
L	0.475REF		
L1	0.100	--	0.500
e	0°	--	8°

**Suggested Land Pattern**

**Unit:mm**

### Packaging Quantity

Part Number	Delivery Form	Delivery Quantity
JED323-xxV-C	7''T&R	3,000

### Soldering Parameters



Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time(Min to Max)( $t_s$ )	60~180 secs.
Average ramp up rate (Liquid us Temp( $T_L$ ) to peak)		3°C/sec. Max
Ts(max) to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature ( $t_L$ )	60~150 secs.
Peak Temp ( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
xTime 25°C to Peak Temp (TP)		8 min. Max
Do not exceed		+260°C

### Part Number System

## JE D323 - xxV-C

C=Bi-directional  
 Blank=Uni-directional

Working Voltage: xxV

SOD-323

JDT ESD

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