

## DESCRIPTION

The JULC0501P is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast re-sponse time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The AU0521P1 complies with the IEC 61000-4-2 (ESD) with  $\pm 30$  kV air and  $\pm 30$  kV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size and high ESD surge protection make JULC0501P an ideal choice to protect cell phone, digital cameras, audio play-ers and many other portable applications.

## APPLICATIONS

- ✧ Cellular Handsets and Accessories.
- ✧ Personal Digital Assistants.
- ✧ Notebooks and Handhelds.
- ✧ Portable Instrumentation.
- ✧ Digital Cameras.
- ✧ Peripherals.
- ✧ Audio Players.
- ✧ Keypads, Side Keys, USB 2.0, LCD Displays.

## FEATURES

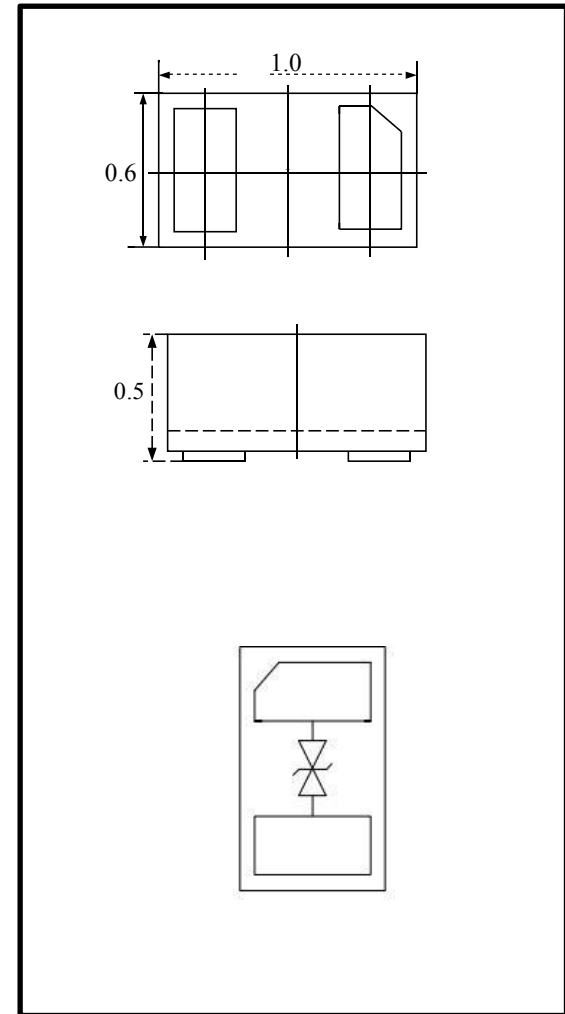
- ✧ Ultra small package: 1.0x0.6x0.5mm.
- ✧ Protects one data or power line.
- ✧ Ultra low leakage: nA level.
- ✧ Working voltage: 5V.
- ✧ Low clamping voltage.
- ✧ 2-pin leadless package.
- ✧ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test Air discharge:  $\pm 15$ kV
  - Contact discharge:  $\pm 8$ kV
  - IEC61000-4-4 (EFT) 40A (5/50ns).
- ✧ RoHS Compliant.

## ORDERING INFORMATION

- ✧ Device: JULC0501P.
- ✧ Package: DFN1006-2.
- ✧ Packing: Tape & Reel.
- ✧ Quantity per reel: 10,000pcs .
- ✧ Reel Size : 7 inch.

## MACHANICAL DATA

- ✧ Package: DFN1006-2 (1.0×0.6×0.5mm).
- ✧ Case Material: “Green” Molding Compound.
- ✧ Moisture Sensitivity: Level 3 per J-STD-020.
- ✧ Terminal Connections: See Diagram Below.
- ✧ Marking Information: See Below.

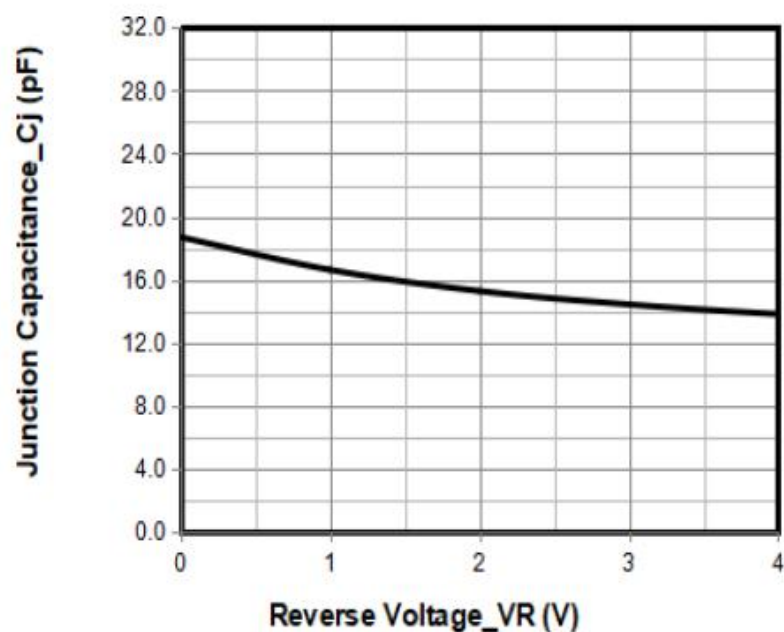
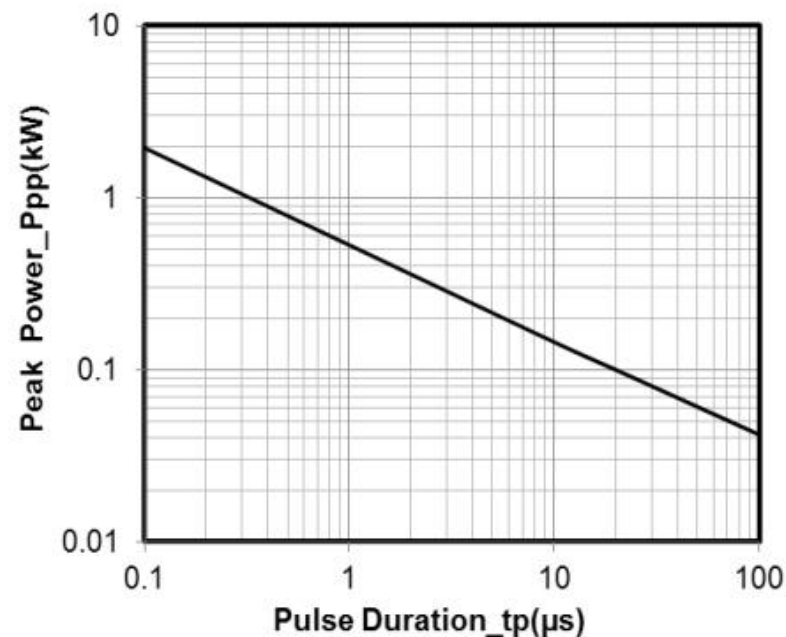


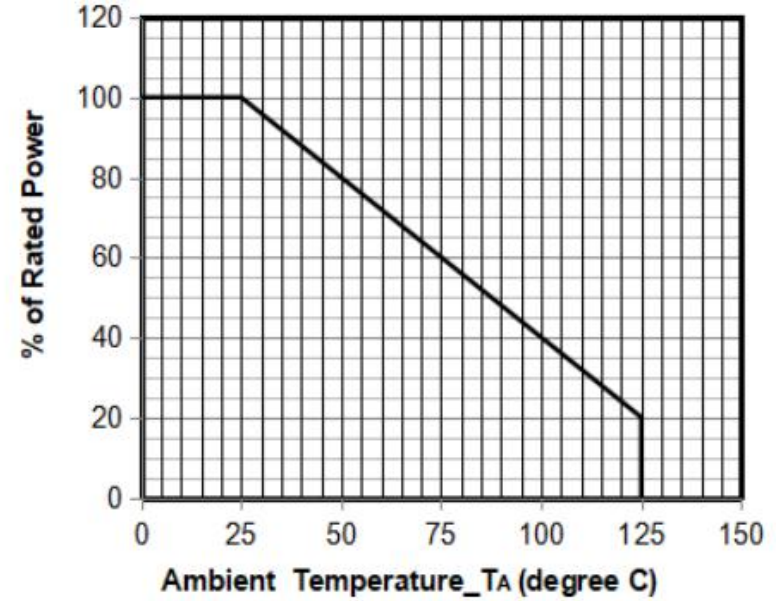
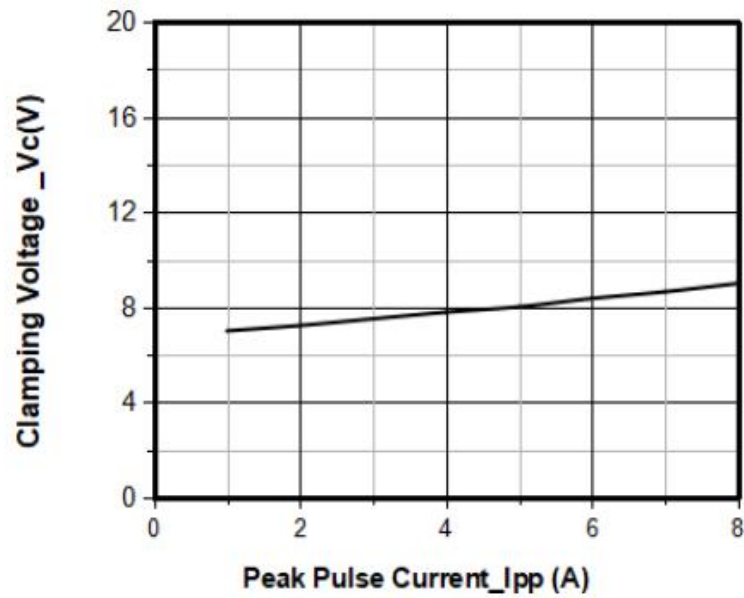
**DEVICE CHARACTERISTICS**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu$ s)	Ppk	100	W
Peak Pulse Current (8/20 $\mu$ s)	IPP	8	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 30$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 30$	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS (TA=25 $^{\circ}\text{C}$ )**

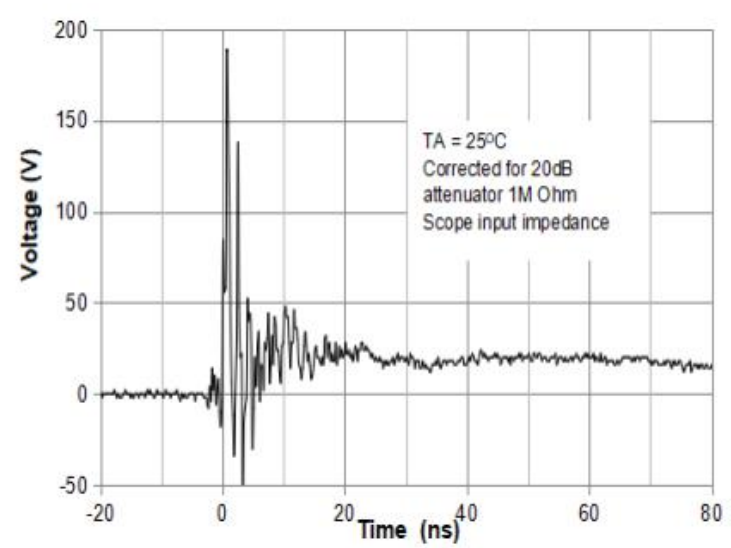
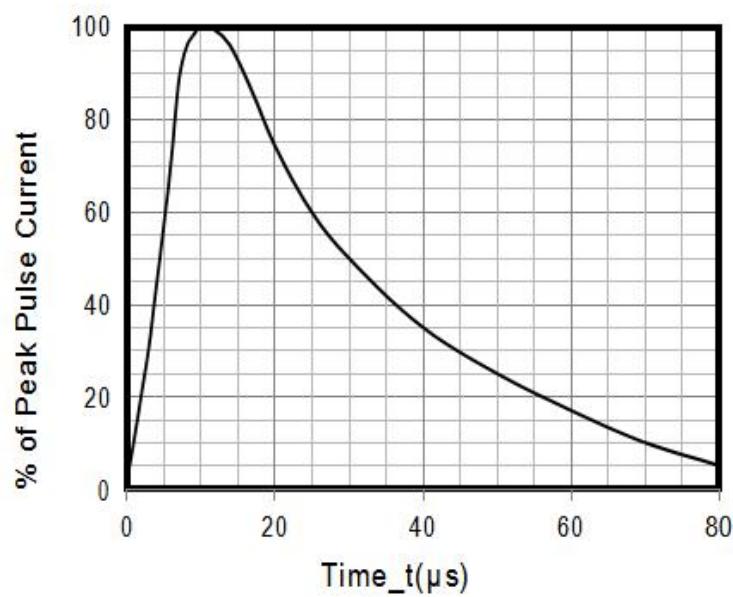
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6		8	V	IT = 1mA
Reverse Leakage Current	IR			0.2	$\mu\text{A}$	VRWM = 5V
Clamping Voltage	VC			8	V	IPP = 1A
Clamping Voltage	VC			13	V	IPP = 8A
Junction Capacitance	CJ		18		pF	VR = 0V, f = 1MHz

**ELECTRICAL PERFORMANCE CHARACTERISTICS (TA=25 $^{\circ}\text{C}$ )**

**Junction Capacitance vs. Reverse Voltage**

**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current ( $t_p = 8/20\mu s$ )**

**Power Derating Curve**

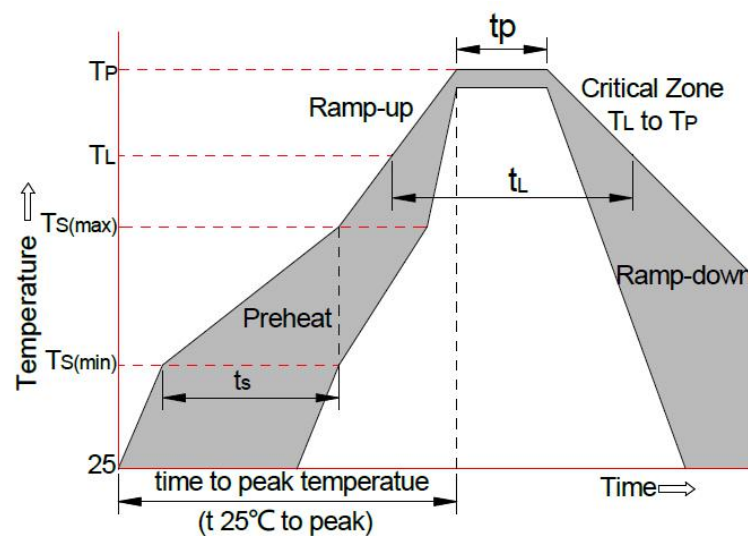


**8 X 20μs Pulse Waveform**

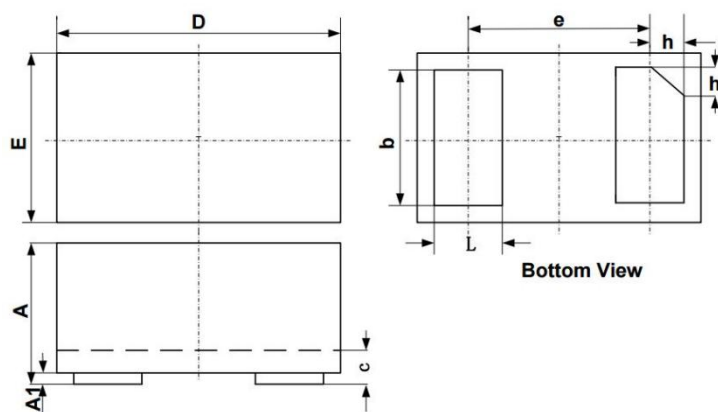
**ESD Clamping Voltage**

**8 kV Contact per IEC61000-4-2**

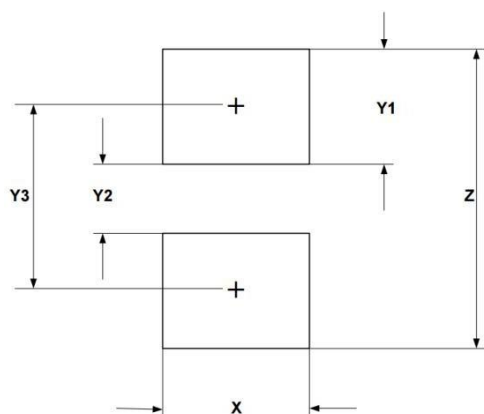
## SOLDERING PARAMETERS



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) (ts)	60-180 secs
Average ramp up rate( Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{S\ (max)}$ 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/secs. Max
xTime 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C

**DFN1006-2 PACKAGE OUTLINE DIMENSIONS**


SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
c	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012
h	0.07	0.12	0.17	0.003	0.005	0.007

**SUGGESTED LAND PATTERN**


SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.60	0.024
Y1	0.50	0.020
Y2	0.30	0.012
Y3	0.80	0.032
Z	1.30	0.052

Website: <http://www.jksemi.com> For additional information,  
 please contact your local Sales Representative.

©Copyright 2016, jksemi