

## Description

The DL0502P2 is an uni-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The DL0502P2 has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) standard with  $\pm 25\text{kV}$  air and  $\pm 20\text{kV}$  contact discharge. It is assembled into an ultra-small 1.2x1.0x0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make DL0502P2 an ideal choice to protect cell phone, digital video interfaces and other high speed ports.

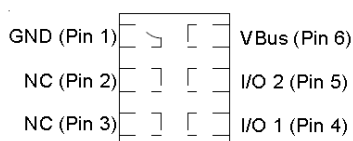
## Features

- ◆ Ultra small package: 1.2x1.0x0.5mm
- ◆ Ultra low capacitance: 0.6pF typical
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 5V
- ◆ Low clamping voltage
- ◆ 6-pin leadless package
- ◆ Protects two lines
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
  - Air discharge:  $\pm 25\text{kV}$
  - Contact discharge:  $\pm 20\text{kV}$
  - IEC 61000-4-5 (Lightning) 5A (8/20 $\mu\text{s}$ )
- ◆ RoHS Compliant

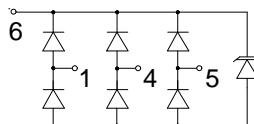
## Applications

- ◆ Cellular Handsets and Accessories
- ◆ USB Ports
- ◆ Video Interface
- ◆ MDDI Ports

## Dimensions and Pin Configuration



Pin Schematic



## Marking Information



52P= Device Marking Code

Dot denotes Pin1

## Ordering Information

Part Number	Marking	Packaging	Reel Size
DL0502P2	52P	3000/Tape & Reel	7 inch

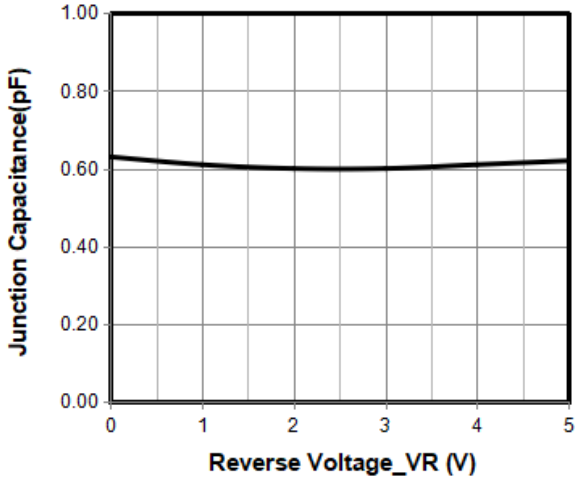
### **Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20 $\mu\text{s}$ )	Ppk	75	W
Peak Pulse Current(8/20 $\mu\text{s}$ )	Ipp	5	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 25$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 20$	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

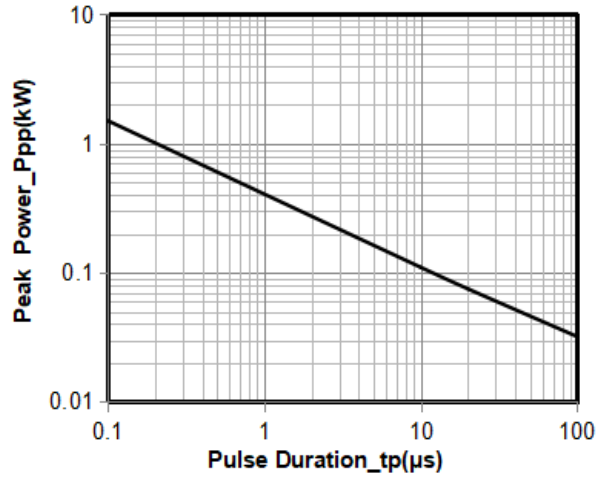
### **Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6			V	IT = 1mA
Reverse Leakage Current	IR			0.5	$\mu\text{A}$	VRWM = 5V
Clamping Voltage	VC			10	V	I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse), any I/O pin to ground
Clamping Voltage	VC			15	V	I <sub>PP</sub> = 5A (8 x 20 $\mu\text{s}$ pulse), any I/O pin to ground
Junction Capacitance	CJ		0.3	0.4	pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	CJ			0.8	pF	VR = 0V, f = 1MHz, any I/O pin to ground

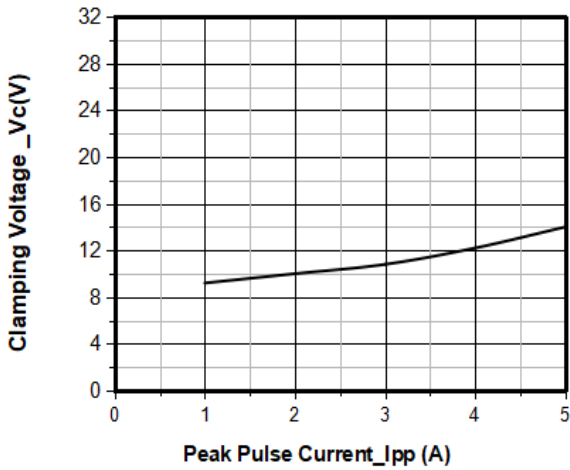
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



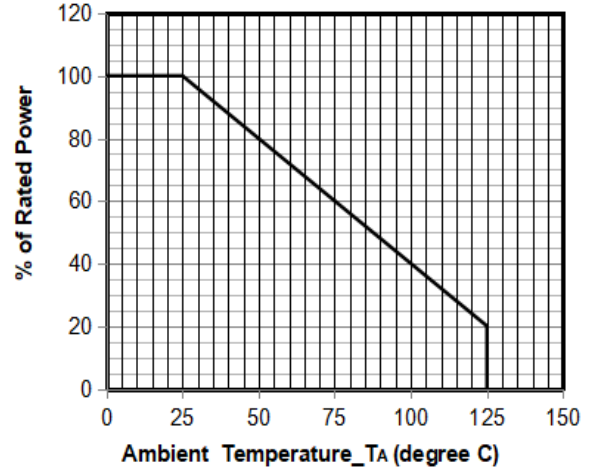
Junction Capacitance vs. Reverse Voltage



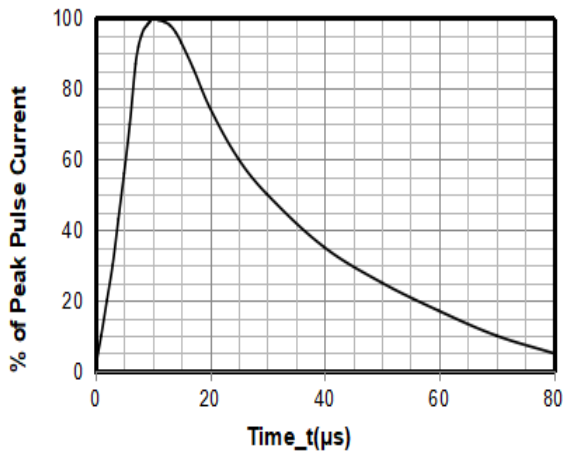
Peak Pulse Power vs. Pulse Time



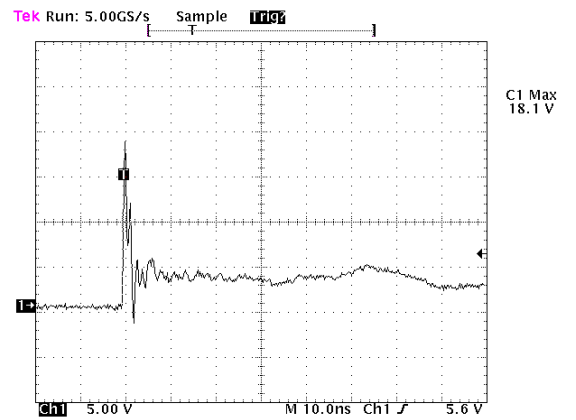
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

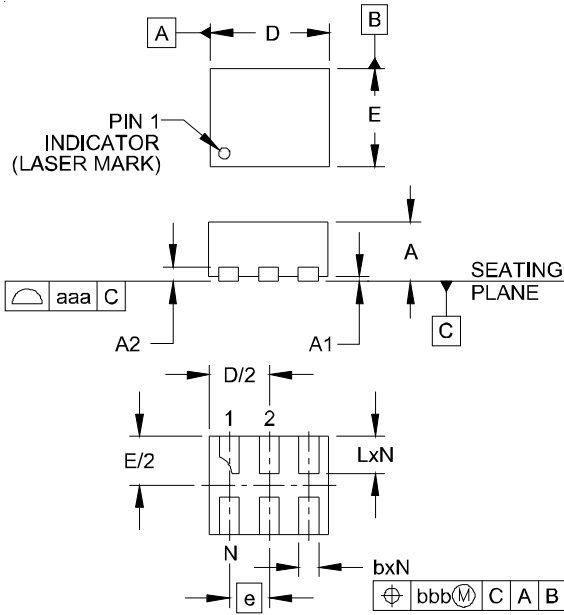


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

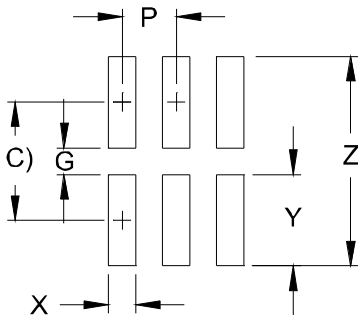
8 kV Contact per IEC61000-4-2

**DFN1210-6 Package Outline Drawing**



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.58	0.65	0.020	0.023	0.026
A1	0.00	0.03	0.05	0.000	0.001	0.002
A2	(0.13)			(0.005)		
b	0.15	0.20	0.25	0.006	0.008	0.010
D	1.10	1.20	1.30	0.043	0.047	0.051
E	0.90	1.00	1.10	0.035	0.039	0.043
e	0.40 BSC			0.016 BSC		
L	0.30	0.38	0.43	0.012	0.015	0.017
N	6			6		
aaa	0.08			0.003		
bbb	0.10			0.004		

**Suggested Land Pattern**



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	(0.875)	(0.031)
G	0.20	0.008
P	0.40	0.016
X	0.20	0.008
Y	0.675	0.027
Z	1.55	0.061

**Contact Information**

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