Description

The AR0511P0S is a bi-directional TVS diode, 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 AR0511P0S has a low capacitance with a typical value at 0.5pF, and complies with the IEC 61000-4-2 (ESD) with ±30kV air and ±30kV contact discharge. The small size, low capacitance and high ESD surge protection make AR0511P0S an ideal choice to protect cell phone, digital visual interfaces, HDMI, DVI, USB2.0, USB3.0, and other high speed ports.

Features

- low capacitance: 0.5pF typical
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - – IEC61000-4-5 (Lightning) 9A (8/20μs)
- RoHS Compliant

Mechanical Characteristics

- Package: DFN0603-2
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

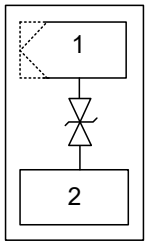
- Cellular Handsets and Accessories
- Display Ports
- MDDI / MHL
- USB 2.0 / USB 3.0
- Digital Visual Interface (DVI)
- PCI Express and Serial SATA Ports

Caution:
This Device is designed for signal line protection only.
Not intended to be used under bias, not for application with a power line.

Marking Information

AV = Device Marking Code

Equivalent Circuit and Pin Configuration



Circuit and Pin Schematic

Ordering Information

Part Number	Packaging	Reel Size
AR0511P0S	10000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

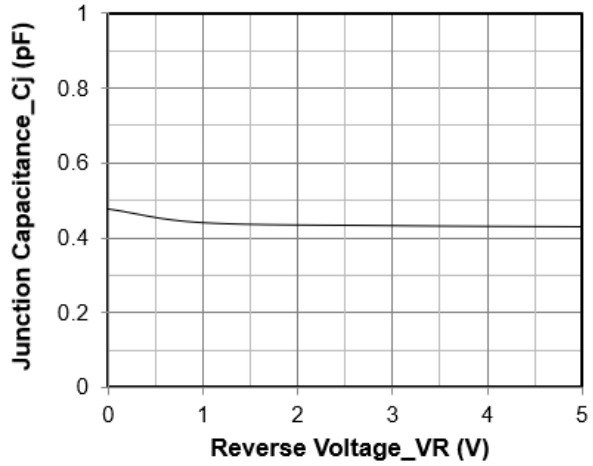
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	90	W
Peak Pulse Current (8/20μs)	I_{PP}	9	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

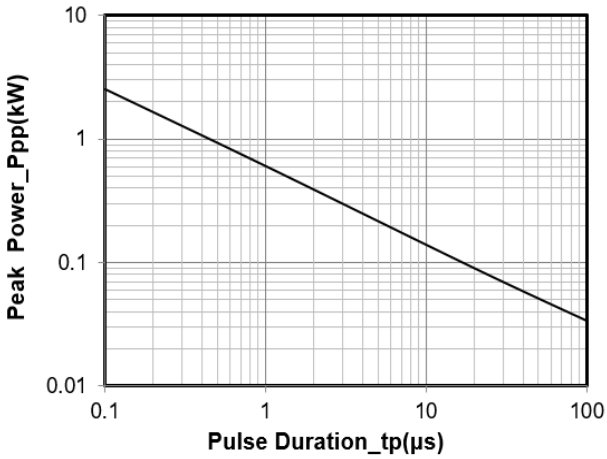
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Punch-Through Voltage	V_{PT}	6			V	I_T = 2μA
Snap-Back Voltage	V_{SB}	0.7			V	I_T = 50mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 9A (8 x 20μs pulse)
ESD Clamping Voltage(1)	V_C		5.5		V	IPP = 4A, tp = 0.2/100ns (TLP)
ESD Clamping Voltage(1)	V_C		9.7		V	IPP = 16A, tp = 0.2/100ns (TLP)
Dynamic Resistance(2)	R_{DYN}		0.35		Ohm	tp = 0.2/100ns (TLP)
Junction Capacitance	C_J		0.5		pF	VR = 0V, f = 1MHz

(1) Transmission Line Pulse Test (TLP) Settings: tp = 100ns, tr = 0.2ns.
(2) Dynamic resistance calculated from ITLP = 4A to ITLP = 16A.

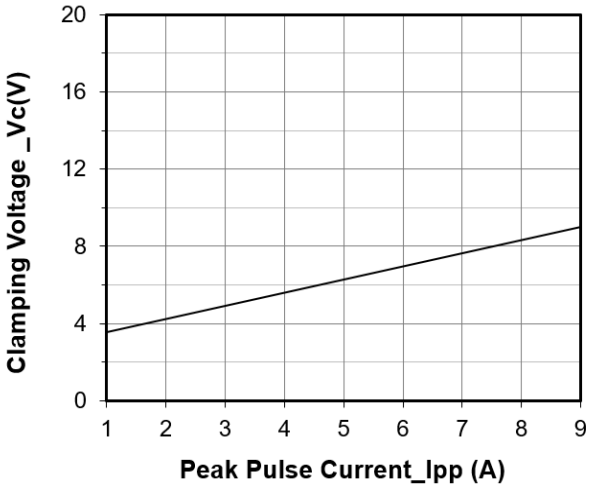
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



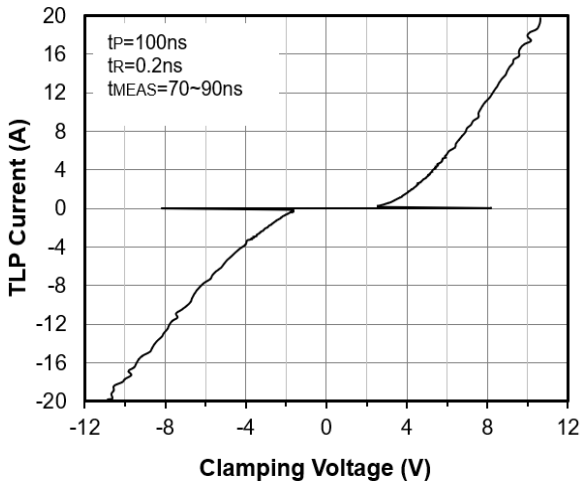
Junction Capacitance vs. Reverse Voltage



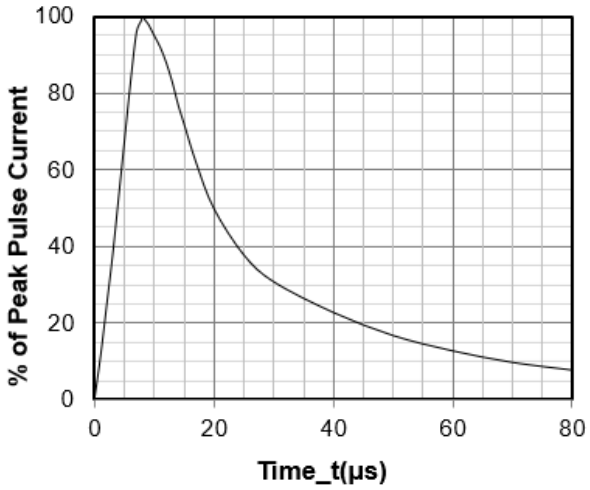
Peak Pulse Power vs. Pulse Time



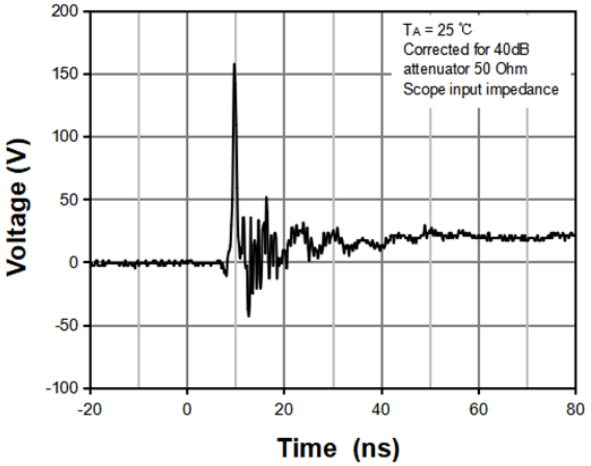
Clamping Voltage vs. Peak Pulse Current (tp = 8/20μs)



TLP Measurement



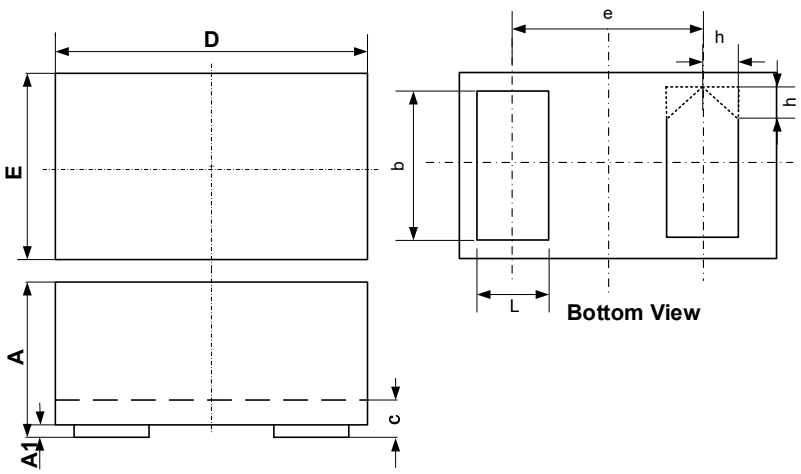
8 X 20μs Pulse Waveform



ESD Clamping Voltage

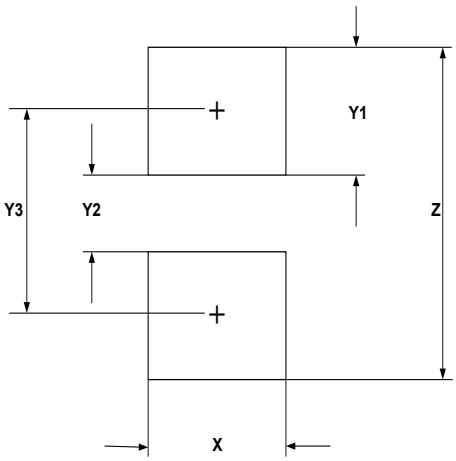
8 kV Contact per IEC61000−4−2

DFN0603-2 Package Outline Drawing



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.340
A1	0.000	-	0.050
b	0.200	-	0.300
c	0.050	-	0.180
D	0.550	-	0.650
e	0.360 BSC		
E	0.250	-	0.350
L	0.130	-	0.240
h	0.079 BSC		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026

Contact Information

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