

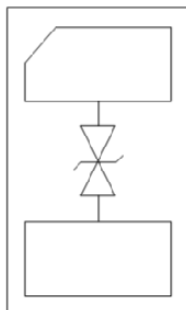
Description

The AR0541P1SC 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 AR0541P1SC has a low capacitance with a typical value at 0.5pF, and complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. The small size, ultra-low capacitance and high ESD surge protection make AR0541P1SC an ideal choice to protect cell phone, digital visual interfaces, HDMI, DVI, USB2.0, USB3.0, and other high speed ports.

Features

- 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: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 12A (8/20 μs)
- RoHS Compliant

Equivalent Circuit and Pin Configuration



Circuit and Pin Schematic

Mechanical Characteristics

- Package: DFN1006-2
- 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



4X = Device Marking Code

Ordering Information

Part Number	Packaging	Reel Size
AR0541P1SC	10000/Tape & Reel	7 inch

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

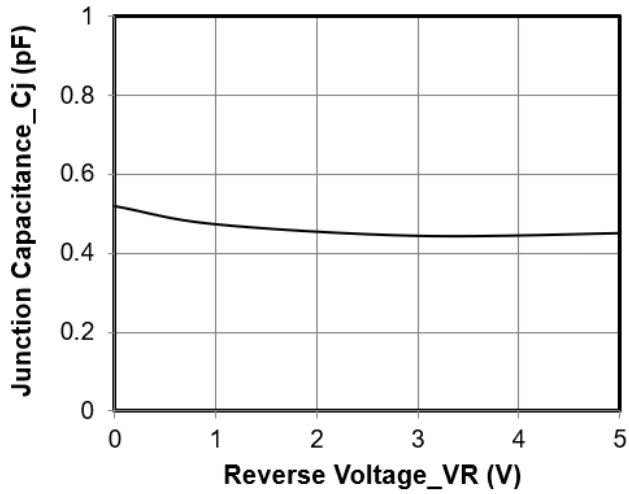
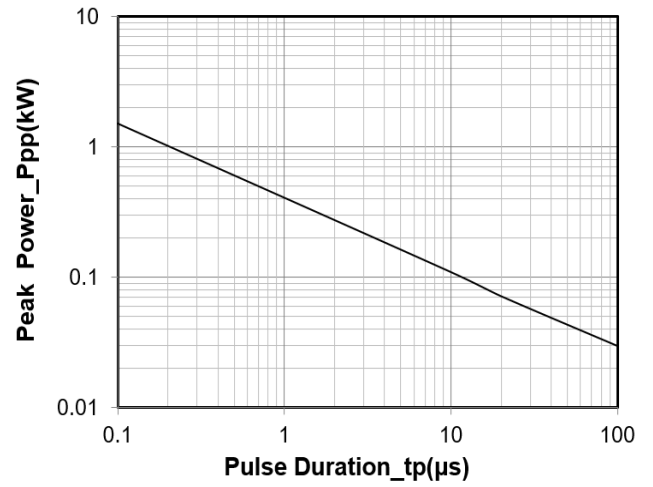
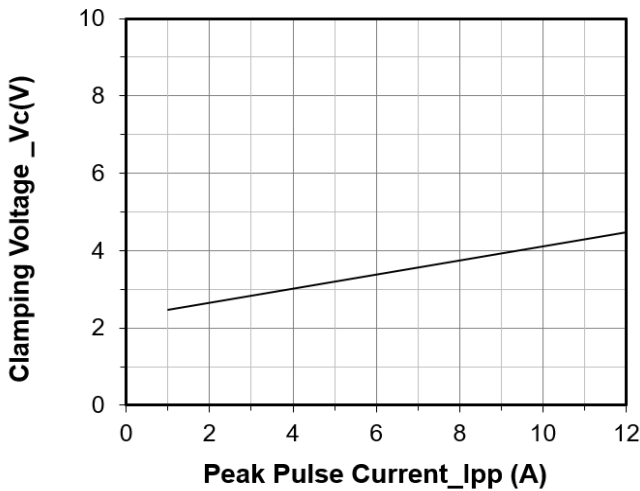
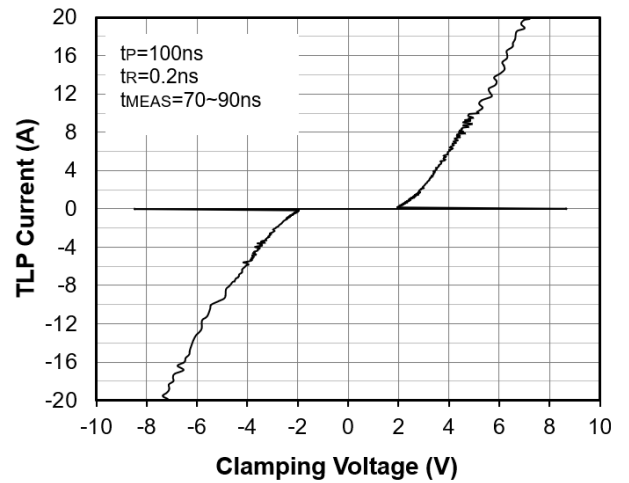
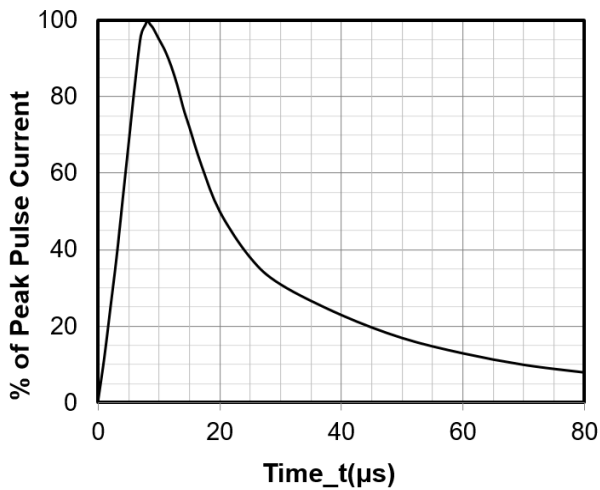
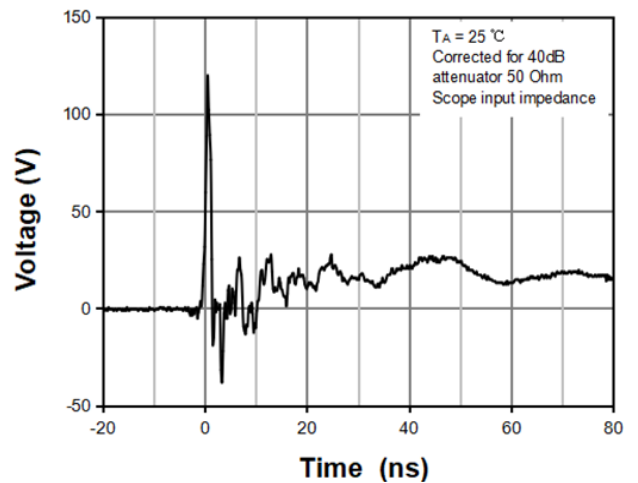
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	72	W
Peak Pulse Current (8/20μs)	I _{PP}	12	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±30 ±30	kV
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

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

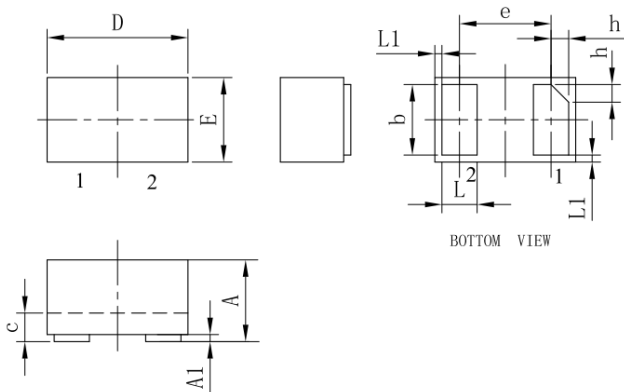
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5	V	
Breakdown Voltage	V _{BR}	6		9	V	I _T = 1mA
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 5V
Clamping Voltage	V _C			6	V	I _{PP} = 12A (8 x 20μs pulse)
ESD Clamping Voltage ⁽¹⁾	V _C		2.5		V	I _{PP} = 1A, t _p = 0.2/100ns (TLP)
			3.5		V	I _{PP} = 4A, t _p = 0.2/100ns (TLP)
			6.3		V	I _{PP} = 16A, t _p = 0.2/100ns (TLP)
Dynamic Resistance ⁽²⁾	R _{DYN}		0.23		Ohm	t _p = 0.2/100ns (TLP)
Junction Capacitance	C _J		0.5		pF	V _R = 0V, f = 1MHz

(1) Transmission Line Pulse Test (TLP) Settings: t_p = 100ns, t_r = 0.2ns

(2) Dynamic resistance calculated from I_{TLP} = 4A to I_{TLP} = 16A

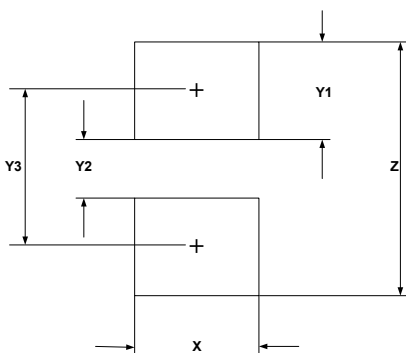
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)

Junction Capacitance vs. Reverse Voltage

Peak Pulse Power vs. Pulse Time

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

TLP Measurement

8 X 20 μs Pulse Waveform

ESD Clamping Voltage
8 kV Contact per IEC61000-4-2

DFN1006-2 Package Outline Drawing



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
L1	0.05REF			0.002REF		
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

Contact Information

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