Description

The AR0521M0 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 AR0521M0 has an ultra-low capacitance with a typical value at 0.25pF, and complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free 0201 package. The small size, ultra-low capacitance and high ESD surge protection make AR0521M0 an ideal choice to protect cell phone, digital visual interfaces and other high speed ports.

Features

- Ultra small package: 0.6x0.3x0.3mm
- Ultra low capacitance: 0.25pF 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: ±20kV
    - Contact discharge: ±15kV
  - – IEC61000-4-5 (Lightning) 4A (8/20μs)
- RoHS Compliant

Mechanical Characteristics

- Package: 0201
- Lead Finish: Sn
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

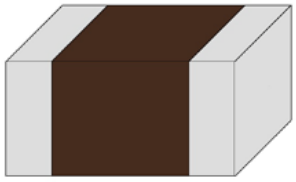
Applications

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

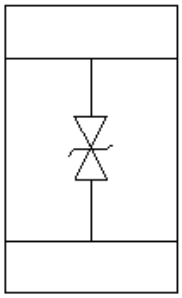
Ordering Information

Part Number	Packaging	Reel Size
AR0521M0	10000/Tape & Reel	7 inch

Dimensions and Pin Configuration



Package Dimensions



Circuit and Pin Schematic

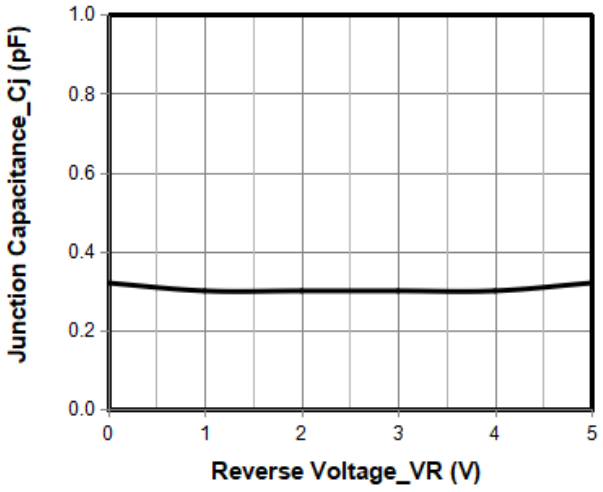
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	100	W
Peak Pulse Current (8/20μs)	I_{PP}	4	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±25 ±23	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

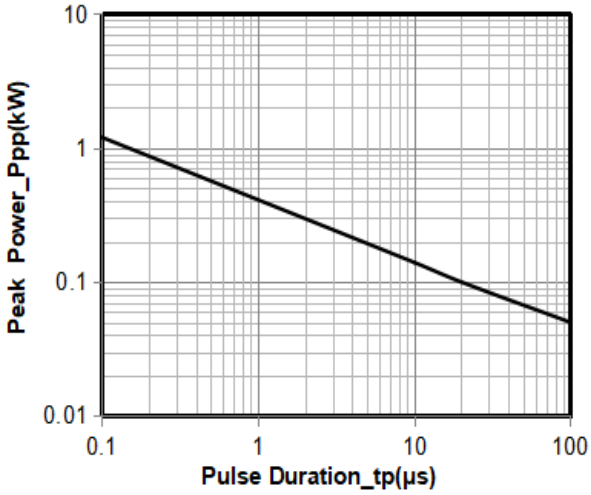
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 5V
Clamping Voltage	V_C			12	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			25	V	I_{PP} = 4A (8 x 20μs pulse)
Junction Capacitance	C_J		0.3	0.5	pF	VR = 0V, f = 1MHz

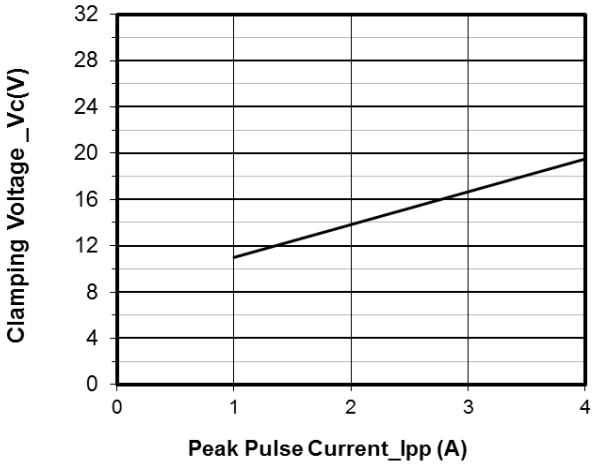
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



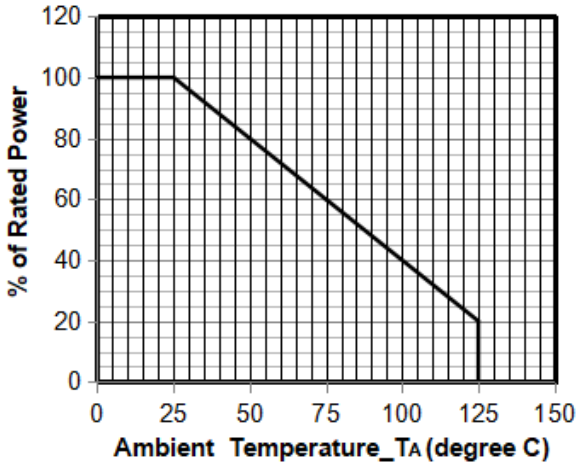
Junction Capacitance vs. Reverse Voltage



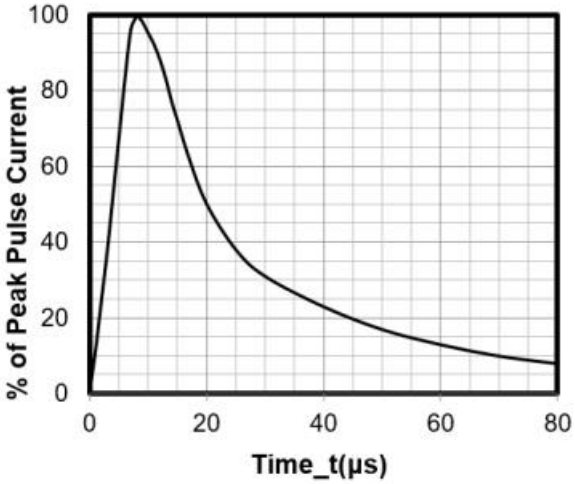
Peak Pulse Power vs. Pulse Time



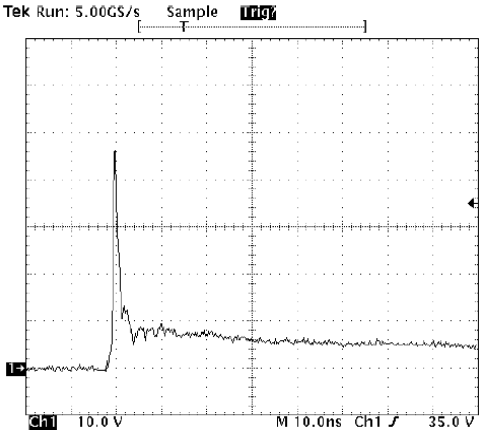
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

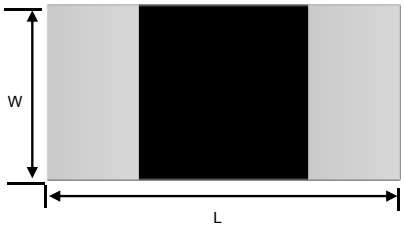


Note: Data is taken with a 10x attenuator

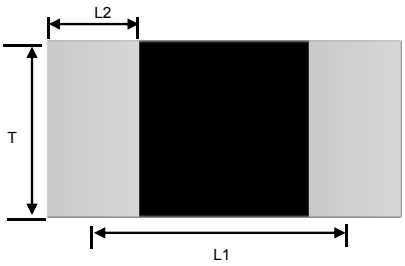
ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

0201 Package Outline Drawing



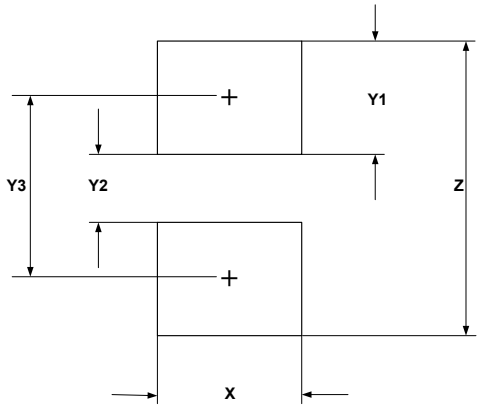
Top View



Side View

SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
W	0.25	0.30	0.35	0.010	0.012	0.014
L	0.55	0.60	0.65	0.022	0.024	0.026
T	0.25	0.30	0.35	0.010	0.012	0.014
L1	0.30 BSC			0.012 BSC		
L2	0.10	0.15	0.20	0.004	0.006	0.008

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.30	0.012
Y3	0.55	0.022
Z	0.80	0.032

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