

Description

The AZC199-04S is an ultra low capacitance TVS 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 AZC199-04S has an ultra-low capacitance with a typical value at 0.6 pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 15\text{kV}$ air and $\pm 8\text{kV}$ contact discharge. It is assembled into a 6-pin lead-free SOT23-6 package.

The combination of small size, ultra low capacitance, and high ESD surge capability make it ideal for use in applications such as multimedia, and other high speed ports.

Features

Ultra low capacitance: 0.6 pF typical (I/O-GND)
 Ultra low leakage: nA level
 Low operating voltage: 5.0V
 Up to 4 data lines and one power line protects
 Low clamping voltage

Complies with following standards:

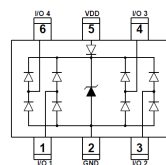
- IEC 61000-4-2 (ESD) immunity test
 Air : $\pm 20\text{kV}$; discharge: $\pm 15\text{kV}$
- IEC61000-4-5 (Lightning) 5A (8/20 μs)

SOT23-6 Package
 RoHS Compliant

Applications

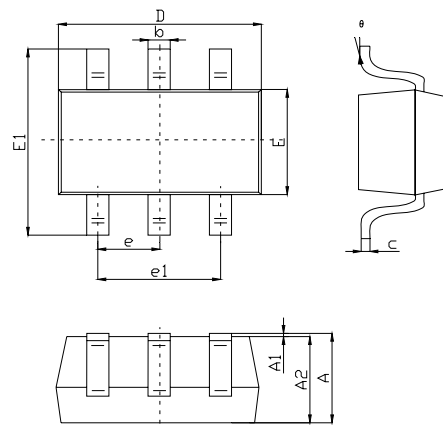
Monitors and flat panel displays
 Set-top box and Digital TV
 Video graphics cards
 Digital Video Interface (DVI)
 Notebook Computers
 PCI Express and Serial SATA Ports

Circuit Diagram



Circuit Diagram

SOT23-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100		0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
	0°	8°	0°	8°

Dimensions in millimeters

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

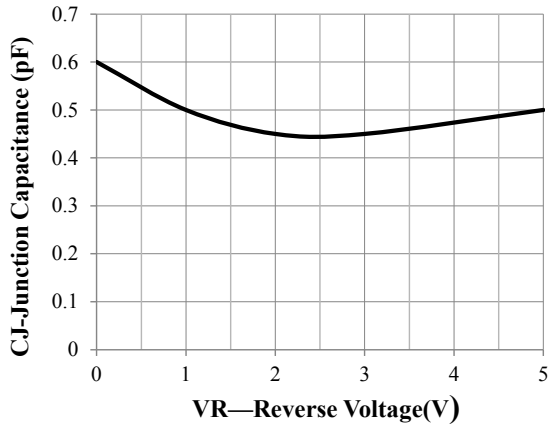
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs , I/O-GND)	Ppk	40	W
Peak Pulse Power (8/20 μs , Vcc-GND)	Ppk	100	W
Peak Pulse Current (8/20 μs , I/O-GND)	IPP	3	A
Peak Pulse Current (8/20 μs , Vcc-GND)	IPP	7	A
ESD per IEC 61000-4-2 (Air)	$V_{\text{ESD}, \text{VDD}}$	± 20	kV
ESD per IEC 61000-4-2 (Contact)	$V_{\text{ESD}, \text{I/O}}$	± 15	kV
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

AZC199-04S

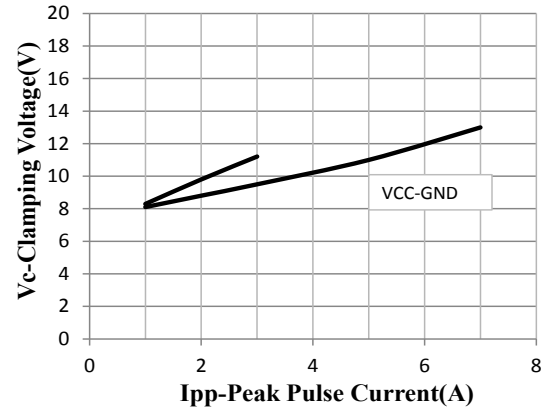
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	Pin 5 to GND, I/O-GND			5.0	V
Breakdown Voltage	V_{BR1}	$I_T = 1\text{mA}$ (Pin 5 to GND, I/O-GND)	6.0	7.5	8.5	V
Reverse Leakage Current	I_R	$V_{RWM} = 5.0\text{V}$ (Pin 5 to GND, I/O-GND)			0.5	μA
Breakdown Voltage	V_{BR2}	$I_T = 1\text{mA}$ (I/O to Pin 5)	6.0	7.5	8.5	V
Reverse Leakage Current	I_{R2}	$V_{RWM} = 5.0\text{V}$ (I/O to Pin 5)			0.5	μA
Forward Breakdown Voltage	V_F	$I_F = 15\text{mA}$, GND to Pin 5/IO		0.8	1.3	V
Clamping Voltage	V_C	$I_{PP} = 3\text{A}$ (8 x 20 μs pulse, I/O to GND)		11.5	13.0	V
Clamping Voltage	V_C	$I_{PP} = 7\text{A}$ (8 x 20 μs pulse, Pin 5 to GND)		13.0	16.0	V
Junction Capacitance	C_J	$V_{pin5} = 5\text{V}$, I/O=0V, $f = 1\text{MHz}$, I/O-GND		0.6	1.0	pF
Junction Capacitance	C_L	$V_{pin5} = 5\text{V}$, I/O=0V, $f = 1\text{MHz}$, I/O-I/O pins		0.3	0.5	pF

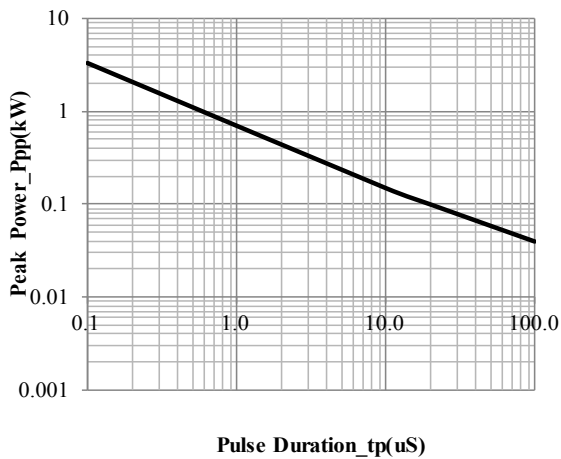
RATING AND CHARACTERISTIC CURVES (AZC199-04S)



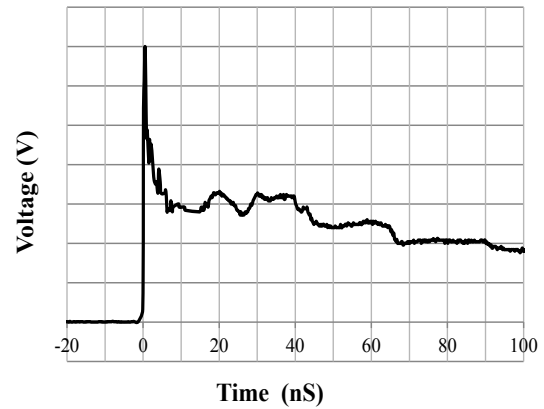
Junction Capacitance vs. Reverse Voltage



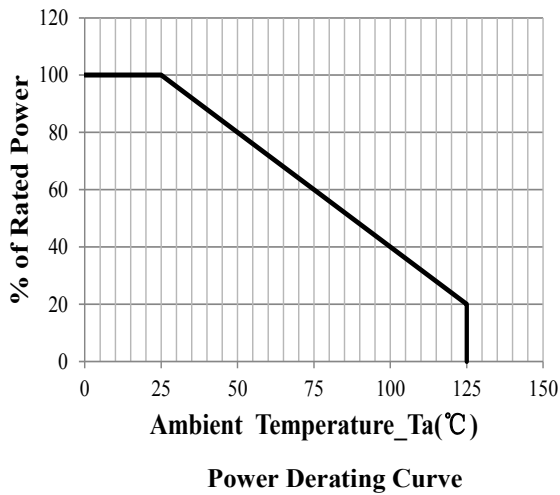
Clamping Voltage vs. Peak Pulse Current



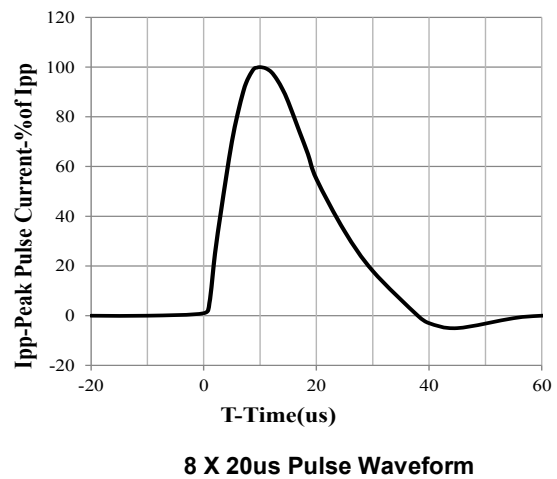
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



Power Derating Curve



8 X 20us Pulse Waveform