UMW 099-04AT1G

Low Capacitance 2-Line ESD Protection

1.Description

The 099-04AT1G is a 4-channel ultra low capacitance rail clamp ESD protection diodes array. Each channel consists of a pair of ESD diodes that steer positive or negative ESD current to either the positive or negative rail. A zener diode is integrated in to the array between the positive and negative supply rails.

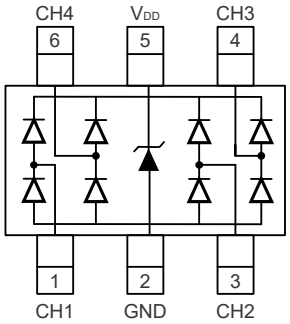
2.Applications

- HDMI / DVI ports
- Display Port interface
- VGA interface
- Flat panel Monitors / TVs; PC / Note book
- 10M / 100M / 1G Ethernet USB 2.0 interface

3.Features

- 4 channels of ESD protection
- Provides ESD protection to IEC61000-4-2 level 4
  - ±15kV air discharge
  - ±8kV contact discharge
- Channel I/O to GND capacitance: 0.9pF(Max)
- Channel I/O to I/O capacitance: 0.45pF(Max)
- Low clamping voltage
- Low operating voltage
- Improved zener structure
- Optimized package for easy high speed data lines PCB layout

4.Pinning information



SOT23-6

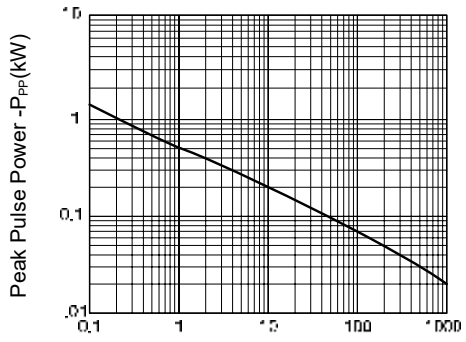
5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak Pulse Power(8/20μs)	P_{PP}	150	W
Peak Pulse Current(8/20μs)	I_{PP}	5	A
ESD per IEC 61000-4-2(Air)	V_{ESD1}	±15kV	kV
ESD per IEC 61000-4-2(Contact)	V_{ESD2}	±8kV	kV
Junction Temperature Range	T_{OPR}	-55 to 125	°C
Storage Temperature Range	$T_{J,}$ T_{STG}	-55 to 150	°C

6.Electrical Characteristic

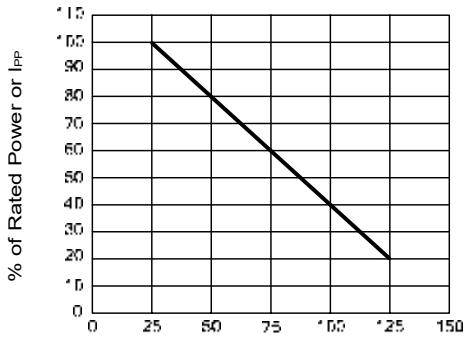
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse Working Voltage	V_{RWM}	Any I/O pin to GND			5	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA, Any I/O pin to GND	6			V
Reverse Leakage Current	I_R	V_{RWM}=5V, T=25°C Any I/O pin to GND			1	μA
Positive Clamping Voltage	V_{C1}	I_{PP}=1A, tp=8/20μs Positive pulse Any I/O pin to GND		8.5	12	V
Negative Clamping Voltage	V_{C2}	I_{PP}=1A, tp=8/20μs Negative pulse Any I/O pin to GND		1.8		V
Junction Capacitance Between Channel	C_{J1}	V_R=0V, f=1MHz Between I/O pins		0.35	0.45	pF
Junction Capacitance Between I/O And GND	C_{J2}	V_R=0V, f=1MHz Any I/O pin to GND			0.9	pF

7.1Typical characteristic



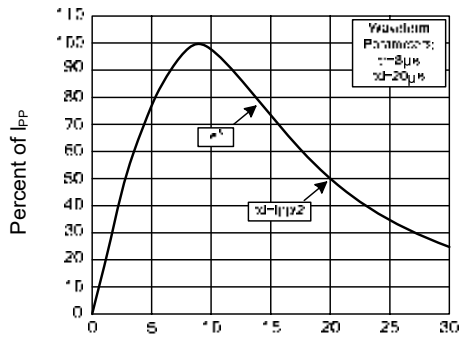
Pulse Duration - tp(μs)

Figure 1: Non-Repetitive Peak Pulse Powervs.Pulse Time



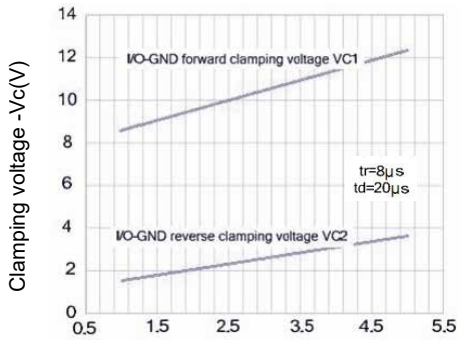
Ambient Temperature - T_A(°C)

Figure 2: Power Derating Curve



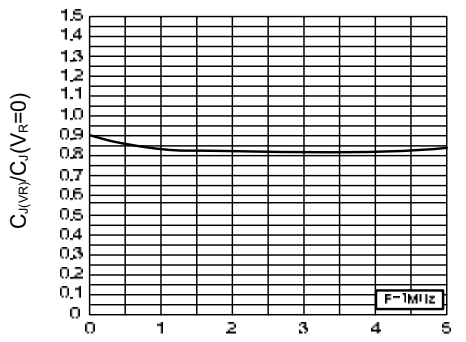
Time (μs)

Figure 3: Pulse Waveform



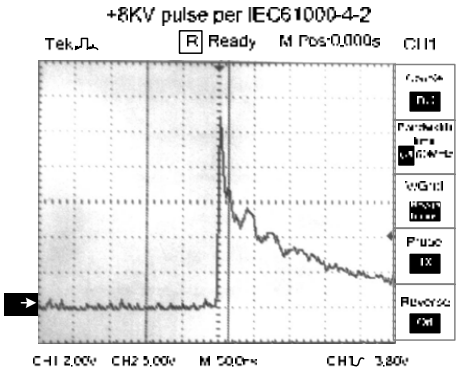
Peak pulse current-I_{PP}(A)

Figure 4: I/O-GND clamping voltage vs. peak pulsecurrent



Reverse Voltage - V_R(V)

Figure 5: Normalized Capacitancevs.Reverse Voltage



T_J,Junction Temperature (°C)

Figure 6: ESD Clamping for+8KV pulse per IEC61000-4-2

7.2Typical characteristic

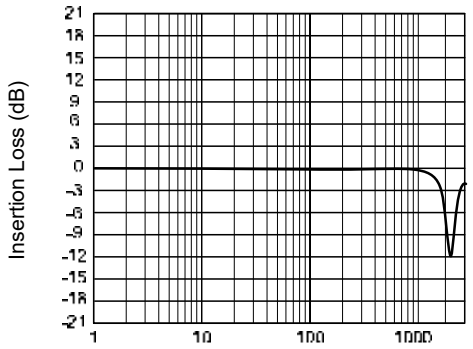


Figure 7: I/O-GND Insertion Loss vs. Frequency

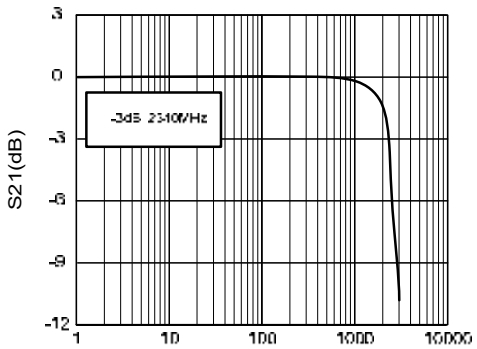
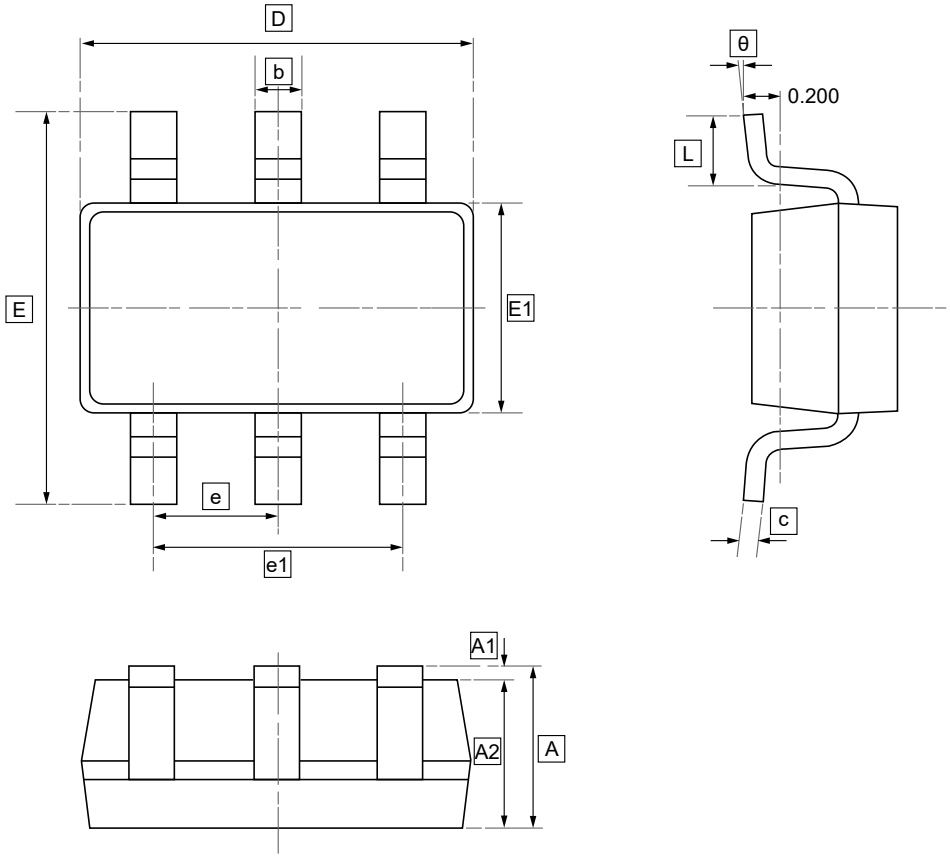


Figure 8: Insertion Loss vs. Frequency

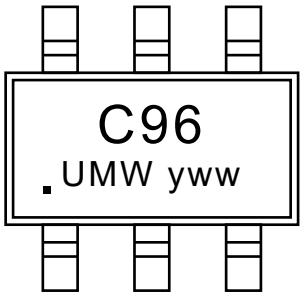
8.SOT23-6 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E1	E	e	e1	L	θ
Min	1.050	0.000	1.050	0.300	0.100	2.820	1.500	2.650	0.950	1.800	0.300	0°
Max	1.250	0.100	1.150	0.500	0.200	3.020	1.700	2.950	BSC	2.000	0.600	8°

9.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW 099-04AT1G	SOT23-6	3000	Tape and reel

10.Disclaimer

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