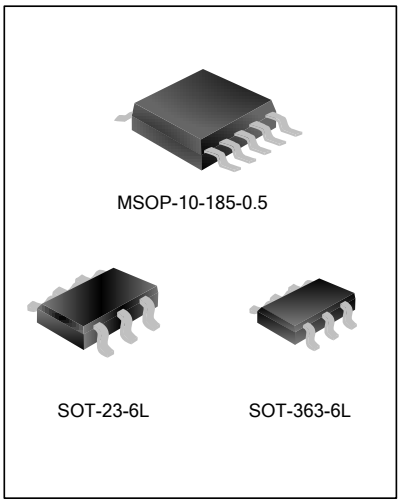
4-Channel Low Capacitance ESD Protection Diode Array

General Description

The GG0524 is a 4-channel ultra low capacitance rail clamp ESD protection diode 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 into the array between the positive and negative supply rails.

In a typical application, the negative rail pin (assigned as GND) is connected with system ground. The Positive ESD current is steered to the ground through an ESD diode and Zener diode and the positive ESD voltage is clamped to the Zener voltage.

The GG0524 is ideal to protect high speed data lines. Three package types are provided for easy PCB layout.



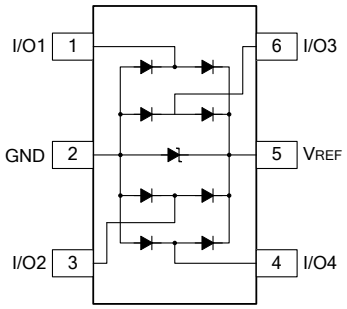
Features

- 4 channels of ESD protection
- Provides ESD protection to IEC61000-4-2 level 4
  - ±17kV air discharge
  - ±12kV contact discharge
- Channel I/O to GND capacitance: 0.9pF(Max)
- Channel I/O to I/O capacitance: 0.45pF(Max)
- Low clamping voltage
- 5V low operating voltage
- Improved zener structure
- Optimized package for easy high speed data lines PCB layout
- RoHS compliant.

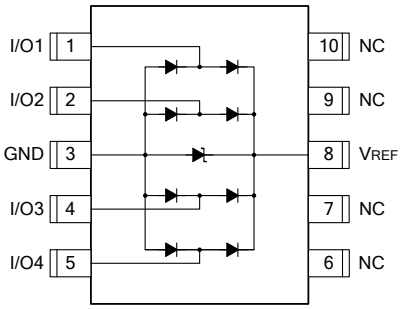
Applications

- HDMI / DVI ports
- Display Port interface
- 10M / 100M / 1G Ethernet
- USB 2.0 interface
- VGA interface
- Set-top box
- Flat panel Monitors / TVs
- PC / Notebook

Pin Configuration



SOT-23-6L/SOT-363-6L
(Top view)



MSOP-10-0.5
(Top view)

Absolute Maximum Ratings

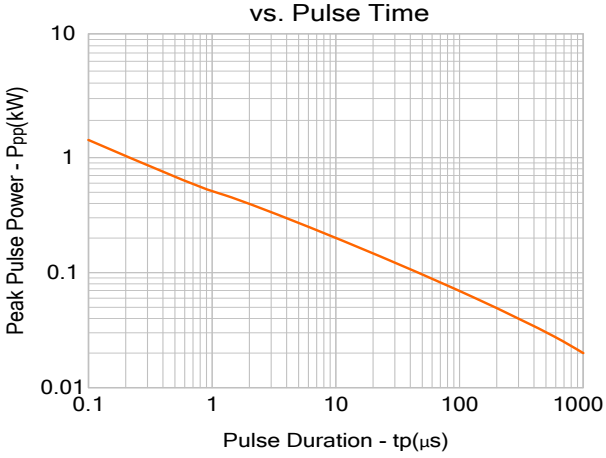
Characteristics	Symbol	Rating	Unit
Peak Pulse Power(8/20μs)	P_{PP}	150	W
Peak Pulse Current(8/20μs)	I_{PP}	5	A
ESD per IEC 61000-4-2(Air)	V_{ESD1}	±17	kV
ESD per IEC 61000-4-2(Contact)	V_{ESD2}	±12	kV
Operating Temperature Range	Topr	-55 ~ +125	°C
Storage Temperature Range	Tstg	-55 ~ +150	°C

Electrical Characteristics (Tamb=25°C)

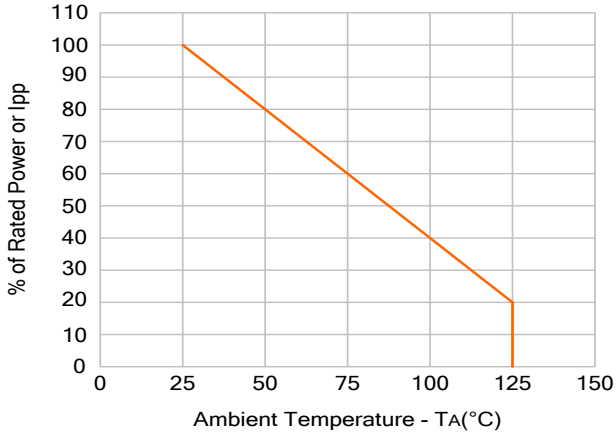
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Reverse Working Voltage	V_{RWM}	Any I/O pin to GND	--	--	5	V
Reverse Breakdown Voltage	V_{BR}	I_t=1mA; Any I/O pin to GND	6	--	--	V
Reverse Leakage Current	I_R	V_{RWM} =5V, T=25°C; Any I/O pin to GND	--	--	1	μA
Positive Clamping Voltage	V_{C1}	I_{PP}=1A, t_P=8/20Ms; Positive pulse; Any I/O pin to GND	--	8.5	12.0	V
Negative Clamping Voltage	V_{C2}	I_{PP}=1A, t_P=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

Typical Characteristics

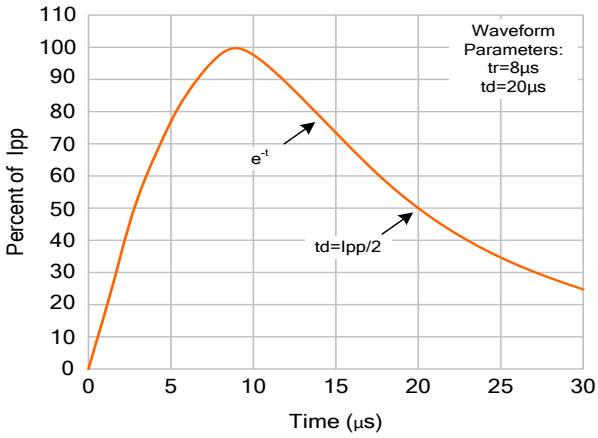
Non-Repetitive Peak Pulse Power vs. Pulse Time



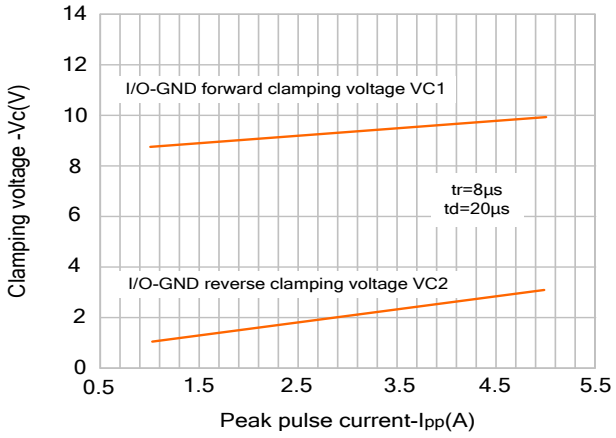
Power Derating Curve



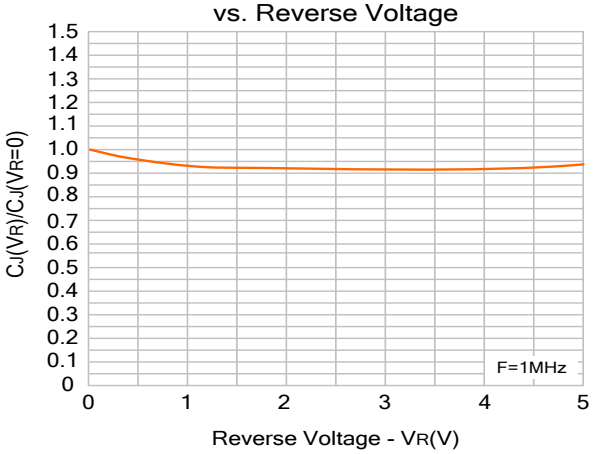
Pulse Waveform



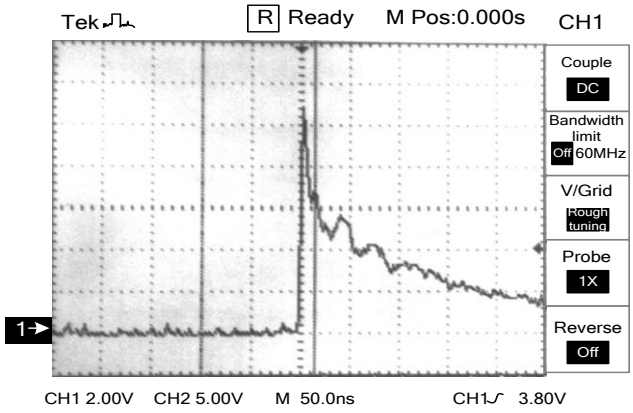
I/O–GND clamping voltage vs. peak pulse current



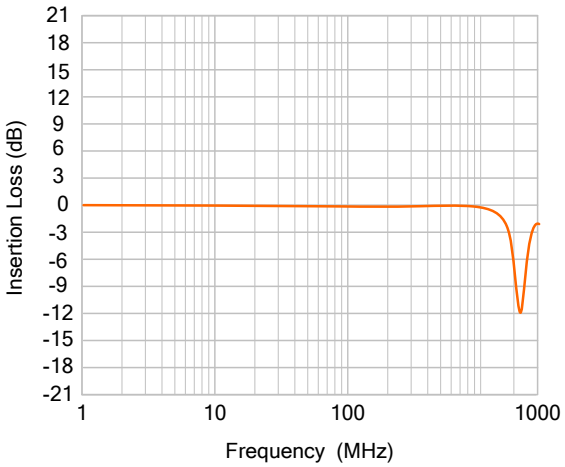
Normalized Capacitance vs. Reverse Voltage



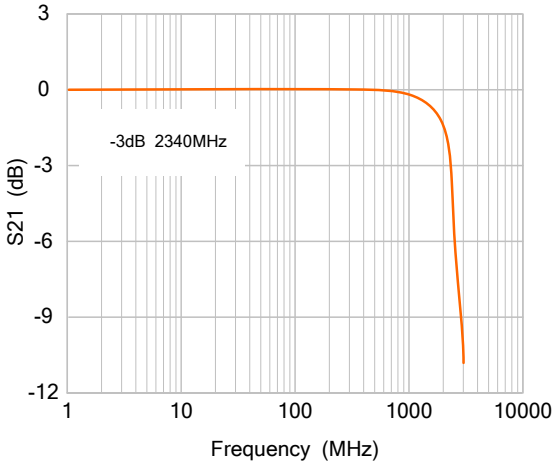
ESD Clamping for +8KV pulse per IEC61000-4-2



I/O - GND Insertion Loss vs. Frequency



Insertion Loss vs. Frequency

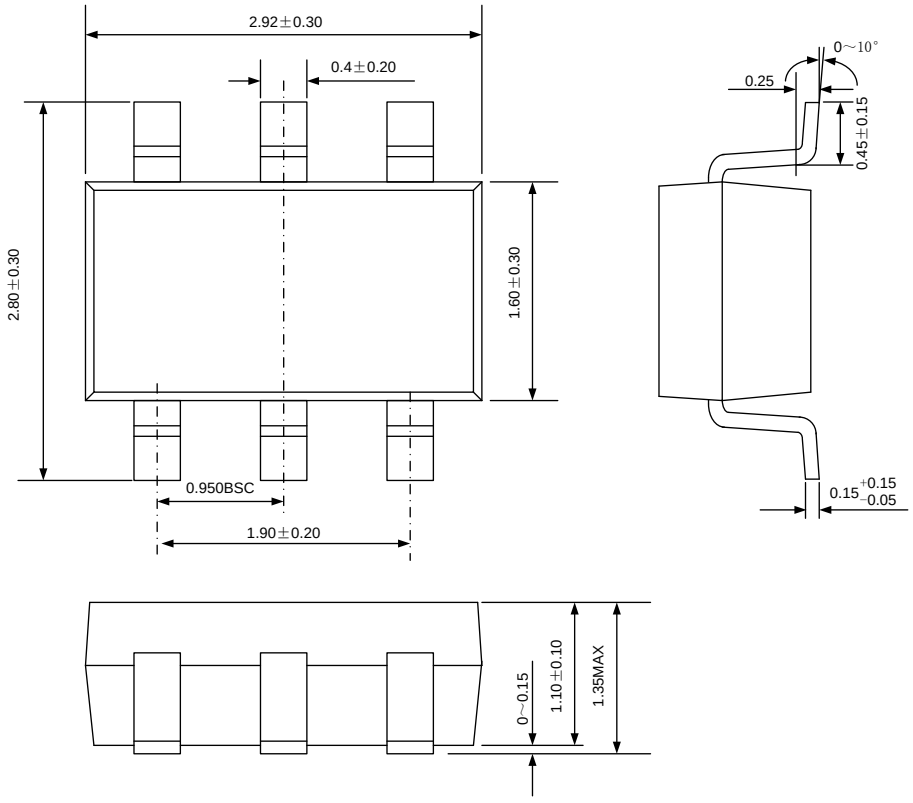


Ordering Information

Part No	Package	Marking	Material	Packing
GG0524A6GTR	SOT-23-6L	24A	Halogen free	Tape&Reel
GG0524B6GTR	SOT-363-6L	24B	Halogen free	Tape&Reel
GG0524LGTR	MSOP-10-185-0.5	0524LG	Halogen free	Tape&Reel

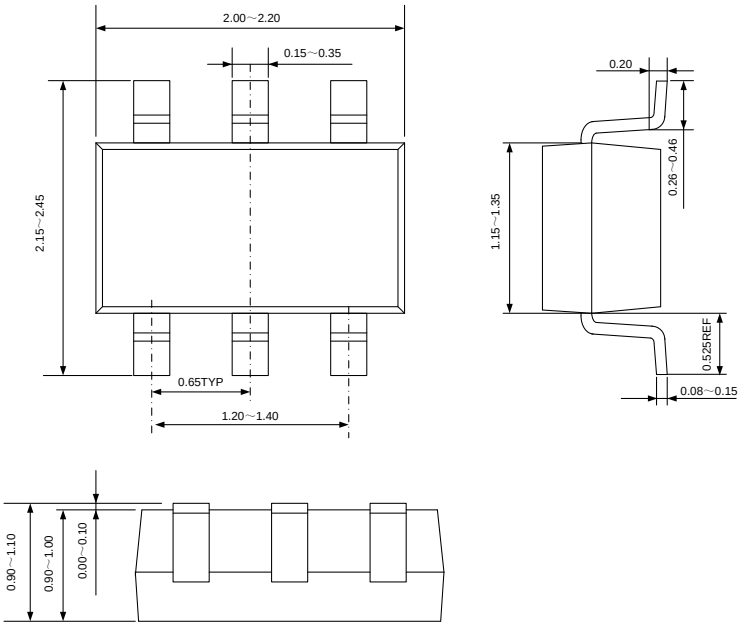
Package Outline

SOT-23-6L
UNIT: mm



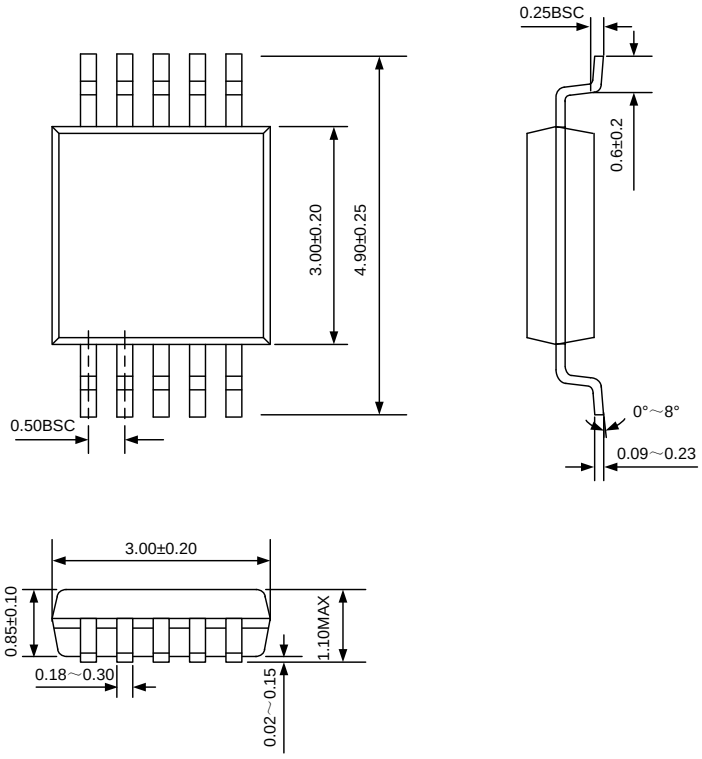
SOT-363-6L

UNIT: mm



MSOP-10-185-0.5

UNIT: mm



MOS Devices Operation Notes:

Electrostatic charges may exist in many things. Please take the following preventive measures to prevent effectively the MOS electric circuit as a result of the damage which is caused by discharge:

- The operator must put on wrist strap which should be earthed to against electrostatic.
- Equipment cases should be grounded.
- All tools used during assembly, including soldering tools and solder baths, must be grounded.
- MOS devices should be packed in antistatic/conductive containers for transportation.

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