

## 4-CHANNEL LOW CAPACITANCE ESD PROTECTION DIODES ARRAY

### ◆ DESCRIPTIONS

The CMTLST23C1R0DLE 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.

In the typical applications, 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 CMTLST23C1R0DLE is idea to protect high speed data lines. SOT-23-6L package type is provided for easy PCB layout.



### ◆ FEATURES

- 1、 4 channels of ESD protection;
- 2、 Provides ESD protection to IEC61000-4-2 level 4:
  - ±17kV (air discharge)
  - ±12kV (contact discharge) ;
- 3、 Channel I/O to GND capacitance: 0.9pF(Max);
- 4、 Channel I/O to I/O capacitance: 0.45pF(Max);
- 5、 Low clamping voltage;
- 6、 Improved zener structure;
- 7、 Optimized package for easy high speed data lines PCB layout;
- 8、 5V low operating voltage;
- 9、 RoHS compliant.

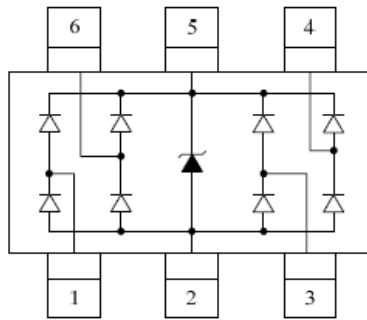
### ◆ APPLICATIONS

- 1、 HDMI/DVI ports;
- 2、 Display Port interface;
- 3、 10M / 100M / 1G Ethernet;
- 4、 USB 2.0 interface;
- 5、 VGA interface;
- 6、 Set-top box;
- 7、 Flat panel Monitors / TVs;
- 8、 PC / Note book.

### ◆ ORDERING INFORMATION

Part No.	Package	Material	Packing
CMTLST23C1R0DLE	SOT-23-6L	Lead free	Tape

◆ PIN CONFIGURATION



SOT-23-6L

◆ ABSOLUTE MAXIMUM RATINGS

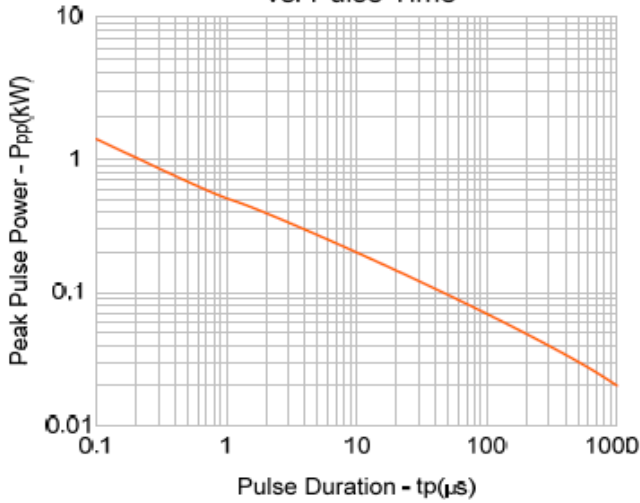
Characteristics	Symbol	Ratings	Unit
Peak Pulse Power (8/20 $\mu$ s)	P <sub>PP</sub>	150	W
Peak Pulse Current (8/20 $\mu$ s)	I <sub>PP</sub>	5	A
IEC61000-4-2 (air discharge)	V <sub>ESD1</sub>	$\pm$ 17kV	kV
IEC61000-4-2 (contact discharge)	V <sub>ESD2</sub>	$\pm$ 12kV	kV
Operating Temperature Range	T <sub>opr</sub>	-55 ~ +125	$^{\circ}$ C
Storage Temperature Range	T <sub>stg</sub>	-55 ~ +150	$^{\circ}$ C

◆ ELECTRICAL CHARACTERISTICS (T<sub>amb</sub>=25 $^{\circ}$ C)

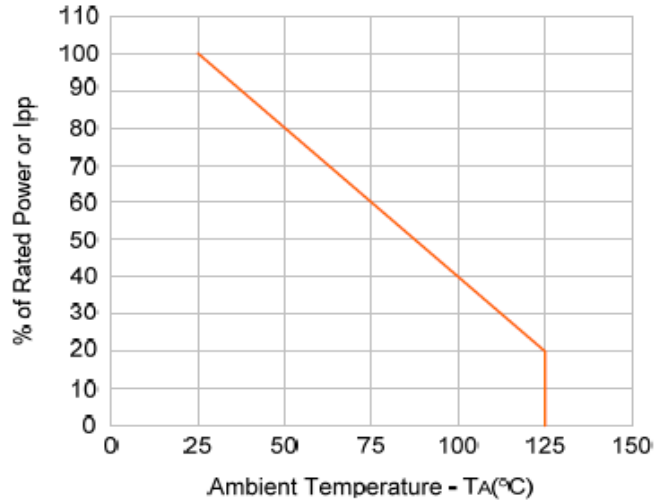
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Reverse Working Voltage	V <sub>RWM</sub>	Any I/O pin to GND			5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	Any I/O pin to GND I <sub>t</sub> =1mA	6			V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> =5V; T=25 $^{\circ}$ C Any I/O pin to GND			1	$\mu$ A
Positive Clamping Voltage	V <sub>C1</sub>	I <sub>pp</sub> =1A, t <sub>p</sub> =8/20 $\mu$ s; Positive pulse; Any I/O pin to GND		8.5	12.0	V
Negative Clamping Voltage	V <sub>C2</sub>	I <sub>pp</sub> =1A, t <sub>p</sub> =8/20 $\mu$ s; Positive pulse; Any I/O pin to GND		1.8		V
Junction Capacitance Between Channel	C <sub>J1</sub>	V <sub>R</sub> =0V, f=1MHz; Between I/O pins		0.35	0.45	pF
Junction Capacitance Between I/O And GND	C <sub>J2</sub>	V <sub>R</sub> =0V, f=1MHz; Any I/O pin to GND			0.9	pF

## ◆ TYPICAL ELECTRICAL CHARACTERISTICS CURVE

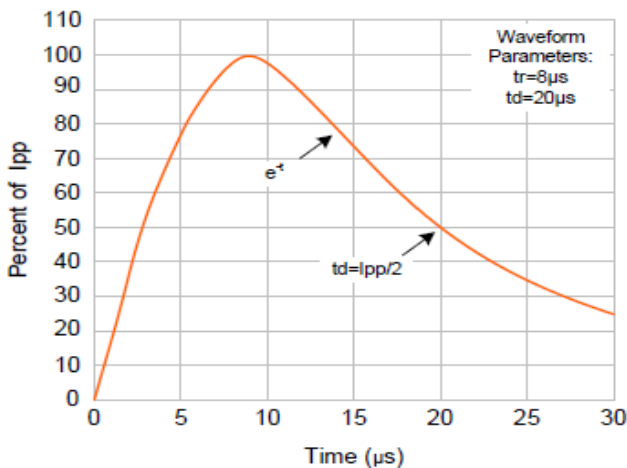
Non-Repetitive Peak Pulse Power vs. Pulse Time



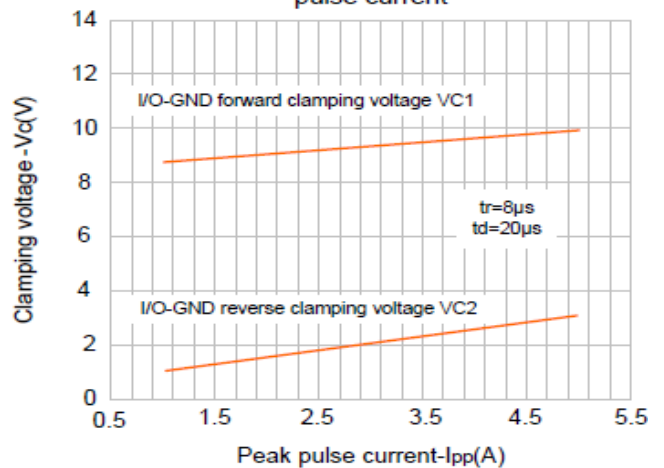
Power Derating Curve



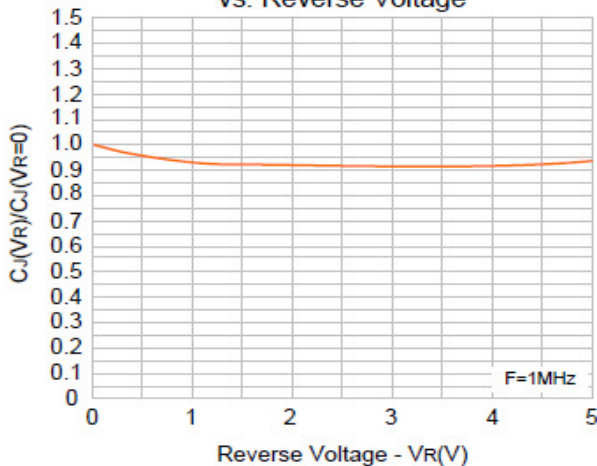
Pulse Waveform



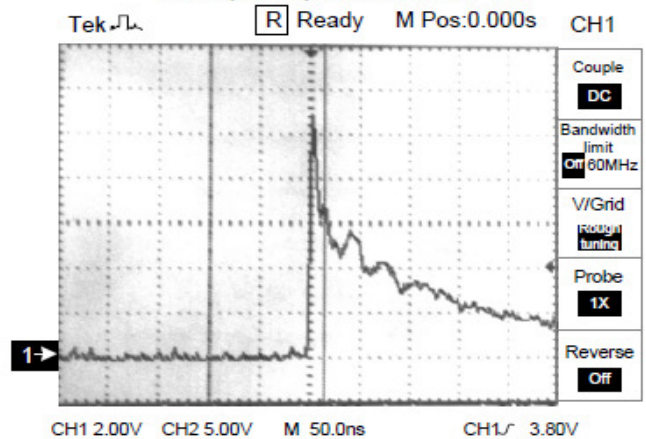
I/O—GND clamping voltage vs. peak pulse current



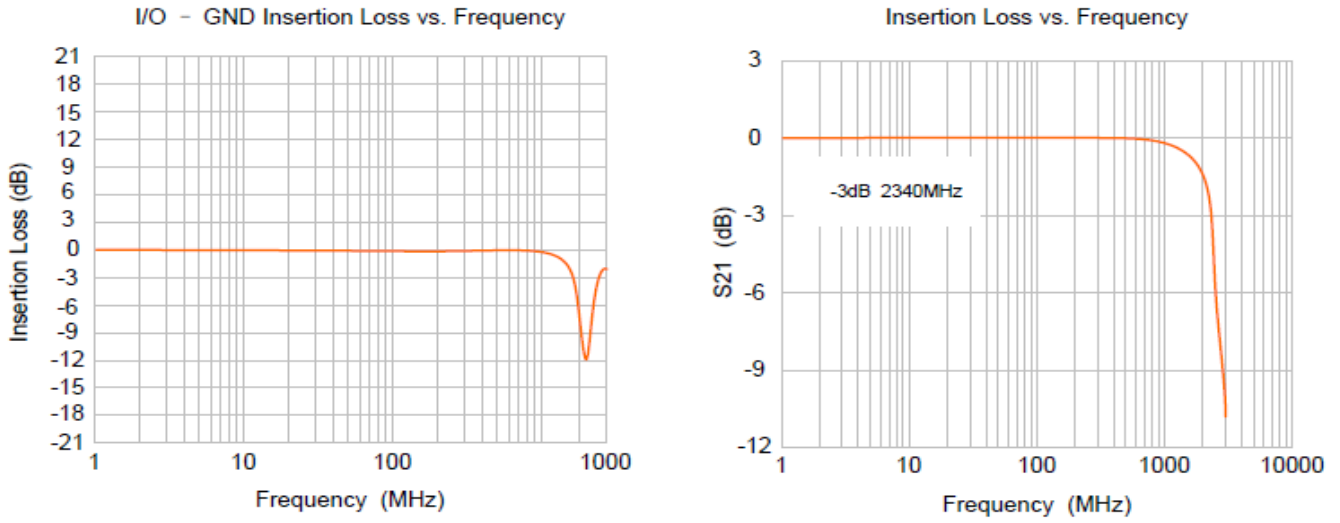
Normalized Capacitance vs. Reverse Voltage



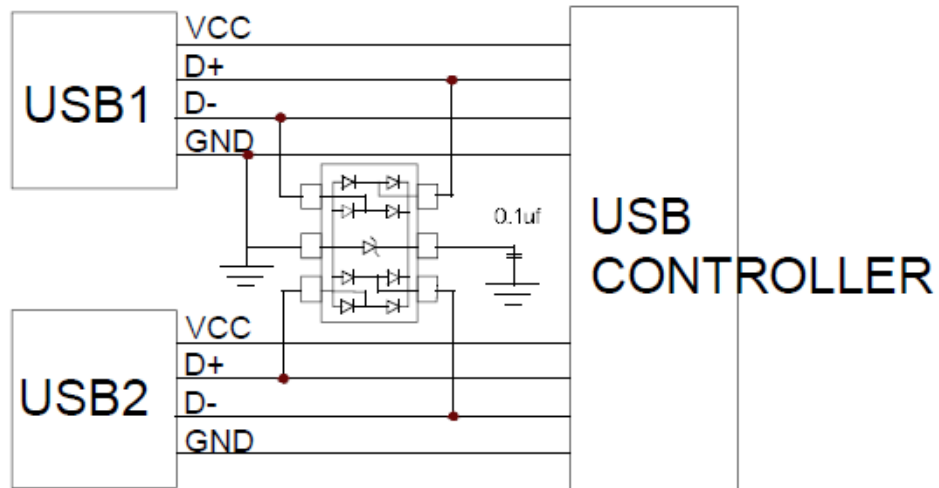
ESD Clamping for +8KV pulse per IEC61000-4-2



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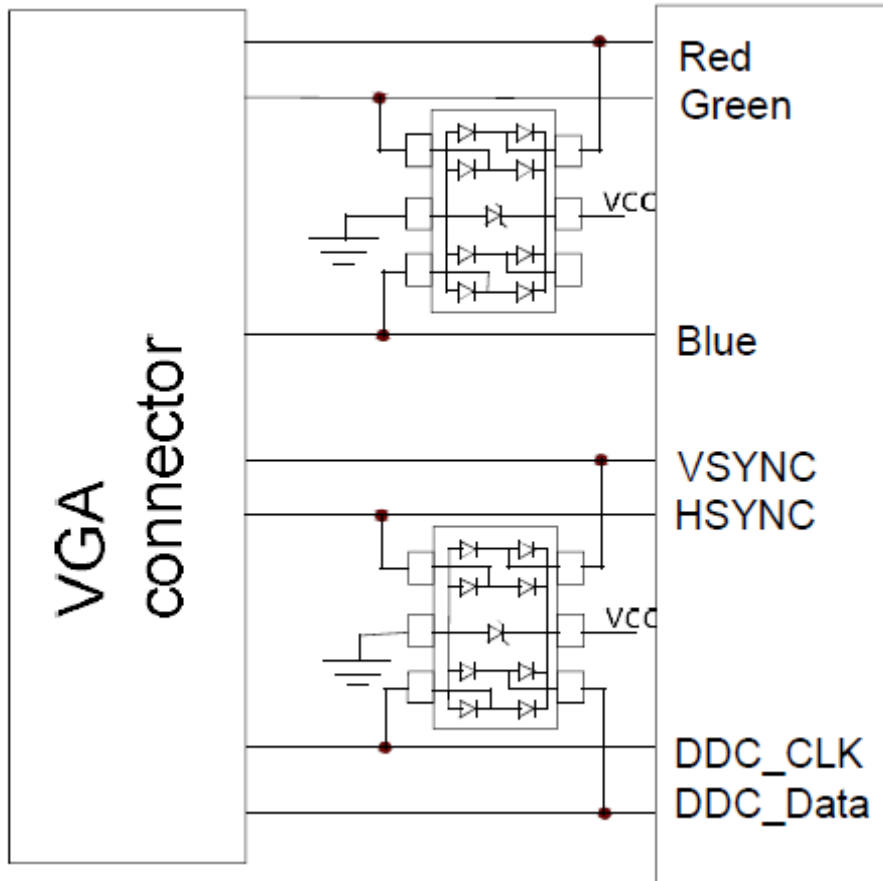


## ◆ TYPICAL APPLICATIONS



ESD protection for USB port

◆ TYPICAL APPLICATIONS



ESD protection for VGA port

### ◆ PACKAGE OUTLINE

#### SOT-23-6L

