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CMTLS523CR50BFE

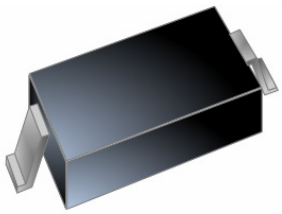
Low-Capacitance Bidirectional Micro Packaged

◆ DESCRIPTIONS

The CMTLS523CR50BFE is a single-channel ultra low capacitance rail clamp ESD protection diodes array including a pair of ESD diodes that steer positive or negative ESD current to respectively positive or negative rail. The maximum capacitance of channel to ground is 0.9pF. A zener diode is integrated in thearray between the positive and negative supply rails. In the typical applications, the negative rail pin is connected with the ground of the circuit protected. Thus, the positive ESD current is steered to the ground through the internal zener diode to protect the power supply of the circuit protected.

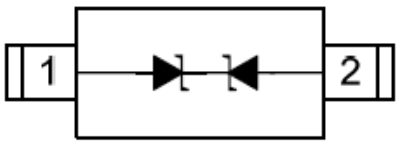
CMTLS523CR50BFE is ideal to protect high speed data lines.

◆ Circuit Diagram



SOD-523

◆ Pin Configuration



◆ FEATURES

1、Small Body Outline Dimensions:
0.063″ x 0.032″ (1.6x0.8 mm)
2、Low Body Height: 0.024″ (0.6 mm) nom
3、Bidirectional ESD protection of one I/O line
4、Ultra low capacitance: typically 0.5pF
5、Low clamping voltage
6、Working voltage: 5V
7、Low leakage current
8、Solid-state silicon-avalanche technology

◆ Main applications

1、High Speed Line :USB1.0/2.0, VGA, DVI, SDI,
2、Serial and Parallel Ports
3、Notebooks, Desktops, Servers
4、Projection TV
5、Cellular handsets and accessories
6、Portable instrumentation
7、Peripherals

◆ Protection solution to meet

1、IEC61000-4-2 (ESD)
±15kV (air),
±8kV (contact)
2、IEC61000-4-4 (EFT) 40A (5/50ns)

◆ ORDERING INFORMATION

Part No.	Package	Material	Qty per Reel	Packing
CMTLS523CR50BFE	SOD-523	Halogen free	5000	Tape

◆ ABSOLUTE MAXIMUM RATINGS

Characteristics	Symbol	Rating	Unit
Peak Pulse Power (tp=8/20μs waveform)	I_{PPP}	50	W
Operating Supply Voltage	V_{DC}	6	V
ESD Per IEC61000-4-2 （air discharge）	V_{ESD1}	±15kV	kV
ESD Per IEC61000-4-2（contact discharge）	V_{ESD2}	±8kV	kV
Lead Soldering Temperature	T_{SOL}	260(10sec.)	°C
Operating Temperature	T_{OP}	-55 ~ +125	°C
Storage Temperature	T_{STO}	-55 ~ +150	°C

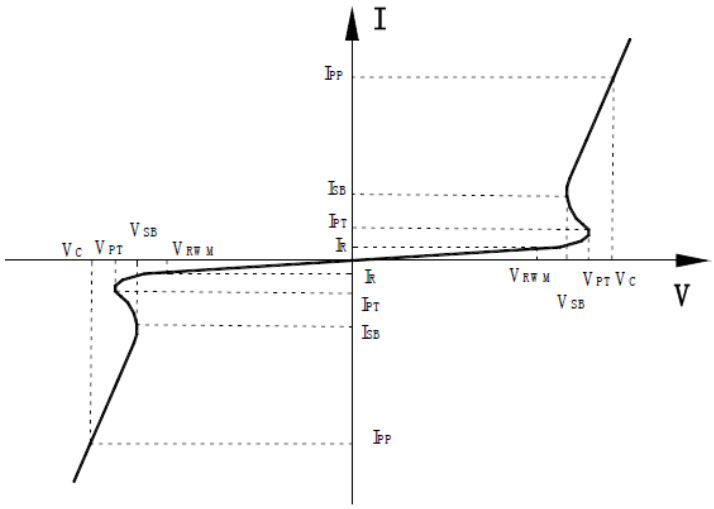
◆ ELECTRICAL CHARACTERISTICS（Tamb=25°C）

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Unit.
Reverse Stand-Off Voltage	V_{RWM}	T=25°C			5.0	V
Reverse Leakage Current	I_{Leak}	V_{RWM}=5V,T=25°C			1.0	μA
Reverse Breakdown Voltage	V_{BV}	I_{BV}=1mA,T=25°C	6.0			V
Junction Capacitance	C_j	V_P=0V, f=1MHz, T=25°C		0.5	0.9	pF

Note1: ESD Pulse Waveform according to IEC 61000-4-2. see Table1 and Figure4.

Note2: ESD tests Setup see Figure 5.

Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
V_{PT}	Punch-Through Voltage@ IPT
V_{SB}	Snap-Back Voltage@ ISB
V_C	Clamping Voltage @ IPP
I_T	Test Current
I_{RM}	Leakage current at VRWM
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



◆ TYPICAL ELECTRICAL CHARACTERISTICS CURVE

Figure 1: Power Derating Curve

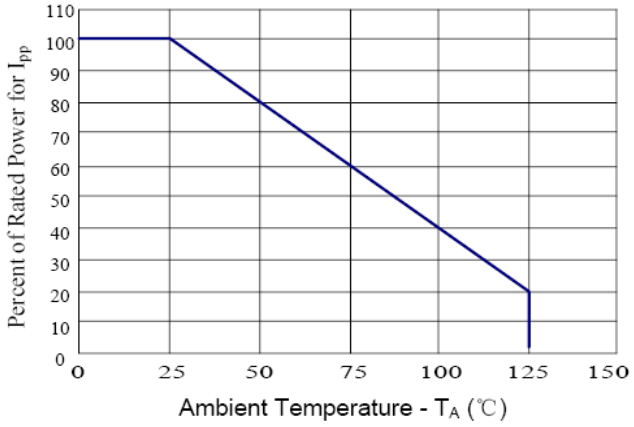


Figure 2: Insertion Loss

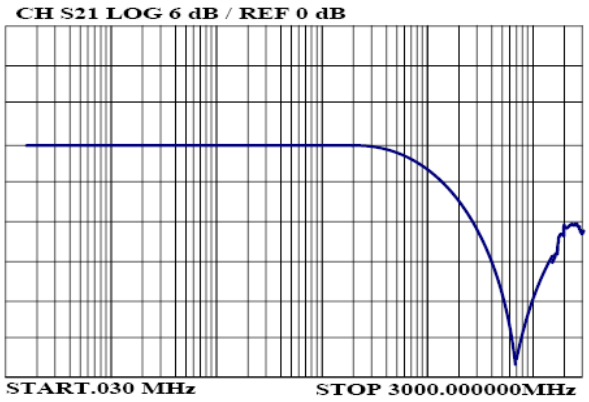


Figure 3: Normalized Junction Capacitance vs. Reverse Voltage

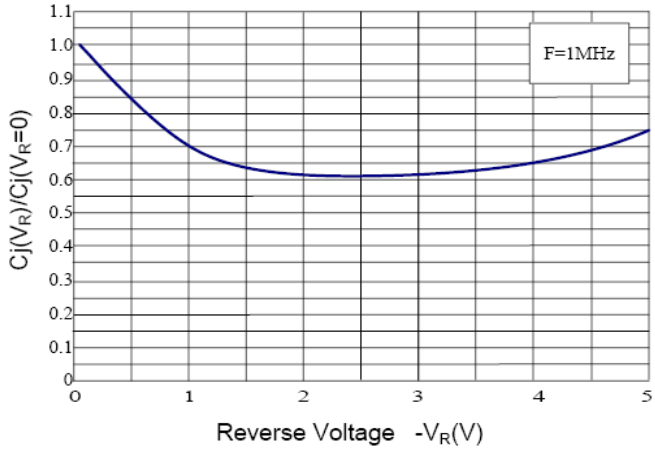


Table 1. IEC 61000-4-2 Discharge Parameters

Level	First Peak Current (A)	Peak Current at 30 ns (A)	Peak Current at 60 ns (A)	Test Voltage (Contact Discharge) (kV)	Test Voltage (Air Discharge) (kV)
1	7.5	4	2	2	2
2	15	8	4	4	4
3	22.5	12	6	6	8
4	30	16	8	8	15

Figure 4. IEC 61000-4-2 Waveform

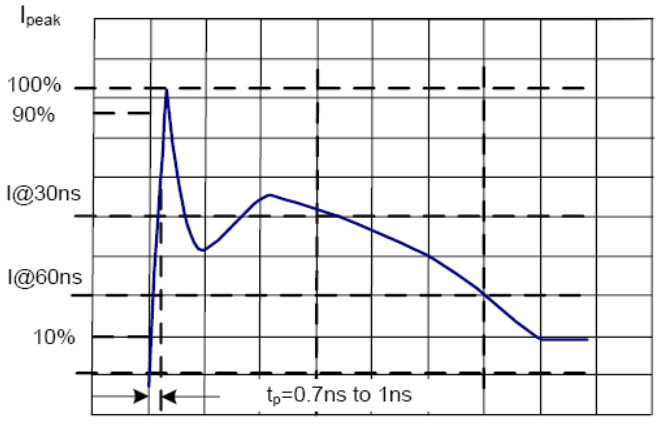
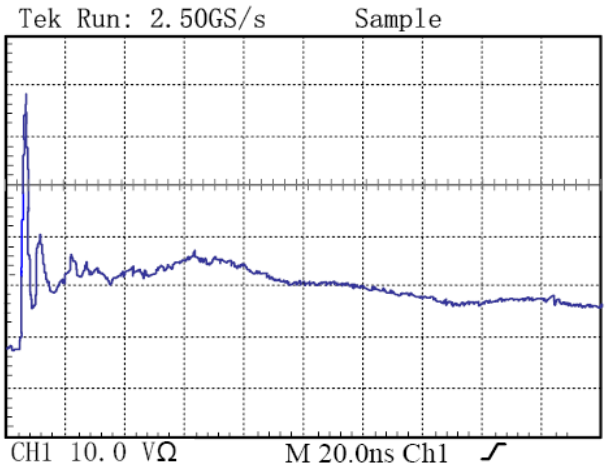
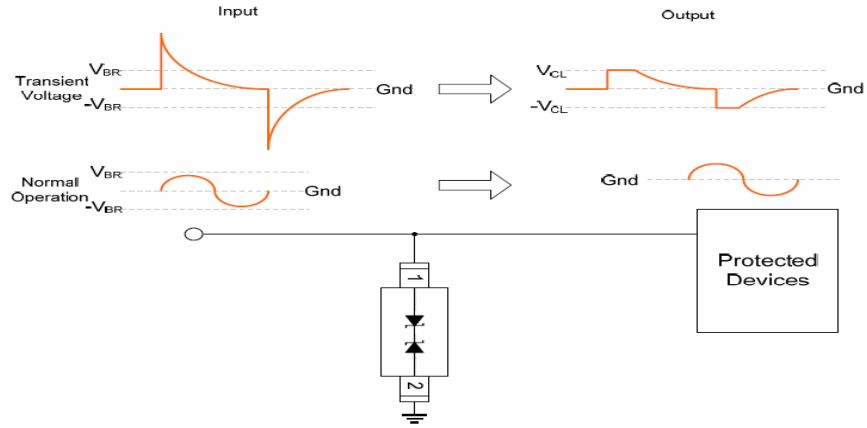


Figure 5: ESD Clamping(8kV Contact per IEC 61000-4-2)

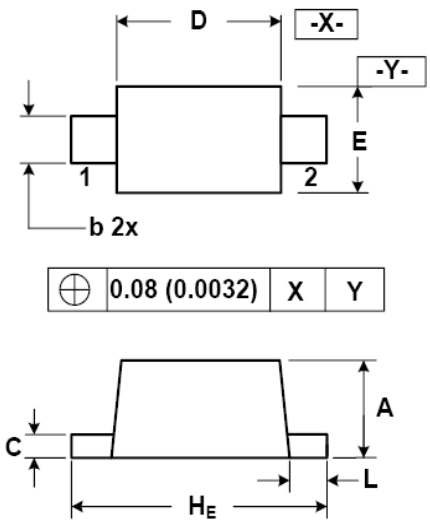


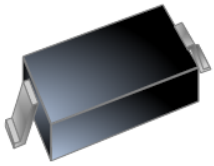
◆ TYPICAL APPLICATIONS



◆ PACKAGE OUTLINE

PACKAGE OUTLINE

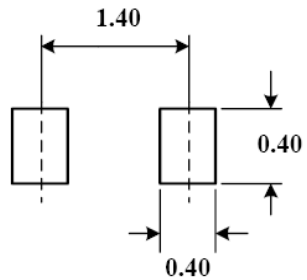




SOD-523

DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.50	0.70	0.020	0.028
b	0.25	0.35	0.010	0.014
C	0.07	0.20	0.0028	0.0079
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
H_E	1.50	1.70	0.059	0.067
L	0.15	0.25	0.006	0.010



DIMENSIONS: MILLIMETERS

Notes

1. Controlling Dimensions in Millimeters.
2. Dimensions are exclusive of mold flash and metal burrs.