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CMTLST23CR40BFE

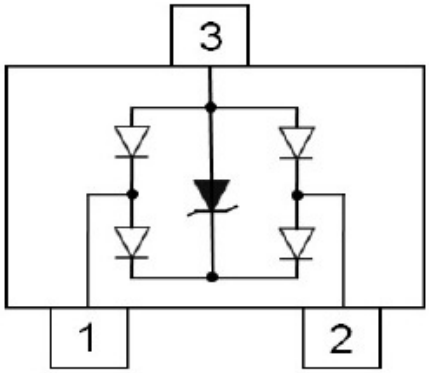
Ultra Low Capacitance TVS/ESD Protection Diode

◆ DESCRIPTIONS

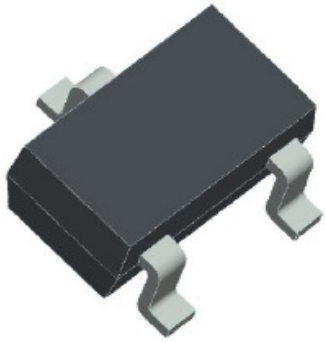
CMTLST23CR40BFE is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.2pF (I/O to I/O) only, CMTLST23CR40BFE is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 (±15kV air, ±8kV contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

CMTLST23CR40BFE uses small SOT-23 package. Each CMTLST23CR40BFE device can protect two high-speed data lines. The combined features of low capacitance, small size and high ESD robustness make CMTLST23CR40BFE ideal for high-speed data port and high-frequency line applications. The low clamping voltage of the CMTLST23CR40BFE guarantees a minimum stress on the protected IC.

◆ Circuit Diagram



◆ Pin Configuration



◆ FEATURES

1、Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) ±15kV (Air)
±8kV (Contact)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
Cable Discharge Event (CDE)
2、Small package (2.9mm 2.4mm 1.0mm)
3、Protects two data lines
4、Low capacitance: 0.2pF Typical (I/O-I/O)
5、Low leakage current
6、Low clamping voltage

◆ Applications

1、Serial ATA
2、Desktops, Servers and Notebooks
3、PCI Express
4、MDDI Ports
5、USB Data Line Protection
6、Display Ports
7、Digital Visual Interfaces (DVI)

◆ Mechanical Characteristics

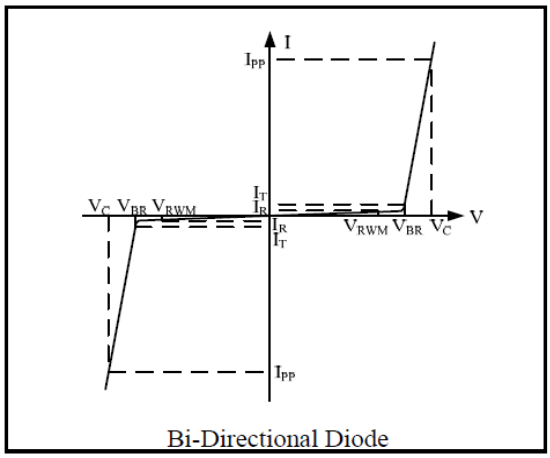
1、SOT-23 package
2、Flammability Rating: UL 94V-0
3、Packaging: Tape and Reel
4、High temperature soldering guaranted:260/10s
5、Reel size: 7 inch

◆ Absolute Maximum Rating

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	60	W
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±20 ±20	kV
T_{OPT}	Operating Temperature	-55/+125	℃
T_{STG}	Storage Temperature	-55/+150	℃

◆ Electrical Characteristics (T = 25℃)

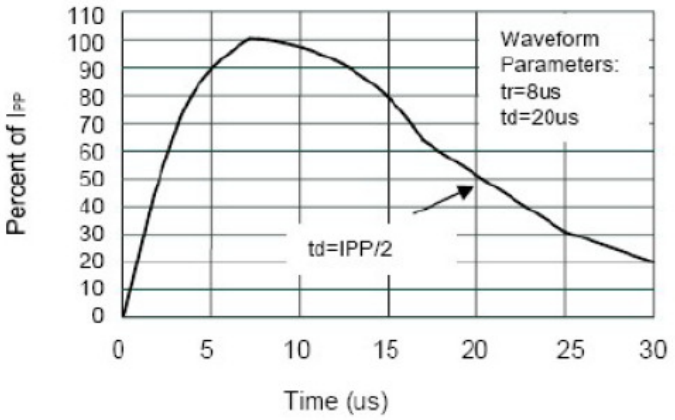
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency



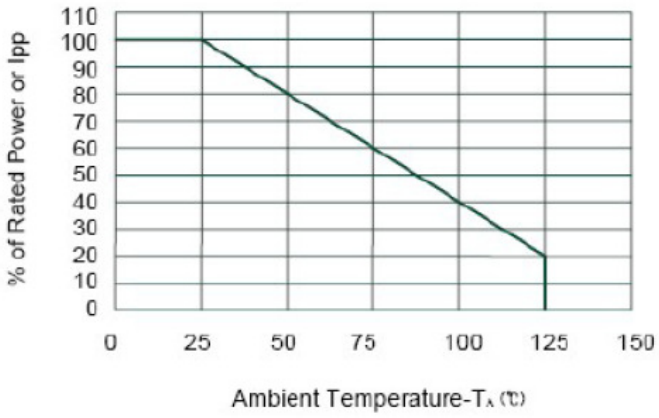
Bi-Directional Diode

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}		-	-	5.0	V
I_R	V_{RWM} = 5V, T = 25℃ Between I/O and I/O	-	-	100	nA
V_{BR}	I_T = 1mA Between I/O and I/O	6.0	-	-	V
V_C	I_{PP} = 1A, tp = 8/20μs Between I/O and I/O	-	-	15	V
C_T	V_R = 0V, f = 1MHz Between I/O and Gnd	-	0.4	-	pF
	V_R = 0V, f = 1MHz Between I/O and I/O	-	0.2	-	pF

◆ TYPICAL ELECTRICAL CHARACTERISTICS CURVE

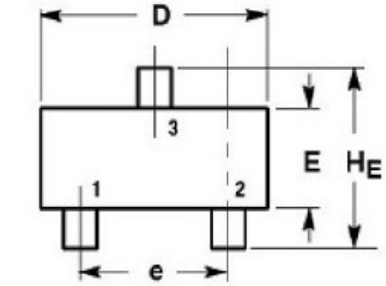


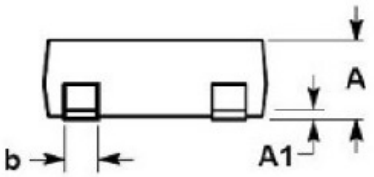
Pulse Waveform

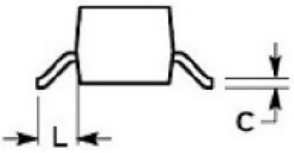


Power Derating Curve

◆ PACKAGE OUTLINE







DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.40	2.64	0.083	0.094	0.104