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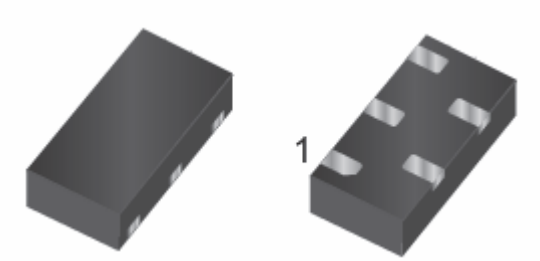
CMTL2010CR15DSE

Ultra Low Capacitance ESD TVS Array

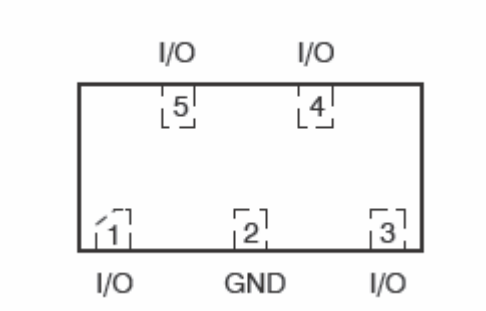
◆ FEATURES

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、Protects up to 4-Lines operating at 5V
3、DFN2010 package
4、R2R + Zener technology
5、Low clamping voltage
6、Low leakage current
7、Fast response time (<1ns)
8、Ultra low capacitance(0.15pF typ. I/O to I/O)
9、RoHS compliant

◆DFN2010



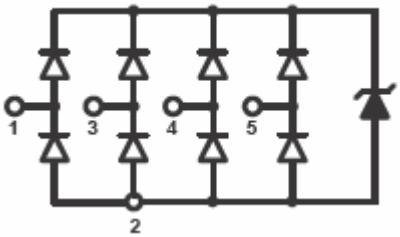
◆Circuit Diagram



◆ Applications

1、USB 3.0/3.1
2、HDMI 1.4/2.0,Display Port 1.3,eSATA
3、Unified Display Interface(UDI)
4、Digital Visual Interface
5、High speed serial interfaces

◆Pin Configuration



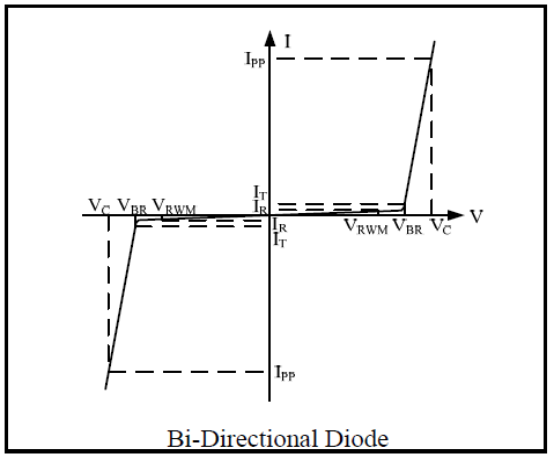
◆ Absolute Maximum Rating

(T_A=25℃,Unless otherwise specified.)

Symbol	Parameter	Value	Units
T_J	Junction Teperature	-55 To +125	℃
T_{STG}	Storage Temperature	-55 To +150	℃
T_L	Lead Soldering Temperature	260(10sec.)	℃
I_{PP}	Peak Puise Current(tp=8/20μS)	3	A
P_{PP}	Peak Pulse Power (tP = 8/20μS)	30	W
V_{ESD}	IEC 61000-4-2 Contact(ESD)	±8	KV
V_{ESD}	IEC 61000-4-2 Air(ESD)	±15	KV

◆ 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	-	0.01	1	μA
V_{BR}	I_T = 1mA Between I/O and I/O	6.0	7.2	9.5	V
V_C	I_{PP} = 3A, tp = 8/20μs Between I/O and I/O	-	10	-	V
VT	VESD=8KV		135	-	V
V_C	VESD=8KV	-	20	-	V
C_J	V_R = 0V, f = 1MHz Between I/O and I/O	-	0.15	-	pF
	V_R = 0V, f = 1MHz Between I/O and GND	-	0.35	-	pF

◆ TYPICAL ELECTRICAL CHARACTERISTICS CURVE

Fig.1 Pulse Waveform-ESD(IEC61000-4-2)

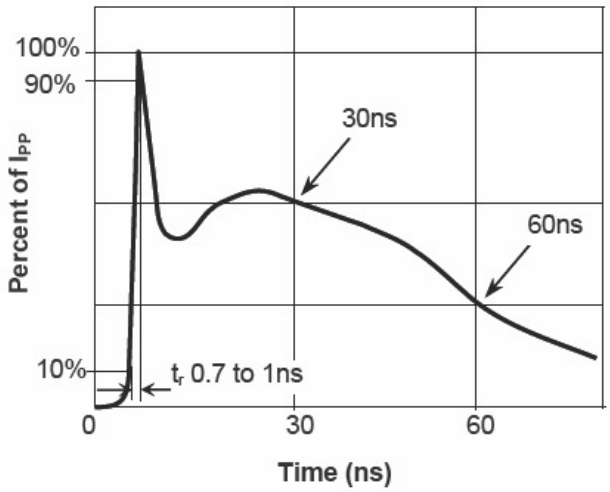


Fig.3 IEC61000-4-2 +8kV Contact ESD Clamping Waveform

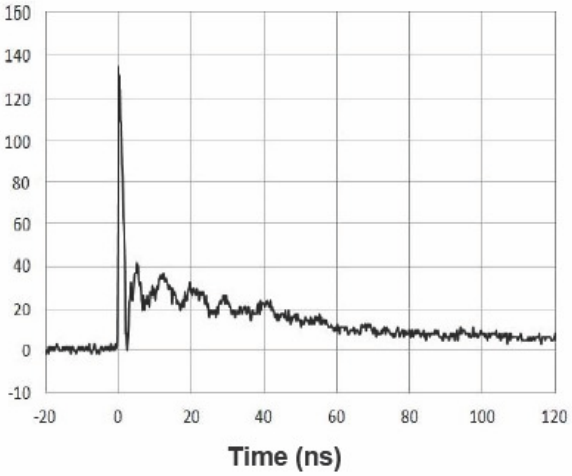


Fig.5 Eye Diagram - USB3.1 at 10Gbps per channel (with SESUC5VD2010-5U)

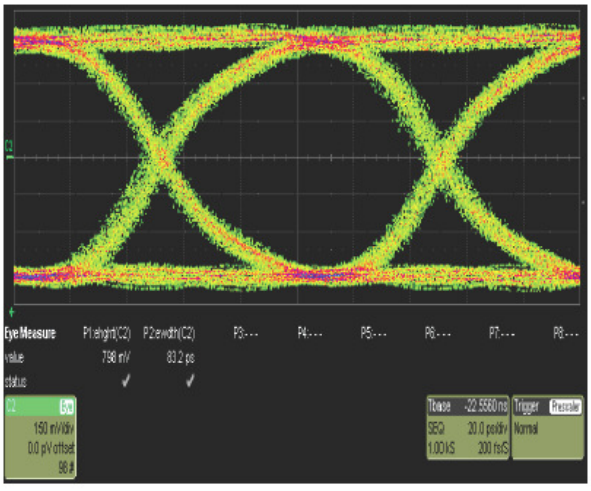
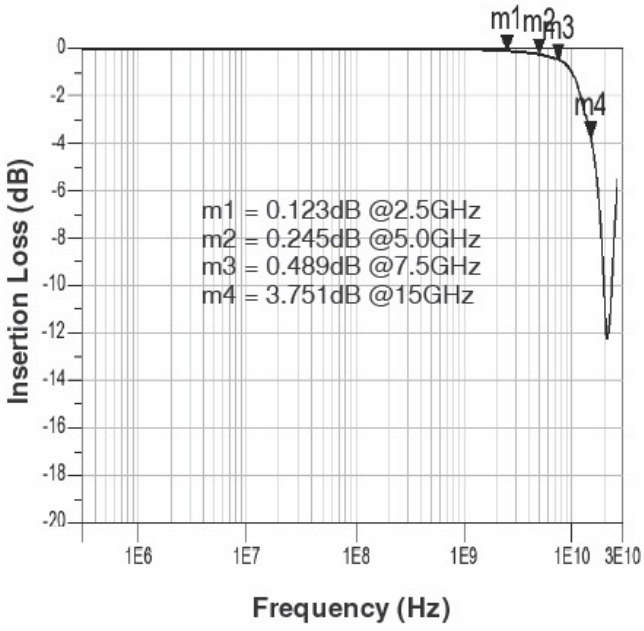


Fig.6 Insertion Loss S21 - I/O to I/O



◆ Reliability Test Summary

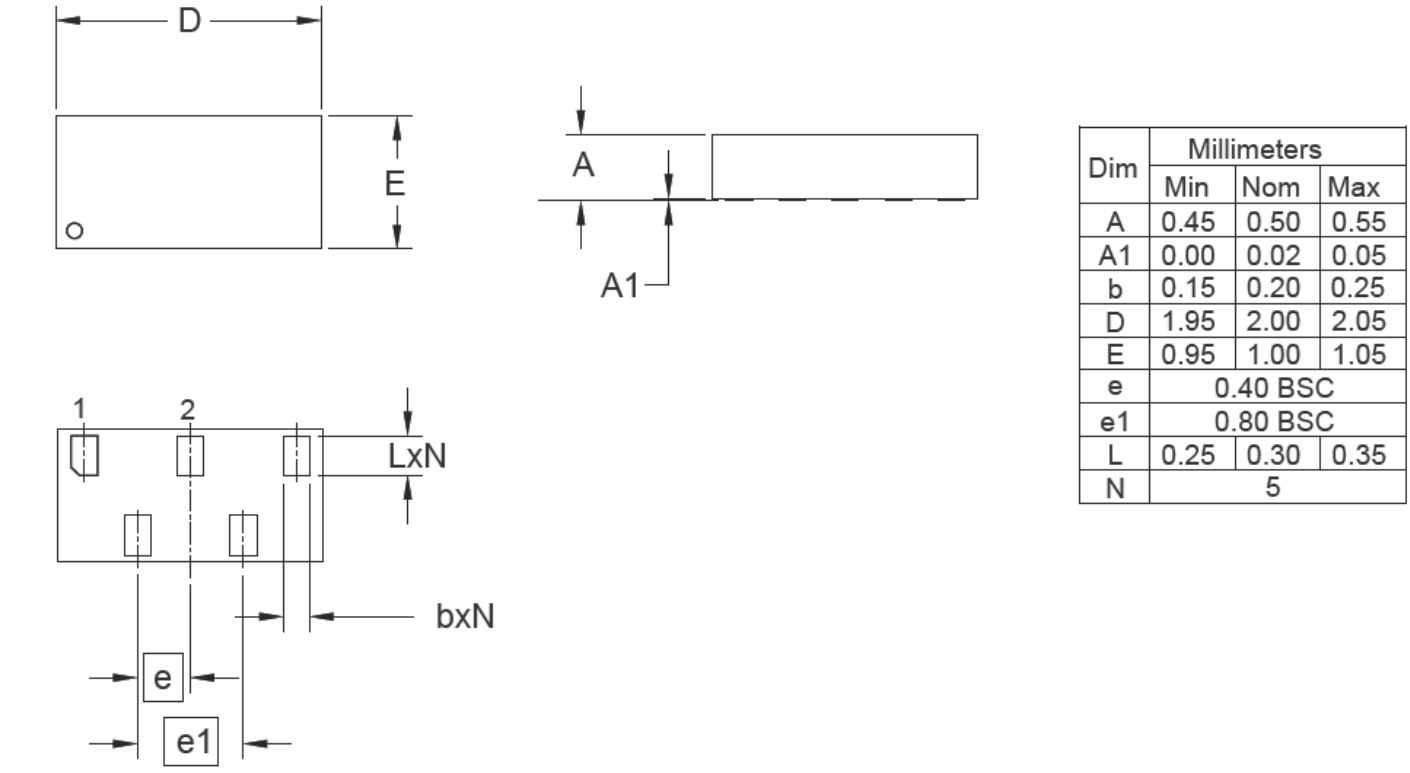
Order	Test Item	Abrv	Equipment	Condition		Duration	Reference	Testing Equ.	Fail Q'ty / S.S.	Pass/Rej
1	High Temperature Reverse Bias Test	HTRB	SY001	Vol.(V)	Temp.(℃)	1000H	JESD22A-108	TVR6000	0 / 22	PASS
				4	125					
2	Pressure Cooker Test	PCT	SY014	Ta= 121℃, 100%R.H.,15psig		96H	JESD22A-102	TVR6000	0 / 22	PASS
3	Temperature Cycling Test	TC	SY011	-55°C / +150°C / 30min.		100Cycles	JESD22A-104	TVR6000	0 / 22	PASS
4	Solderability Test	S	Solder 1	245℃/5S S≥95%		Post-	J-STD-002	TVR6000	0 / 22	PASS
5	Resistance to Soldering heat Test	RSH	Solder 2	260℃/10S		Post-	JESD22B-106	TVR6000	0 / 22	PASS
6	Damp heat, Steady-state Test	DS	SY020	Ta=85℃,RH=85%		1000H	MIL-STD-750-1021.3	TVR6000	0 / 22	PASS
7	High Temperature Storage Life Test	HT	HX044	Ta=+150℃		1000H	MIL-STD-750-1035	TVR6000	0 / 22	PASS
8	Low Temperature Storage Life Test	LT	SY022	Ta=-55℃		1000H	MIL-STD-750-1035	TVR6000	0 / 22	PASS
9	Dropping Test	D	Dropping Equip	On the wooden board from 75cm,3cycles		Post-	SOP-Q005	TVR6000	0 / 22	PASS
10	Thermal Shock	TS	Furnace	TL=0℃; TH=100℃; t1=5mins; t2=5mins;		10Cycles	MIL-STD-750-1056.7	TVR6000	0 / 22	PASS

◆ PACKAGE OUTLINE

1、DFN2010 package

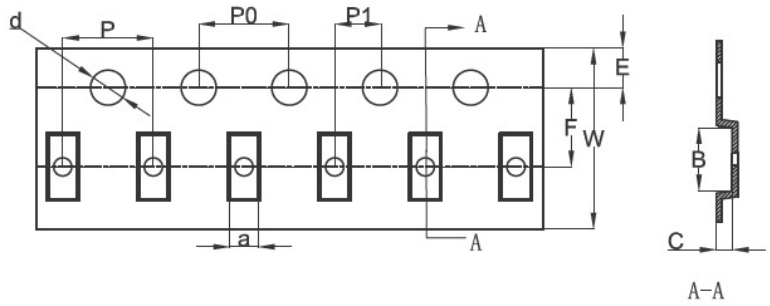
2、very small package

3、MSL - 1

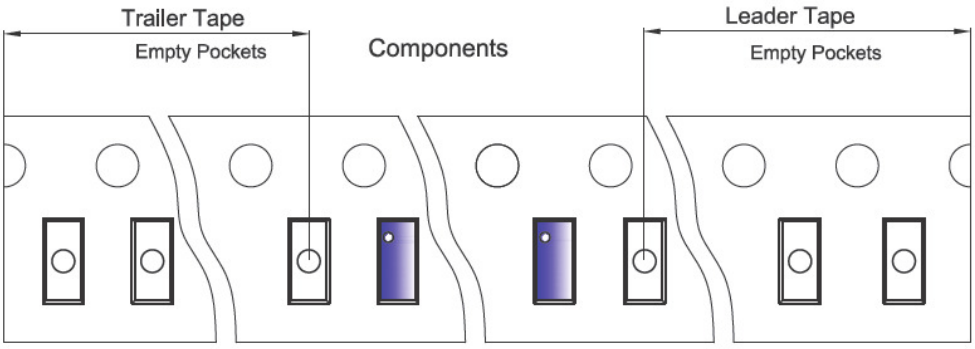


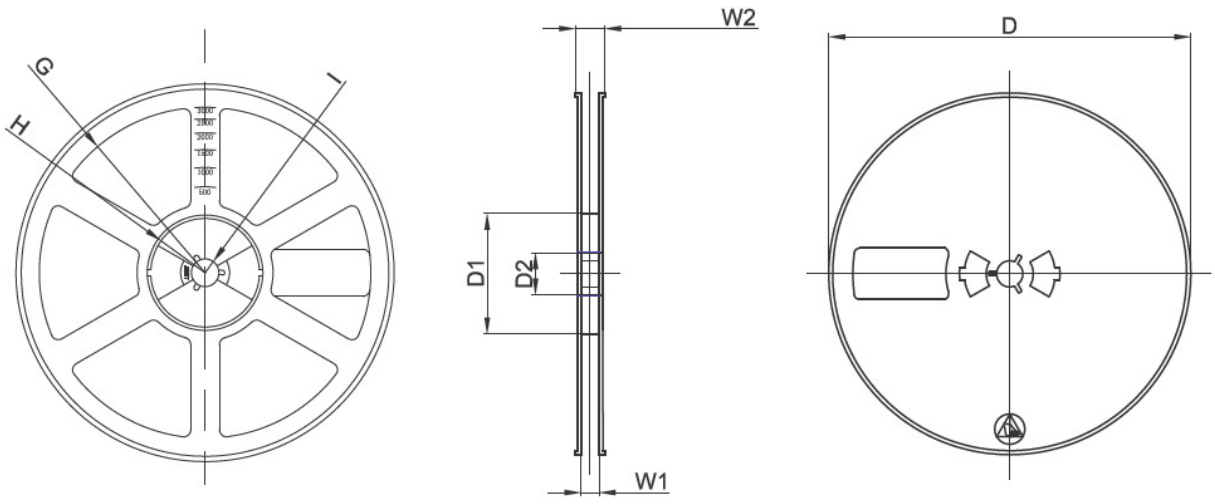
Dim	Millimeters		
	Min	Nom	Max
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.15	0.20	0.25
D	1.95	2.00	2.05
E	0.95	1.00	1.05
e	0.40 BSC		
e1	0.80 BSC		
L	0.25	0.30	0.35
N	5		

◆ TAPE AND REEL INFORMATION



Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
DFN2010	1.23	2.20	0.7	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00





Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø180.00	60.00	13.00	R78.00	R25.60	R6.50	9.50	13.10

REEL	Reel Size	
3000 pcs	7 inch	