ESD2502CW

Low Capacitance ESD/Surge Protection for Gigabit Ethernet Interfaces

DESCRIPTION

ESD2502CW is a low-capacitance Transient Voltage Suppressor (TVS) array designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.8 pF only, ESD2502CW 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), IEC 61000-4-5 (Surge) (15A, 8/20μs), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

Each ESD2502CW device can protect two high-speed line pairs. The combined features of low capacitance and high ESD robustness make ESD2502CW ideal for high-speed data port and high-frequency line (e.g., Gigabit Ethernet Ports) applications. The low clamping voltage of the ESD2502CW guarantees a minimum stress on the protected IC.

FEATURES

✧Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) ±30kV (Air)
±30kV (Contact)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
IEC 61000-4-5 (Surge) 15A (8/20μs)
✧Package optimized for high-speed lines
✧Provides protection for two line pairs
✧Low capacitance: 0.8 pF (Typical)
✧Low leakage current: 100nA @ VRWM (Max)
✧Low operating and clamping voltage
✧Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge

MACHANICAL DATA

✧DFN2010-8L package
✧Flammability Rating: UL 94V-0
✧MSL 1 & Thermally-Enhanced
✧Reel size: 7 inch
✧High temperature soldering guaranteed: 260℃/10s

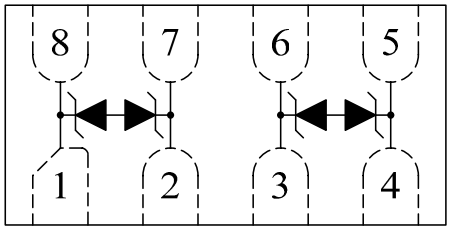
ORDERING INFORMATION

✧Device: ESD2502CW
✧Package: DFN2010-8L
✧Marking: 2502CW
✧Material: Halogen free and RoHS compliant
✧Packing: Tape & Reel
✧Quantity per reel: 3,000pcs

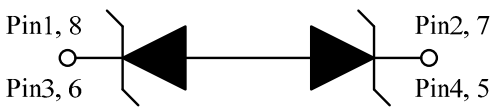
APPLICATIONS

✧10/100/1000M Ethernet Ports
✧WAN/LAN Equipment
✧Desktops, Servers and Notebooks
✧Cellular Phones
✧Switching Systems
✧Audio/Video Inputs

PIN CONFIGURATION



CIRCUIT DIAGRAM



ESD2502CW

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ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20μs)	270	W
I_{PP}	Peak Pulse Current (8/20μs)	15	A
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	±30 ±30	kV
T_{OPT}	Operating Temperature	-55~150	°C
T_{STG}	Storage Temperature	-55~150	°C

ELECTRICAL CHARACTERISTICS (Tamb=25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				2.5	V
I_R	Reverse Leakage Current	V_{RWM} = 2.5V			100	nA
V_B	Reverse Breakdown Voltage	I_R = 1mA	3.5			V
V_{C1}	Clamping Voltage 1	I_{PP} = 1A, t_p = 8/20μs Pin 1, 8 to Pin 2, 7 & Pin 3, 6 to Pin 4, 5			6.5	V
V_{C2}	Clamping Voltage 2	I_{PP} = 10A, t_p = 8/20μs Pin 1, 8 to Pin 2, 7 & Pin 3, 6 to Pin 4, 5			12	V
V_{C3}	Clamping Voltage 3	I_{PP} = 15A, t_p = 8/20μs Pin 1, 8 to Pin 2, 7 & Pin 3, 6 to Pin 4, 5			18	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz Pin 1, 8 to Pin 2, 7 & Pin 3, 6 to Pin 4, 5		0.8		pF

ELECTRICAL CHARACTERISTICS CURVE

Fig 1 8/20μs Waveform per IEC61000-4-5

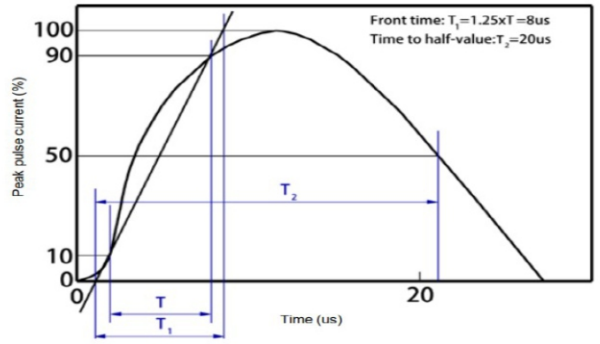


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

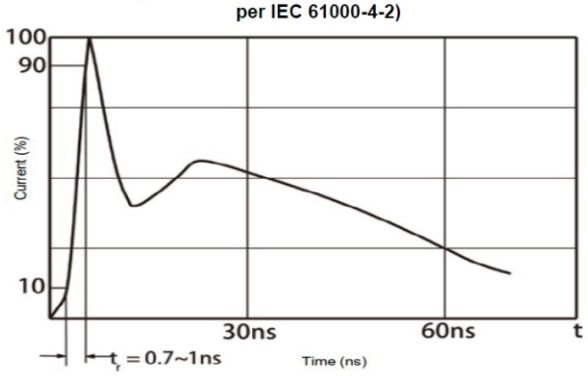


Fig 3 Voltage vs Capacitance

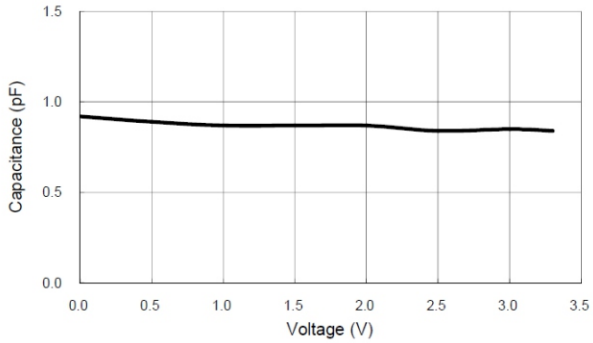
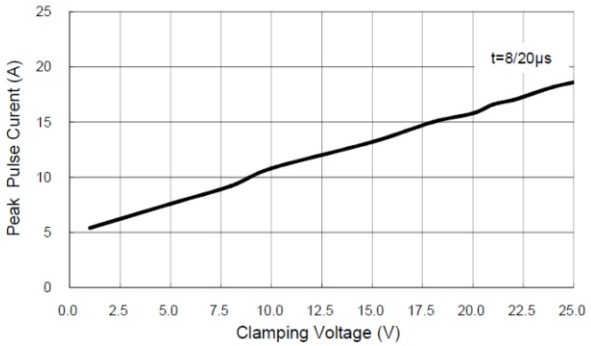
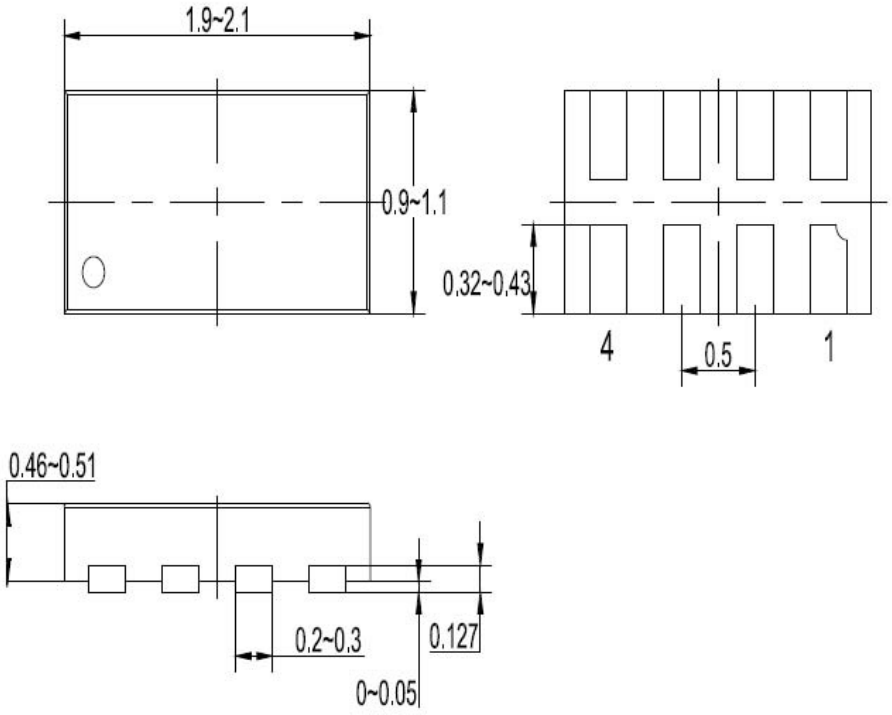


Fig 4 Clamping Voltage vs Peak Pulse Current



DFN2010-8L PACKAGE OUTLINE DIMENSIONS



Recommended Soldering Footprint