ESD5Z5CL

Ultra Low Capacitance ESD Protection Diode

DESCRIPTION

ESD5Z5CL is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.25pF, ESD5Z5CL 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.
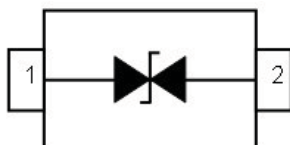
ESD5Z5CL uses ultra-small SOD-523 package. Each ESD5Z5CL device can protect one high-speed data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of low capacitance, ultra-small size and high ESD robustness make ESD5Z5CL ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

FEATURES

✧ Transient protection for high-speed data lines
  IEC 61000-4-2 (ESD)   ±20kV (Contact)
                          ±20kV (Air)
  IEC 61000-4-4 (EFT) 40A (5/50 ns)
  Cable Discharge Event (CDE)
✧ Package optimized for high-speed lines
✧ Ultra-small package (1.6mm×0.8mm×0.6mm)
✧ Protects one data, control line
✧ Low capacitance: 0.25pF (Typical)
✧ Low leakage current
✧ Low clamping voltage

MACHANICAL DATA

✧ SOD-523 package
✧ Flammability Rating: UL 94V-0
✧ Packaging: Tape and Reel
✧ High temperature soldering guaranteed: 260℃/10s
✧ Reel size: 7 inch

ORDERING INFORMATION

✧ Device: ESD5Z5CL
✧ Package:SOD-523
✧ Marking: 5G
✧ Material: Halogen free
✧ Packing: Tape & Reel
✧ Quantity per reel: 3,000pcs

APPLICATIONS

✧ Serial ATA
✧ Desktops, Servers and Notebooks
✧ Cellular Phones
✧ MDDI Ports
✧ USB Data Line Protection
✧ Display Ports
✧ Digital Visual Interfaces (DVI)

PIN CONFIGURATION

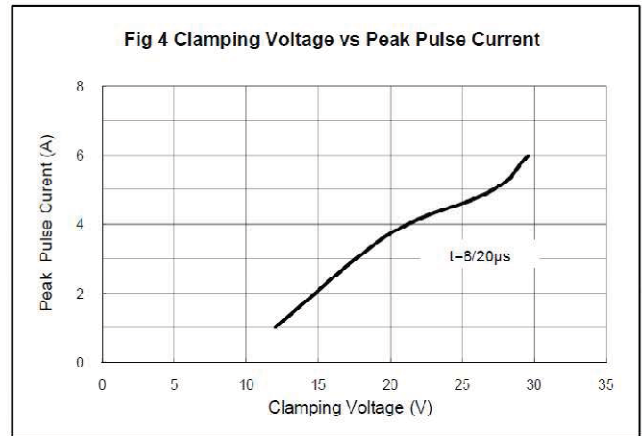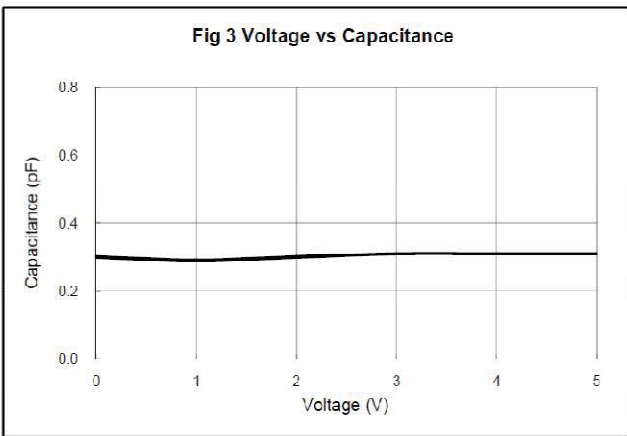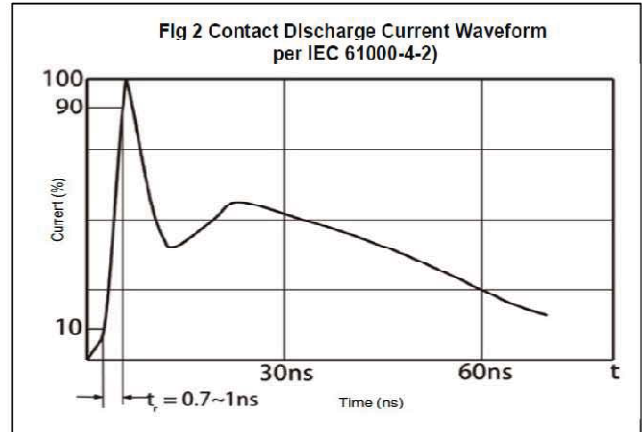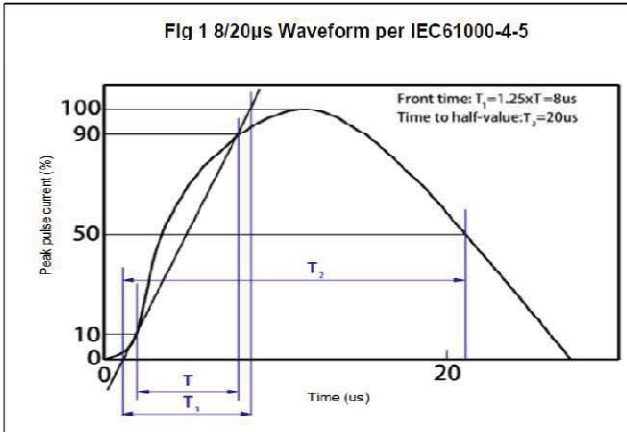## PACKAGE OUTLINE

2023-02/01
REV:O

ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	±20 ±20	kV
P_{PP}	Peak Pulse Power (8/20µs)	100	W
T_{OPT}	Operating Temperature	-55~125	°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				5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA	6.0			V
I_R	Reverse Leakage Current	V_{RWM} = 5V			100	nA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20µs			13	V
		I_{PP} = 4A, t_p = 8/20µs			25	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz		0.25	0.40	pF

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RATING AND CHARACTERISTICS CURVES (ESD5Z5CL)

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

Front time: T_1=1.25xT=8us
Time to half-value: T_2=20us

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

t_r = 0.7~1ns

Fig 3 Voltage vs Capacitance

Fig 4 Clamping Voltage vs Peak Pulse Current

t=8/20μs

SOD-523 PACKAGE OUTLINE DIMENSIONS

1.50 - 1.70 mm [0.059 - 0.067 in]

0.70 - 0.90 mm [0.028 - 0.035 in]

0.25 - 0.35 mm [0.010 - 0.014 in]

1.10 - 1.30 mm [0.043 - 0.051 in]

0.50 - 0.70 mm [0.020 - 0.028 in]

0.20 mm [0.008 in] MAX
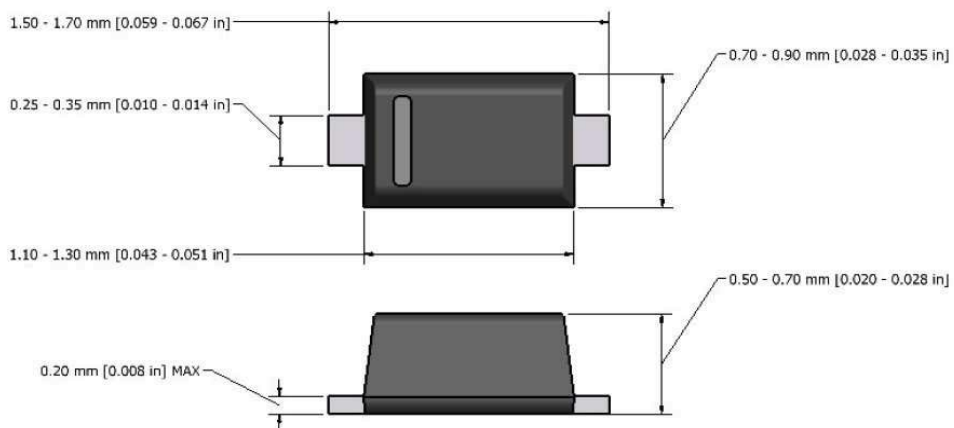
Note: Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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DISCLAIMER NOTICE

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