Ultra-Low Capacitance TVS Diode

- Avalanche diode with low clamping / trigger voltage designed for replacement of polymer suppressor devices

- ESD / transient protection of high-speed data lines exceeding
  IEC61000-4-2 (ESD): 16 kV (contact)
  IEC61000-4-4 (EFT): 2.5 kV / 50 A (5/50 ns)

- No degradation or shifting of characteristics even after 1000 ESD pulses and lower peak voltage than polymer devices
  (see curve on page 4)

- Very low capacitance: 0.2 pF typ. @ 1.8 GHz

- Smallest form factor: 0.6 x 0.3 x 0.3 mm

- Working voltage: 5 V (can be extended to 60 V)

- Response time typ. < 0.5 ns @ 8 kV

- Pb-free (RoHS) compliant) package

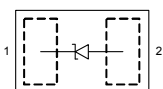- Qualified according AEC Q101

Applications

- 10/100/1000 Ethernet

- HDMI & DVI Interfaces

- Mobile communication and LCD displays

- Consumer products (STB, MP3, DVD, DSC...)

- Notebooks and desktop computers, peripherals

ESD5V0H1U-02LS

Type	Package	Configuration	Marking
ESD5V0H1U-02LS	TSSLP-2-1	1 line, uni-directional	P

Maximum Ratings at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Value	Unit
ESD contact discharge[1]	V_{ESD}	16	kV
Operating temperature range	T_{op}	-55...125	°C
Storage temperature	T_{stg}	-65...150	

Electrical Characteristics at T_A = 25°C, unless otherwise specified

| Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Reverse working voltage	V_{RWM}	-	-	5	V
Avalanche breakdown voltage $I_{(BR)}$ = 1 mA, from pin 2 to 1	$V_{(BR)}$	-	200	-	
Reverse current V_R = 5 V	I_R	-	-	0.1	µA
Clamping voltage[1] after 30 ns V_{ESD} = 8 kV, contact, from pin 2 to 1	V_{CL}	-	40	-	V
Line capacitance[2]	C_T				pF
V_R = 0 V, f = 1.8 GHz		-	0.2	0.4	
V_R = 0 V, f = 1 MHz		-	0.27	0.42	
Series inductance	L_S	-	0.2	-	nH

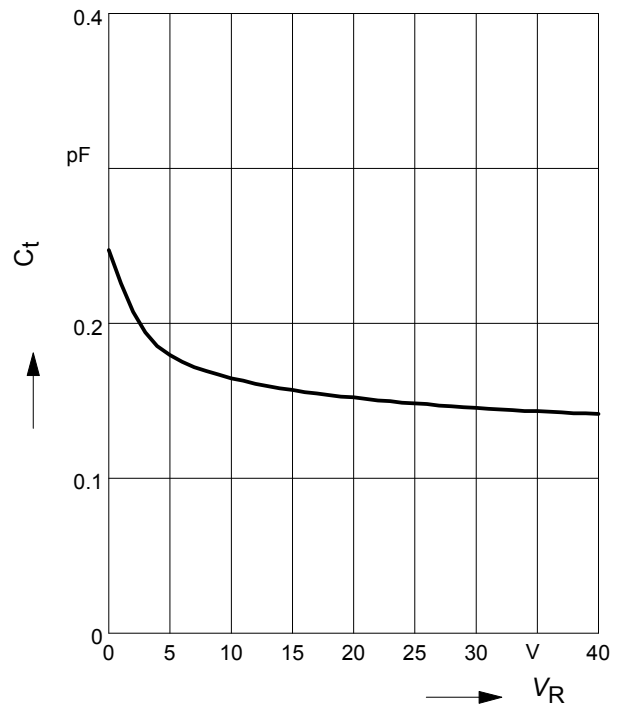[1] V_{ESD} according to IEC61000-4-2

[2] Total capacitance line to ground
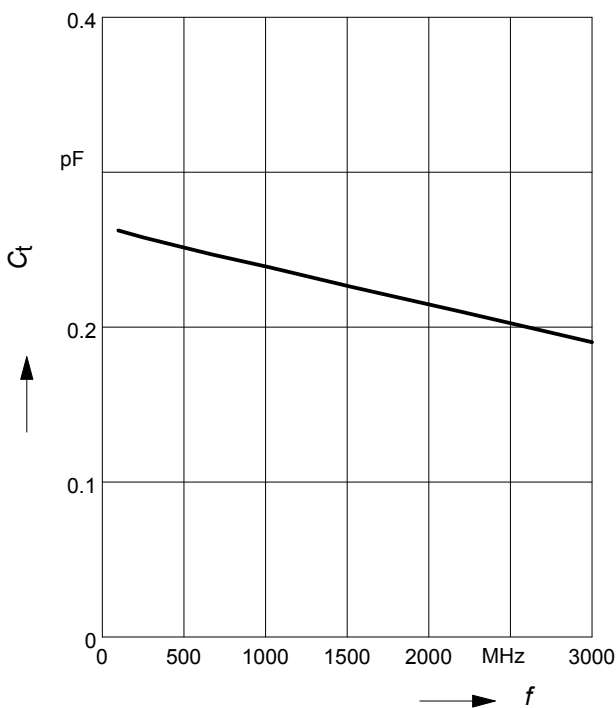
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Reverse current $I_R = f(T_A)$

V_R = 5 V
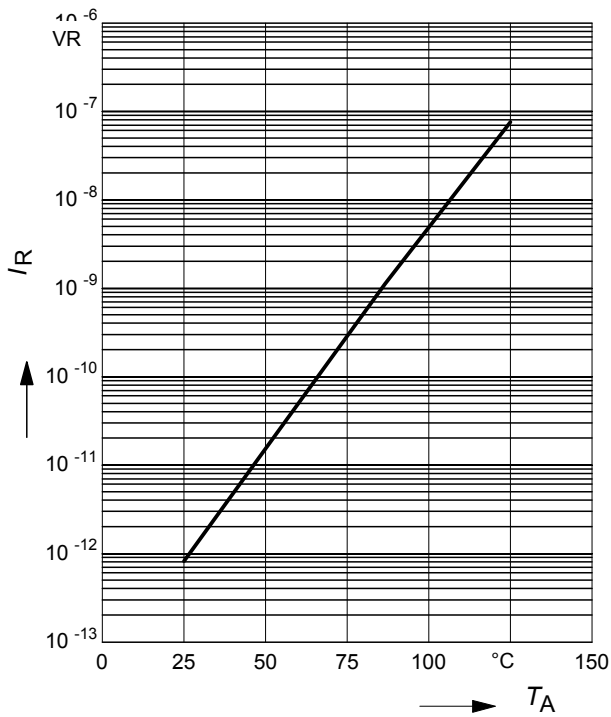
Diode capacitance $C_T = f(V_R)$

f = 1GHz

Line capacitance $C_T = f(f)$

V_R = 0 V

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Application example
single channel, uni-directional

Connector

Protected signal line

I/O ESD sensitive device

The protection diode should be placed very close to the location where the ESD can occur to keep loops and inductances as small as possible.

1

2

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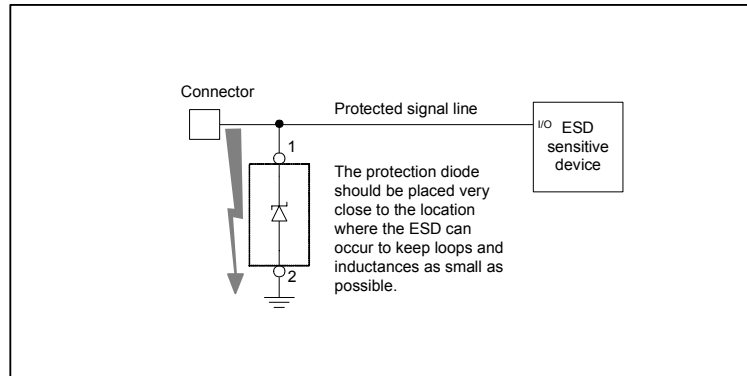
**Clamping voltage at real ESD event according to IEC61000-4-2, 8 kV
contact discharge: comparison with polymer suppressor.
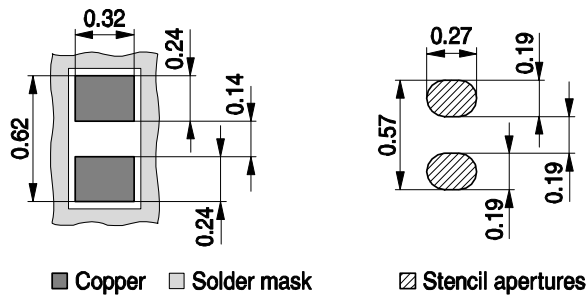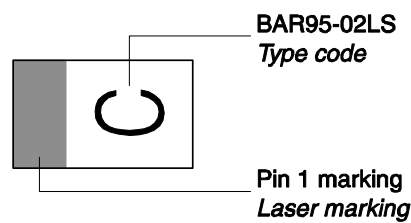ESD gun: C=150pF/R=330Ω... with 6 GHz oscilloscope (50Ω)**

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Package Outline

Top view

0.31 $^{+0.01}_{-0.02}$

0.05 MAX.

Bottom view

0.32 ±0.035

2

1

0.355 ±0.025

0.62 ±0.035

0.26 ±0.025 $^{1)}$

0.2 ±0.025 $^{1)}$

Cathode marking

1) Dimension applies to plated terminal
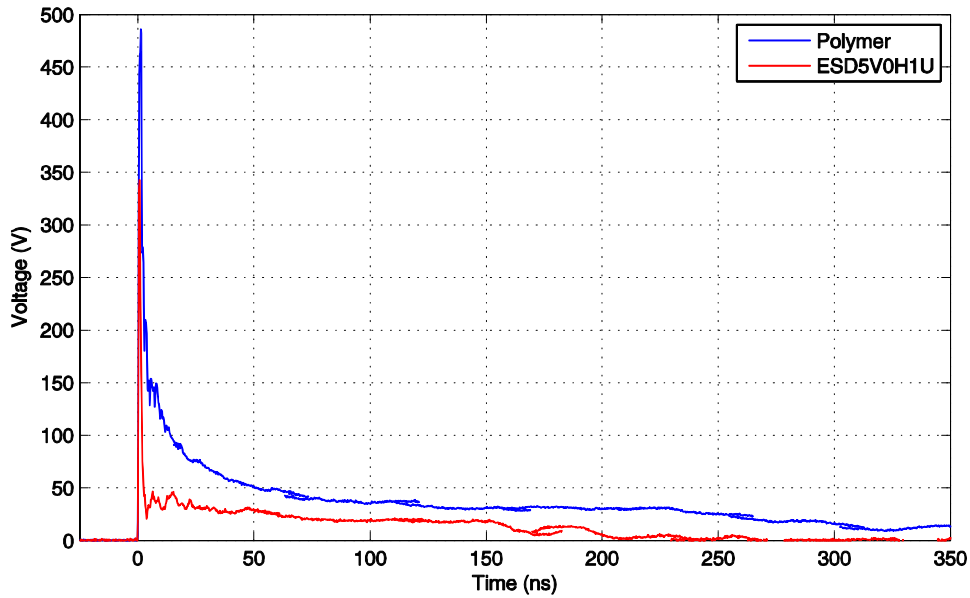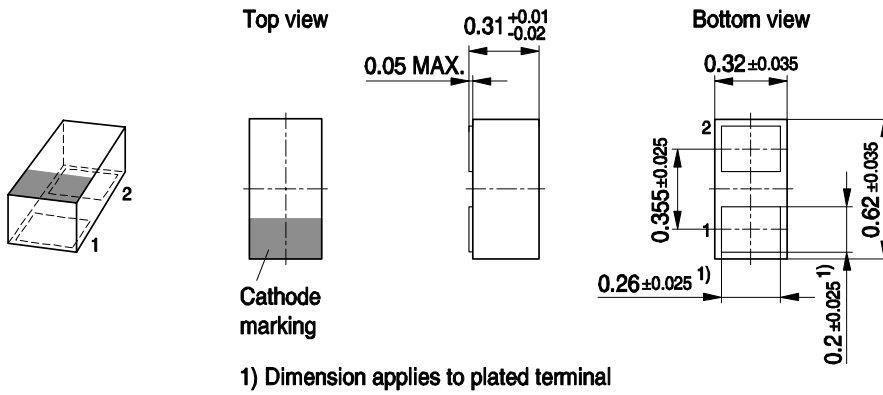
Foot Print

For board assembly information please refer to Infineon website "Packages"

0.32

0.24

0.14

0.62

0.24

0.27

0.19

0.57

0.19

0.19

■ Copper   □ Solder mask   ▨ Stencil apertures

Marking Layout (Example)

BAR95-02LS
Type code

Pin 1 marking
Laser marking

Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel
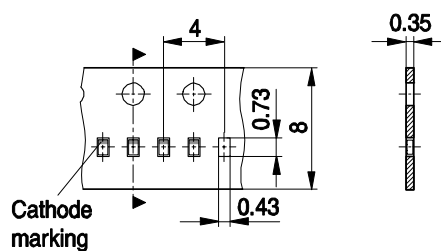
4

0.73

8

0.35

Cathode marking

0.43

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Attention please!

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