Low Capacitance TVS Diode

- ESD / transient protection of high-speed data lines in 3.3 / 5 / 12 V applications according to:

  IEC61000-4-2 (ESD): ±16 kV (air) ±14 kV (contact)

  IEC61000-4-4 (EFT): 40 A (5 / 50 ns))

- Extremely small form factor down to 0.62 x 0.32 x 0.31 mm³

- Max. working voltage: −8 / +14 V

- Very low reverse current < 1 nA typ.

- Very low series inductance down to 0.2 nH typ.

- Low capacitance of 4 pF typ.

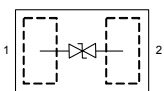- Pb-free (RoHS compliant) package

- Qualified according AEC Q101
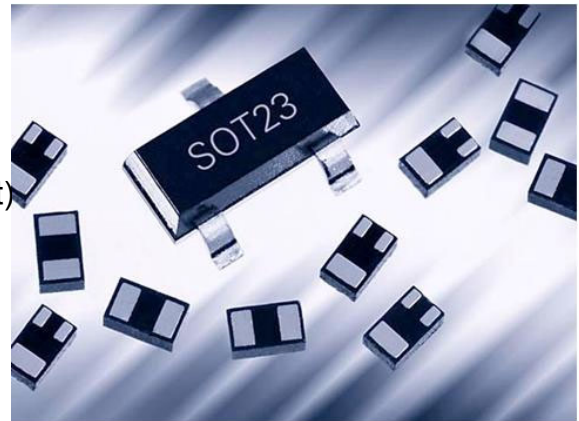
Applications

- USB 2.0, 10/100 Ethernet, Firewire, DVI

- Mobile communication

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

- LCD displays, camera

- Notebooks and destop computers, peripherals

ESD8V0R1B-02LS
ESD8V0R1B-02LRH

Type	Package	Configuration	Marking
ESD8V0R1B-02LRH	TSLP-2-7	1 line, bi-directional	E
ESD8V0R1B-02LS	TSSLP-2-1	1 line, bi-directional	E

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

Parameter	Symbol	Value	Unit
ESD discharge[1)]	V_{ESD}		kV
air		16	
contact		14	
Peak pulse current (t_p = 8 / 20 µs)[2)]	I_{pp}	1	A
Operating temperature range	T_{op}	-55...150	°C
Storage temperature	T_{stg}	-65...150	

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

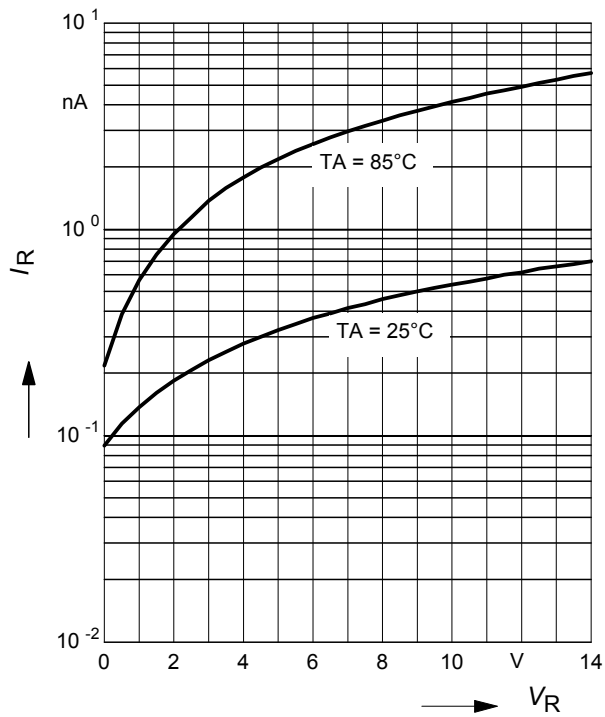| Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Reverse working voltage, from pin 2 to 1	V_{RWM}	-8	-	14	V
Breakdown voltage	$V_{(BR)}$				
$I_{(BR)}$ = 1 mA, from pin 2 to 1		14.5	17	20	
$I_{(BR)}$ = 1 mA, from pin 1 to 2		8.5	11	14	
Reverse current	I_R	-	<1	50	nA
V_R = 3.3 V					
Clamping voltage	V_{CL}				V
I_{PP} = 1 A, t_P = 8/20 µs, from pin 2 to 1[2)]		-	23	28	
I_{PP} = 1 A, t_P = 8/20 µs, from pin1 to 2[2)]		-	17	22	
Line capacitance	C_T	-	4	7	pF
V_R = 0 V, f = 1 MHz					
Series inductance	L_S				nH
ESD8V0R1B-02LS		-	0.2	-	
ESD8V0R1B-02LRH		-	0.4	-	

[1]V_{ESD} according to IEC61000-4-2
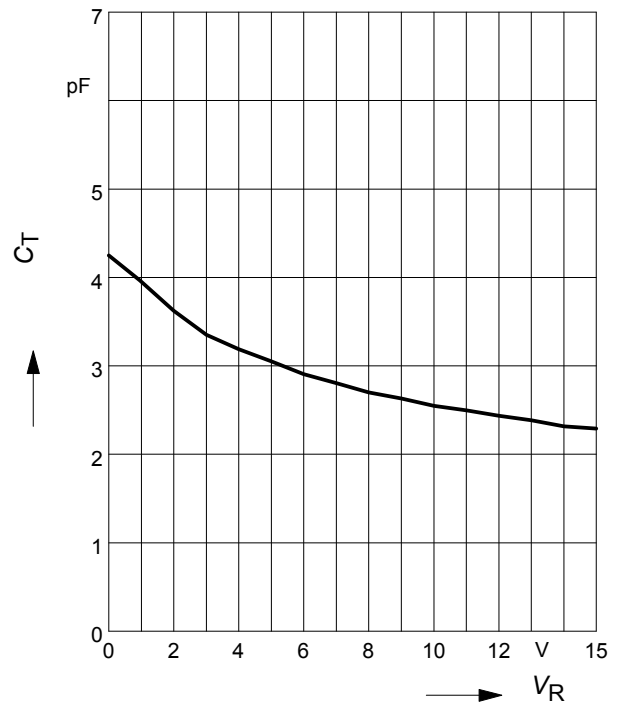
[2]I_{pp} according to IEC61000-4-5
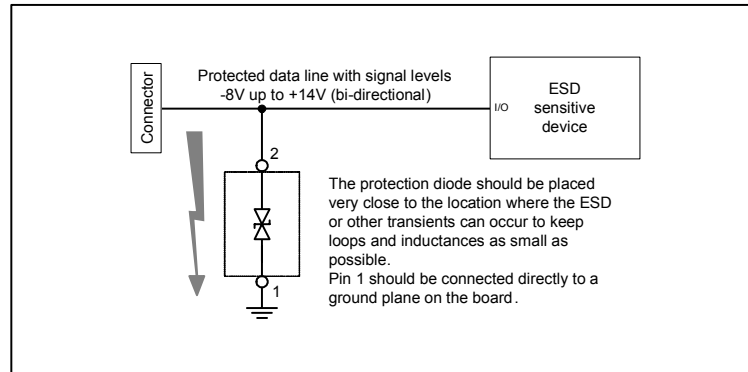
Reverse current $I_R = f(V_R)$

T_A = Parameter

Diode capacitance $C_T = f(V_R)$

f = 1MHz

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Application example ESD8V0R1B...
1 line, bi-directional

Connector

Protected data line with signal levels
-8V up to +14V (bi-directional)

ESD
sensitive
device

I/O

2

1

The protection diode should be placed
very close to the location where the ESD
or other transients can occur to keep
loops and inductances as small as
possible.
Pin 1 should be connected directly to a
ground plane on the board.

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Package Outline

Top view

Bottom view

$0.39^{+0.01}_{-0.03}$

0.05 MAX.

0.6 ± 0.05

0.65 ± 0.05

1 ± 0.05

2

1

Cathode marking

0.5 ± 0.035 ¹⁾

0.25 ± 0.035 ¹⁾

1) Dimension applies to plated terminal

Foot Print

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

0.6

0.35

0.3

1

0.35

0.45

0.275

0.925

0.275

0.375

■ Copper   □ Solder mask   ▨ Stencil apertures

Marking Layout (Example)

BAR90-02LRH
Type code

R9

Cathode marking
Laser marking
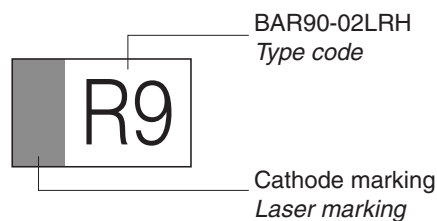
Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel
Reel ø330 mm = 50.000 Pieces/Reel (optional)
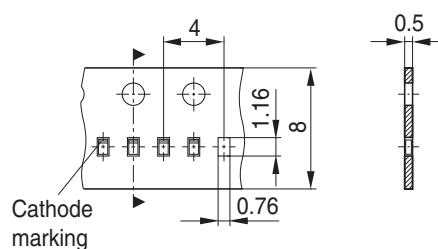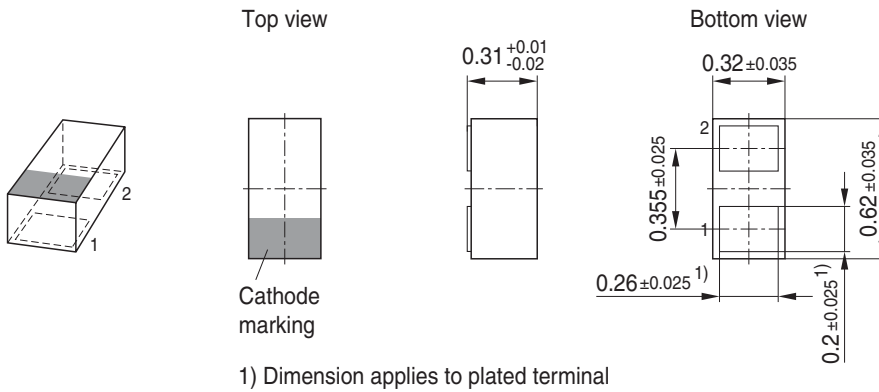
4

0.5

1.16

8

Cathode marking

0.76

Package Outline

Top view

Bottom view

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

0.32 ± 0.035

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

BAR95-02LS
Type code

Pin 1 marking
Laser marking

Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel

4

0.35

0.73

8

Cathode marking

0.43
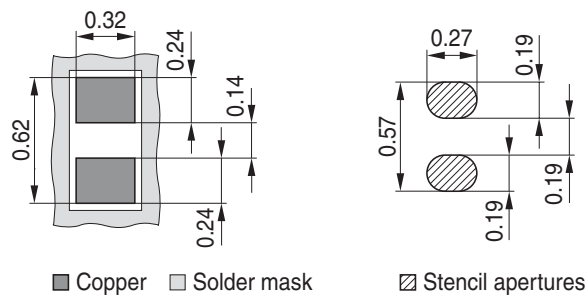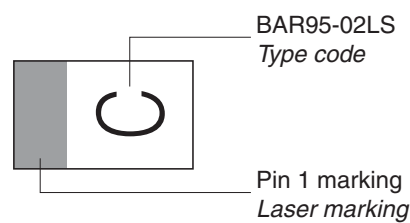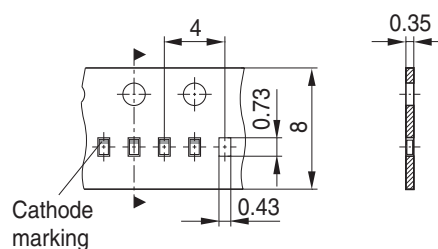
Attention please!

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