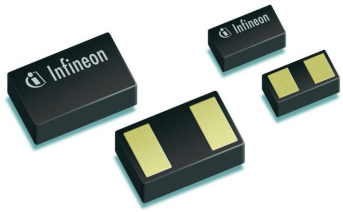
**Ultra-Low Capacitance TVS Diode**



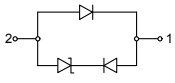
- ESD / transient protection of high-speed data lines exceeding
  IEC61000-4-2 (ESD): ±20 kV (air / contact)
  IEC61000-4-4 (EFT): 2.5 kV / 50 A (5/50 ns)
  IEC61000-4-5 (surge): 3 A (8/20 µs)
- Extremely small form factor down to 0.62 x 0.32 x 0.31 mm³
- Reverse working voltage: 5.3 V max.
- Very low reverse current: < 10 nA typ.
- Extremely low capacitance: 0.4 pF typ.
- Very low clamping voltage: 12 V typ. at positive transients, 4 V typ. at negative transients
- Very low series inductance down to 0.2 nH typ.
- Pb-free (RoHS compliant) package

**Applications**

- USB 2.0, 10/100/1000 Ethernet, Firewire, DVI, HDMI, S-ATA
- Mobile communication
- Consumer products (STB, MP3, DVD, DSC...)
- LCD displays, camera
- Notebooks and desktop computers, peripherals

RoHS

**ESD5V3U1U-02LS**
**ESD5V3U1U-02LRH**




| Type | Package | Configuration | Marking |
|---|---|---|---|
| ESD5V3U1U-02LRH | TSLP-2-7 | 1 line, uni-directional | E5 |
| ESD5V3U1U-02LS | TSSLP-2-1 | 1 line, uni-directional | L |

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

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| ESD (air / contact) discharge[1)] | $V_{ESD}$ | 20 | kV |
| Peak pulse current ($t_p$ = 8 / 20 µs)[2)] | $I_{pp}$ | 3 | A |
| 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 | $V_{RWM}$ | - | - | 5.3 | V |
| Breakdown voltage<br>$I_{(BR)}$ = 1 mA, from pin 1 to 2 | $V_{(BR)}$ | 6 | - | - | |
| Reverse current<br>$V_R$ = 5.3 V, from pin 1 to 2 | $I_R$ | - | < 10 | 100 | nA |
| Clamping voltage | $V_{CL}$ | | | | V |
| $I_{PP}$ = 1 A, $t_p$ = 8/20 µs[2)], from pin 1 to 2 | | - | 10 | 13 | |
| $I_{PP}$ = 3 A, $t_p$ = 8/20 µs[2)], from pin 1 to 2 | | - | 12 | 15 | |
| Forward clamping voltage | $V_{FC}$ | | | | |
| $I_{PP}$ = 1 A, $t_p$ = 8/20 µs[2)], from pin 2 to 1 | | - | 2 | 4 | |
| $I_{PP}$ = 3 A, $t_p$ = 8/20 µs[2)], from pin 2 to 1 | | - | 4 | 6 | |
| Line capacitance[3)]<br>$V_R$ = 0 V, $f$ = 1 MHz | $C_T$ | - | 0.4 | 0.6 | pF |
| Series inductance | $L_S$ | | | | nH |
| ESD5V3U1U-02LS | | - | 0.2 | - | |
| ESD5V3U1U-02LRH | | - | 0.4 | - | |

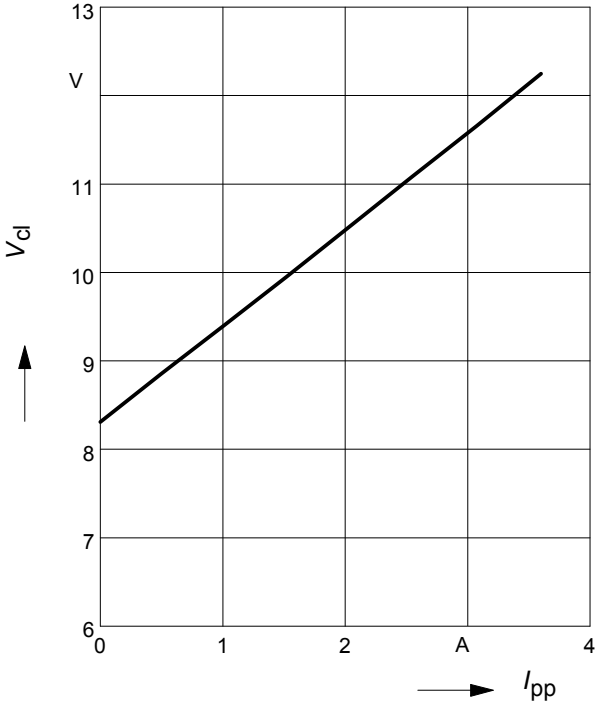
[1] $V_{ESD}$ according to IEC61000-4-2

[2] $I_{pp}$ according to IEC61000-4-5

[3] Total capacitance line to ground

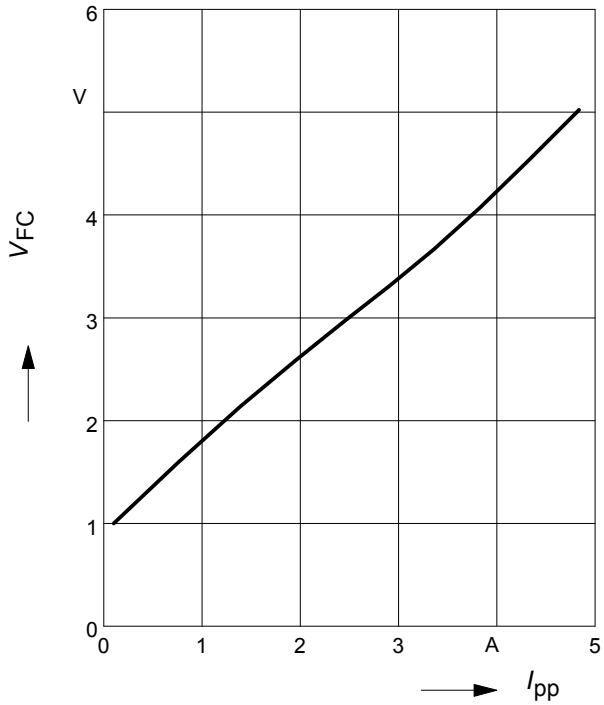
**Clamping voltage**, $V_{cl} = f(I_{pp})$

$t_p$ = 8 / 20 µs, from pin 1 to 2



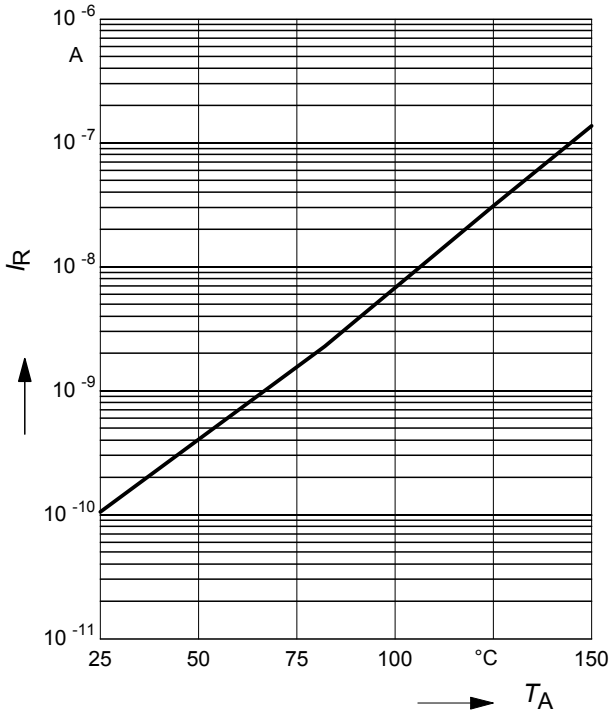

**Forward clamping voltage** $V_{FC} = f(I_{PP})$

$t_p$ = 8 / 20 µs, from pin 2 to 1



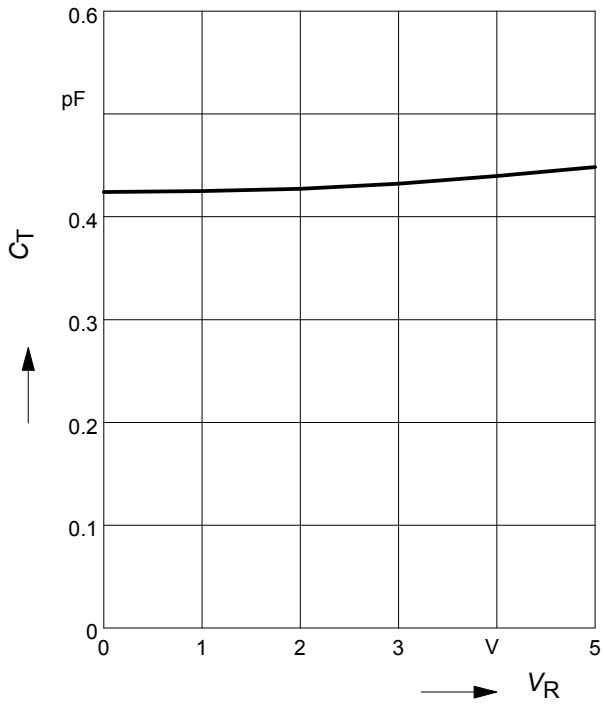

**Reverse current** $I_R = f(T_A)$

$V_R$ = 5.3 V, from pin 1 to 2



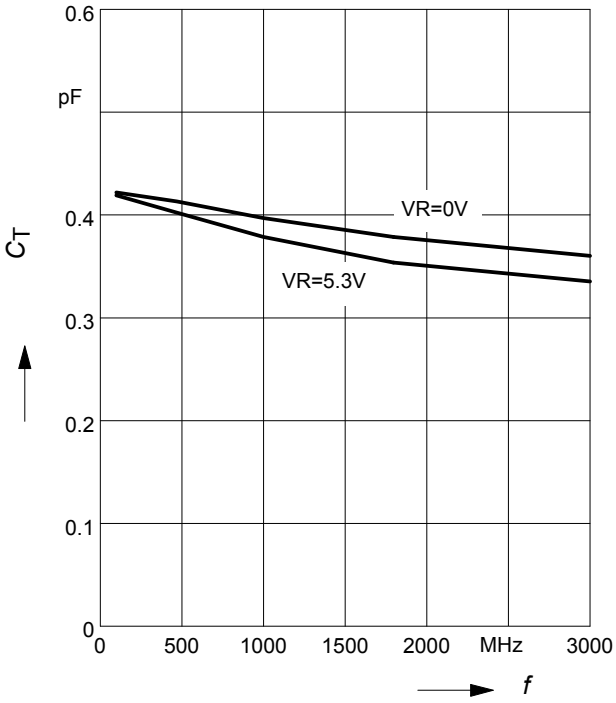

**Line capacitance** $C_T = f(V_R)$

$f$ = 1 MHz, from pin 1 to 2



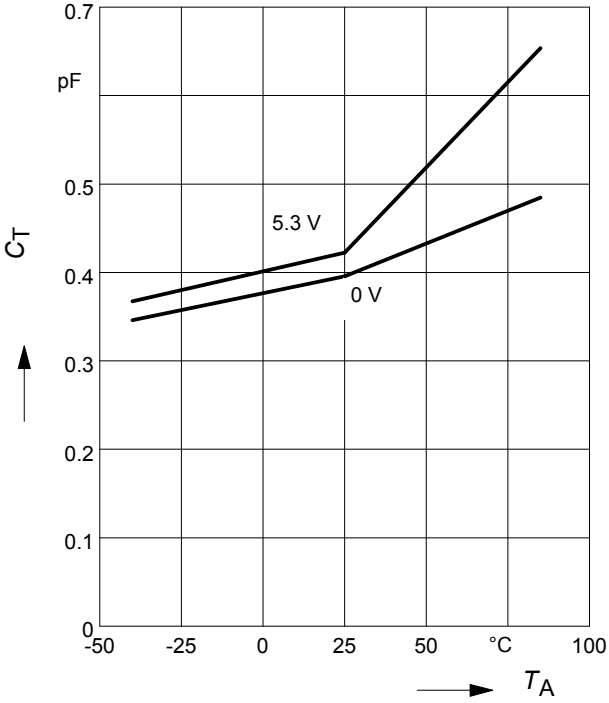
**Line capacitance** $C_T = f$ (f)

$V_R$ = parameter, from pin 1 to 2

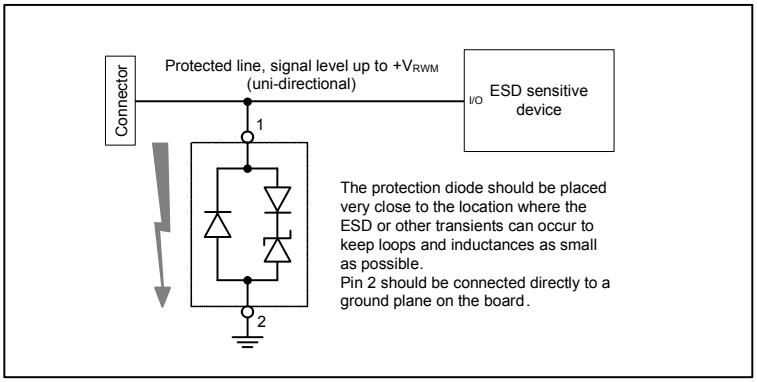



**Line capacitance** $C_T = f(T_A)$

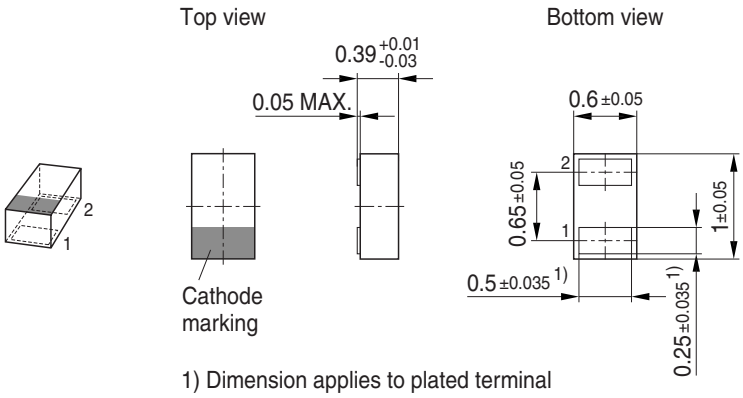
$V_R$ = 0 V, $f$ = 1 MHz



**Application example** ESD5V3U1U...
1-channel, uni-directional



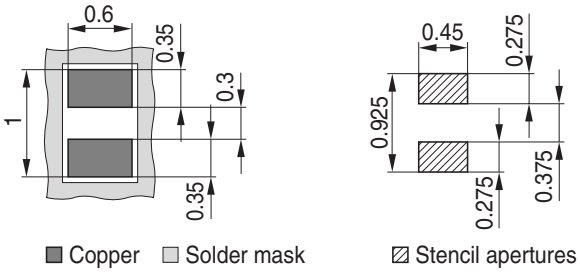
## Package Outline



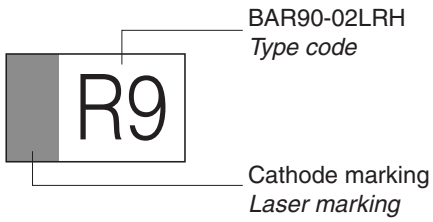

1) Dimension applies to plated terminal

## Foot Print

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

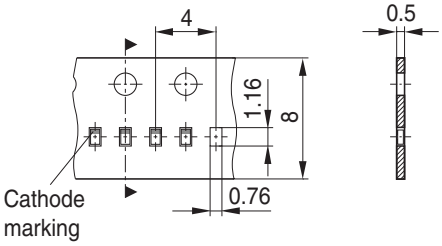



## Marking Layout (Example)

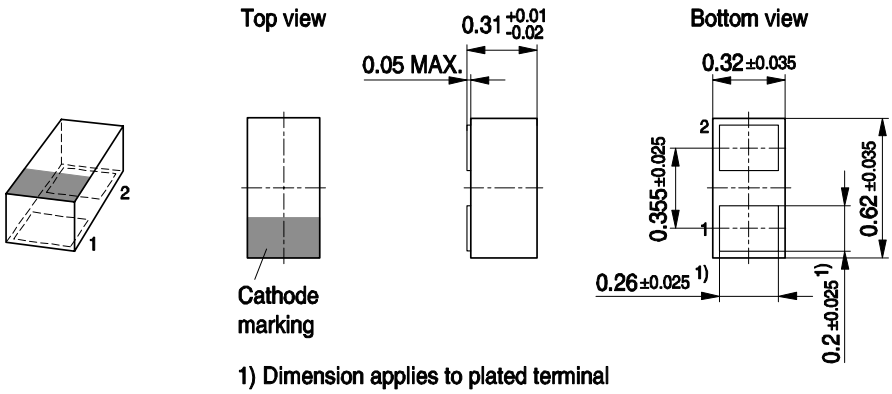



## Standard Packing

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



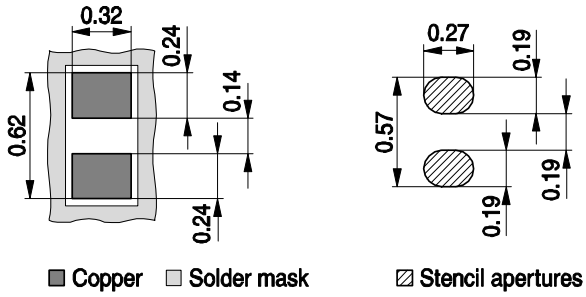
## Package Outline



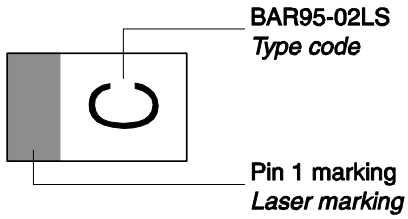

1) Dimension applies to plated terminal

## Foot Print

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

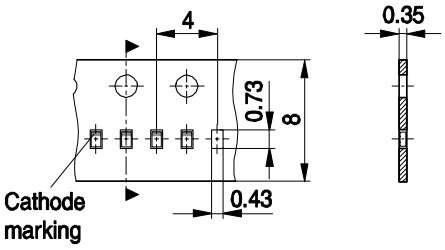



## Marking Layout (Example)




## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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