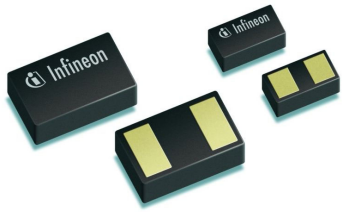
Ultra-Low Capacitance TVS Diode

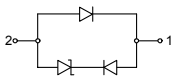


- ESD / transient protection of high-speed data lines exceeding
  IEC61000-4-2 (ESD): ±20 kV (air / contact)
  IEC61000-4-4 (EFT): 2.5 kV / 50 A (5/50 ns)
  IEC61000-4-5 (surge): 3 A (8/20 µs)
- Extremely small form factor down to 0.62 x 0.32 x 0.31 mm³
- Reverse working voltage: 5.3 V max.
- Very low 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
- Qualified according AEC Q101

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

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 $I_{(BR)}$ = 1 mA, from pin 1 to 2	$V_{(BR)}$	6	-	-	
Reverse current 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)] 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	-	

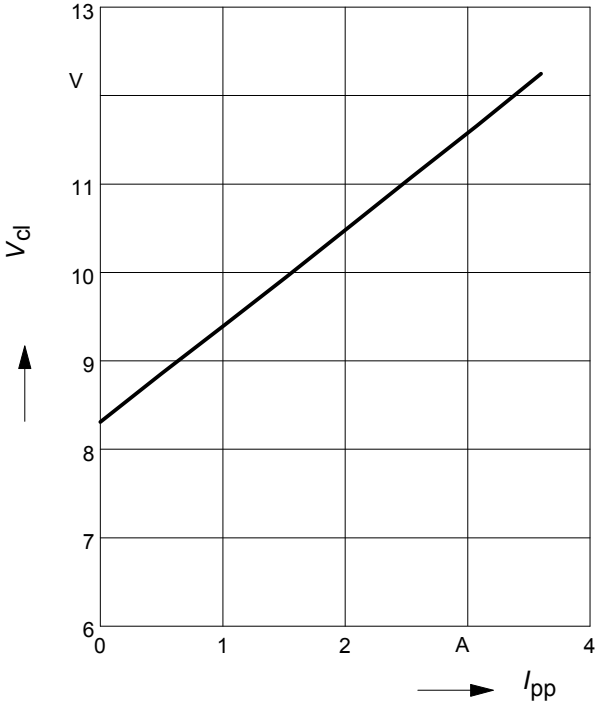
[1] V_{ESD} according to IEC61000-4-2

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

[3] Total capacitance line to ground

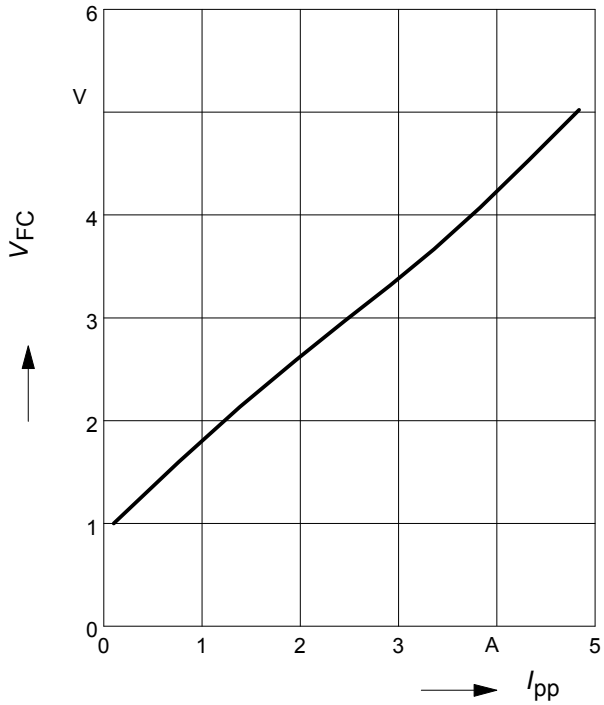
Clamping voltage, $V_{cl} = f(I_{pp})$

t_p = 8 / 20 µs, from pin 1 to 2



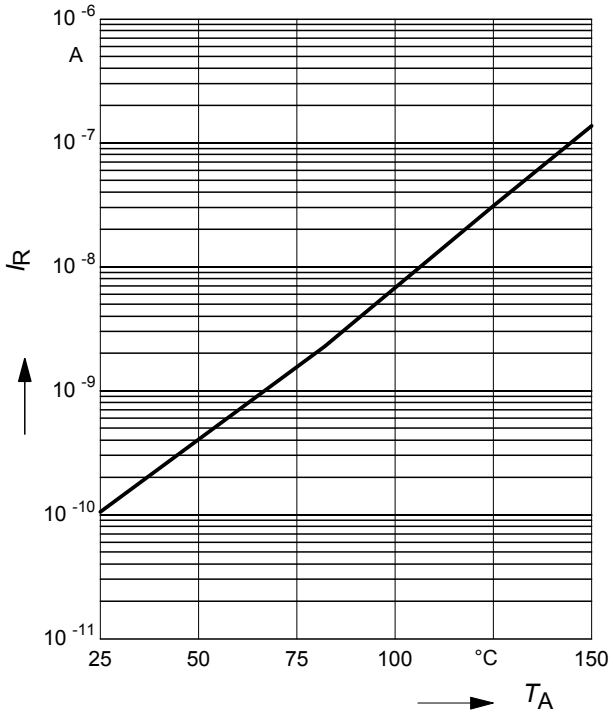
Forward clamping voltage $V_{FC} = f(I_{PP})$

t_p = 8 / 20 µs, from pin 2 to 1



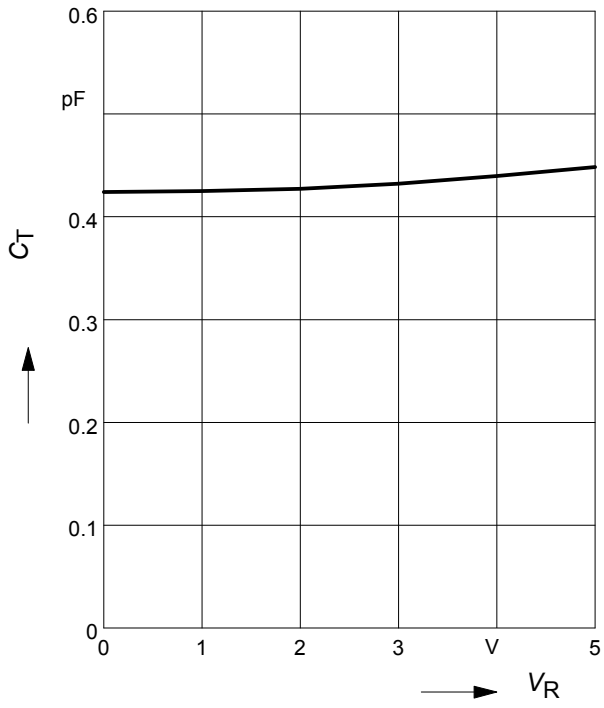
Reverse current $I_R = f(T_A)$

V_R = 5.3 V, from pin 1 to 2



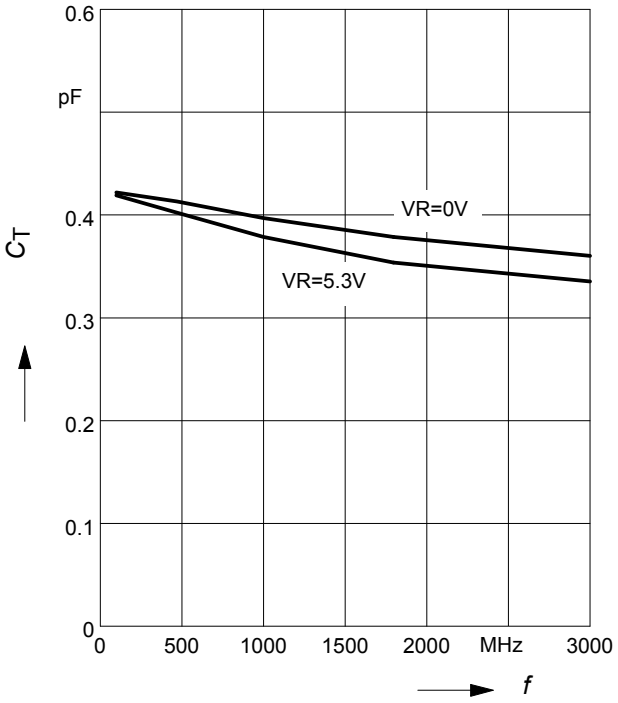
Line capacitance $C_T = f(V_R)$

f = 1 MHz, from pin 1 to 2



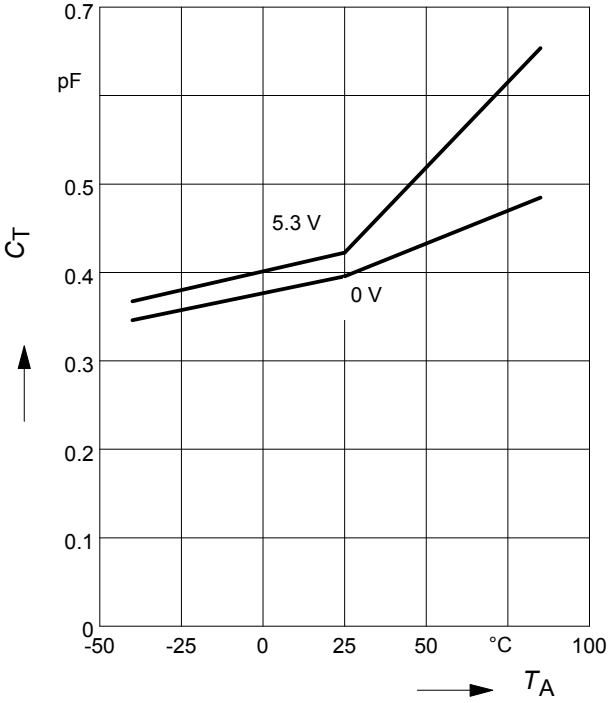
Line capacitance $C_T = f$ (f)

V_R = parameter, from pin 1 to 2

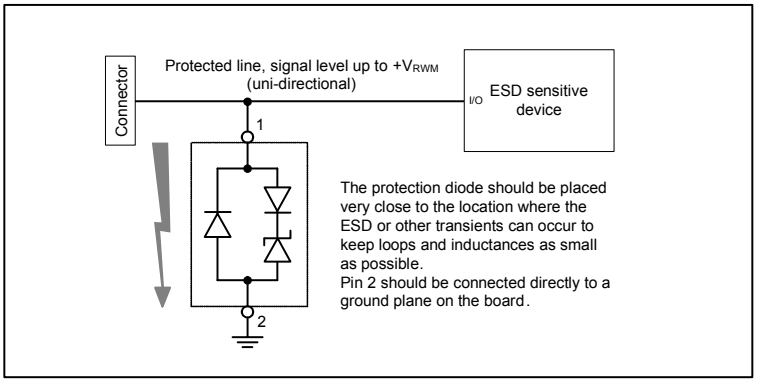


Line capacitance $C_T = f(T_A)$

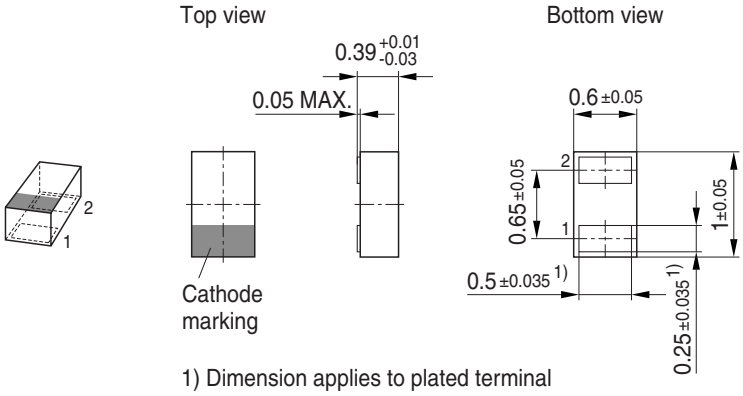
V_R = 0 V, f = 1 MHz



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



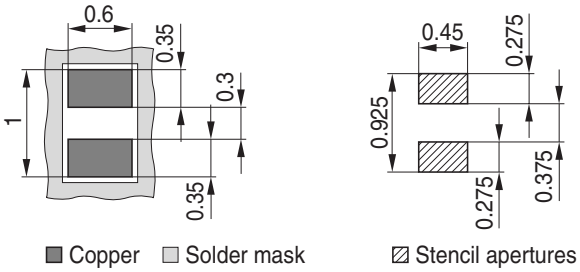
Package Outline



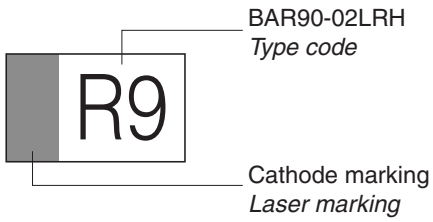
1) Dimension applies to plated terminal

Foot Print

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

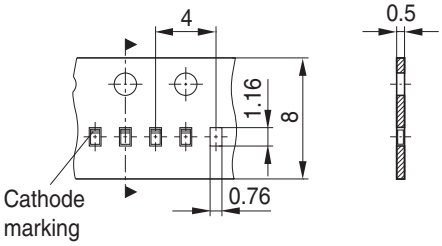


Marking Layout (Example)



Standard Packing

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



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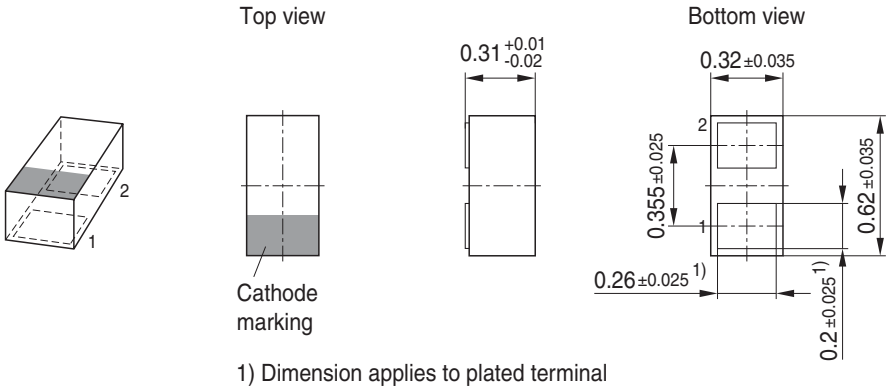

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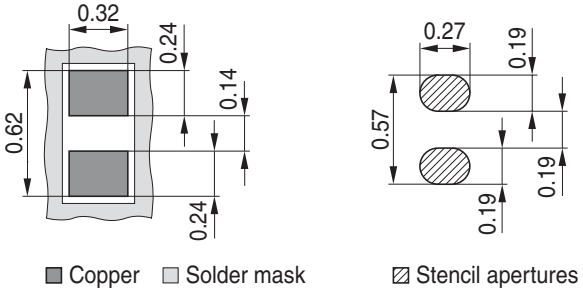
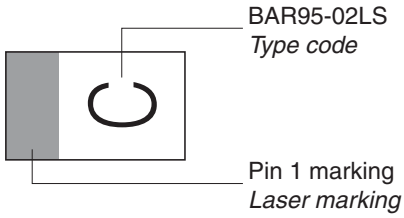
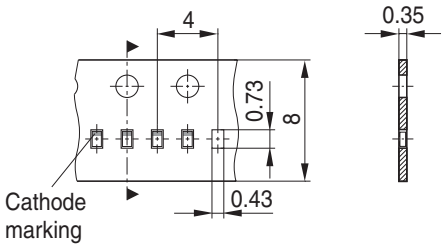


Marking Layout



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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