

Silicon TVS Diode

- ESD / transient protection of data and power lines in low voltage applications according to:
IEC61000-4-2 (ESD): ± 25 kV (air) 20 kV (contact)
IEC61000-4-4 (EFT): 50 A / 2.5 kV (5/50 ns)
IEC61000-4-5 (surge): 5.5 A / 66 W (8/20 μ s)
- Small form factor (0402 inch):
1.0 x 0.6 x 0.4 mm³
- Uni-directional, working voltage up to 5.3 V
- Ultralow clamping voltage,
protects against both positive and negative ESD strikes
- Ultralow dynamic resistance **0.27 Ω**
- Very fast response time
- Pb-free (RoHS compliant) package

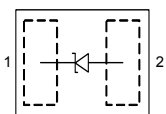


Applications

- Digital interfaces (medium speed)
- Vcc protection
- Keypad, trackball protection, camera, displays in:
mobile communications (smartphone,
camera phone & added functions e.g. mobile TV)
- Digital consumer & computer electronics:
laptops, PC, laserjet printer, photo printer, scanner
input devices (mouse, keyboard, remote control ...)
- Industrial: security systems, sensors, white goods.



ESD5V3S1U-02LRH



Type	Package	Configuration	Marking
ESD5V3S1U-02LRH	TSLP-2-17	1 line, uni-directional	E2

Maximum Ratings at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
ESD air / contact discharge ¹⁾	V_{ESD}	25 / 20	kV
Peak pulse current ($t_p = 8 / 20 \mu\text{s}$) ²⁾	I_{pp}	5.5	A
Peak pulse power ($t_p = 8 / 20 \mu\text{s}$) ²⁾	P_{pk}	66	W
Operating temperature range	T_{op}	-55...125	°C
Storage temperature	T_{stg}	-65...150	

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

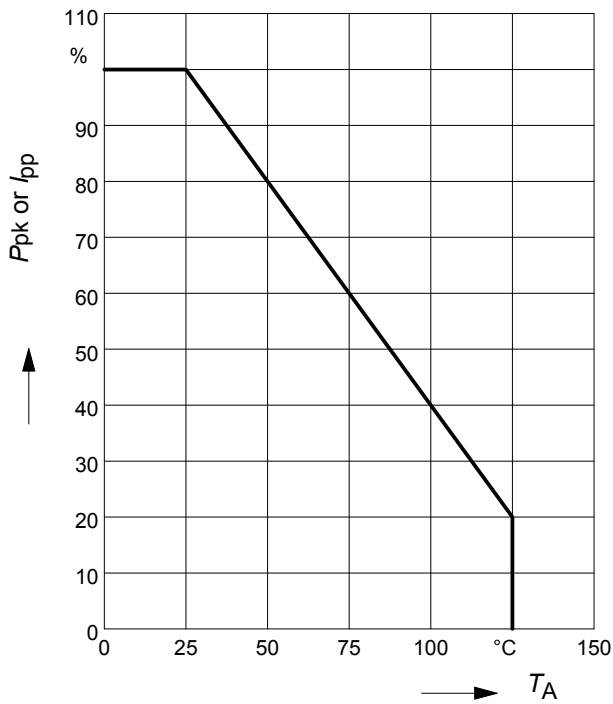
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Reverse working voltage	V_{RWM}	-	-	5.3	V
Breakdown voltage $I_{\text{(BR)}} = 1 \text{ mA}$	$V_{\text{(BR)}}$	5.7	-	-	
Reverse current $V_{\text{R}} = 3.3 \text{ V}$	I_{R}	-	-	0.1	μA
Clamping voltage $I_{\text{PP}} = 1 \text{ A}, t_p = 8/20 \mu\text{s}$ ²⁾ $I_{\text{PP}} = 3.5 \text{ A}, t_p = 8/20 \mu\text{s}$ ²⁾ $I_{\text{PP}} = 5.5 \text{ A}, t_p = 8/20 \mu\text{s}$ ²⁾	V_{CL}	-	7 8 9	9 10 11	V
Forward clamping voltage $I_{\text{PP}} = 1 \text{ A}, t_p = 8/20 \mu\text{s}$ ²⁾ $I_{\text{PP}} = 3.5 \text{ A}, t_p = 8/20 \mu\text{s}$ ²⁾ $I_{\text{PP}} = 5.5 \text{ A}, t_p = 8/20 \mu\text{s}$ ²⁾	V_{FC}	-	1.2 2 2.5	2 3 3.5	
Diode capacitance $V_{\text{R}} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{\text{R}} = 2.5 \text{ V}, f = 1 \text{ MHz}$	C_{T}	-	35 20	40 -	
Dynamic resistance ³⁾ ($t_p = 30 \text{ ns}$)	R_{D}	-	0.27	-	Ω

¹⁾ V_{ESD} according to IEC61000-4-2

²⁾ I_{pp} according to IEC61000-4-5

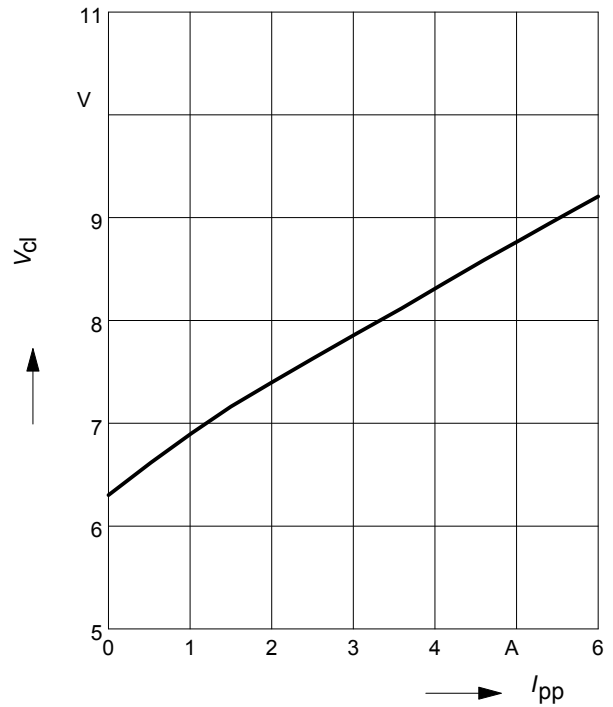
³⁾ according to TLP tests

Power derating curve $P_{pk} = f(T_A)$



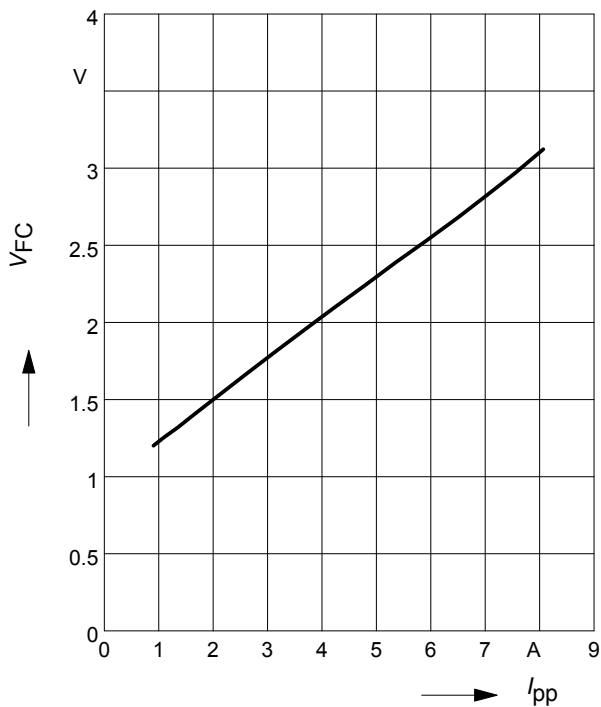
Clamping voltage, $V_{cl} = f(I_{pp})$

$t_p = 8 / 20 \mu s$



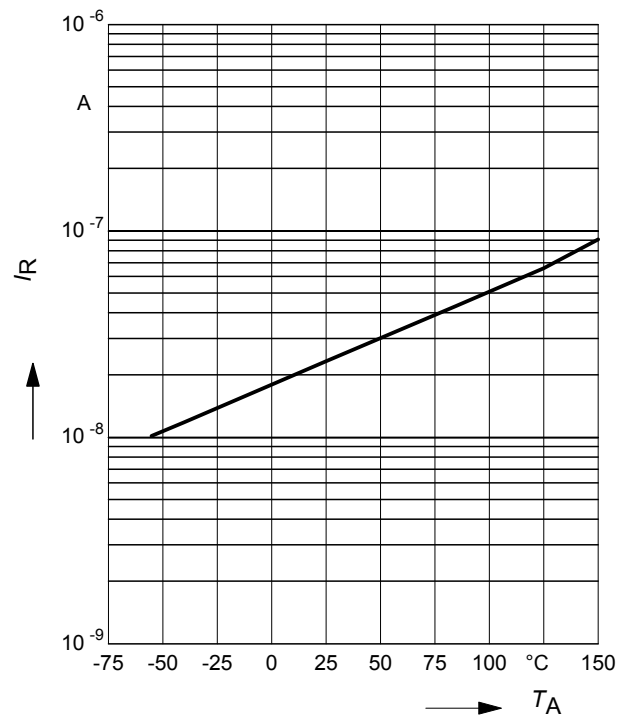
Forward clamping voltage $V_{FC} = f(I_{PP})$

$t_p = 8 / 20 \mu s$



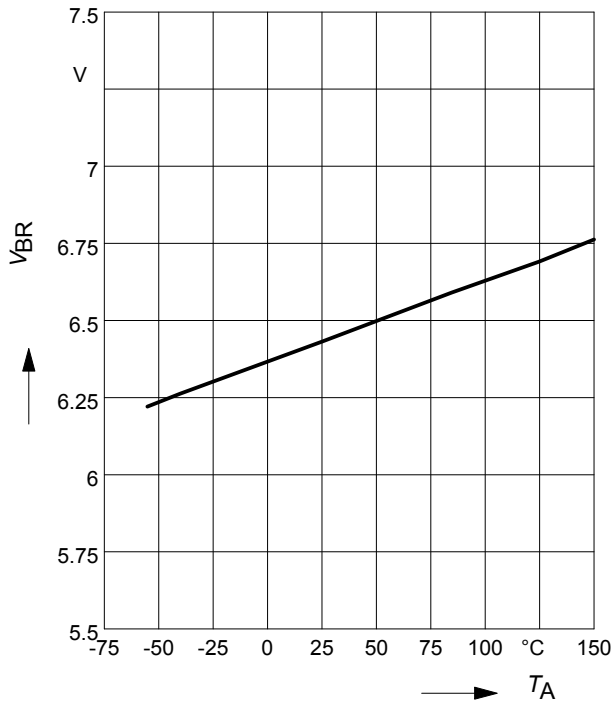
Reverse current $I_R = f(T_A)$

$V_R = 3.3 V$



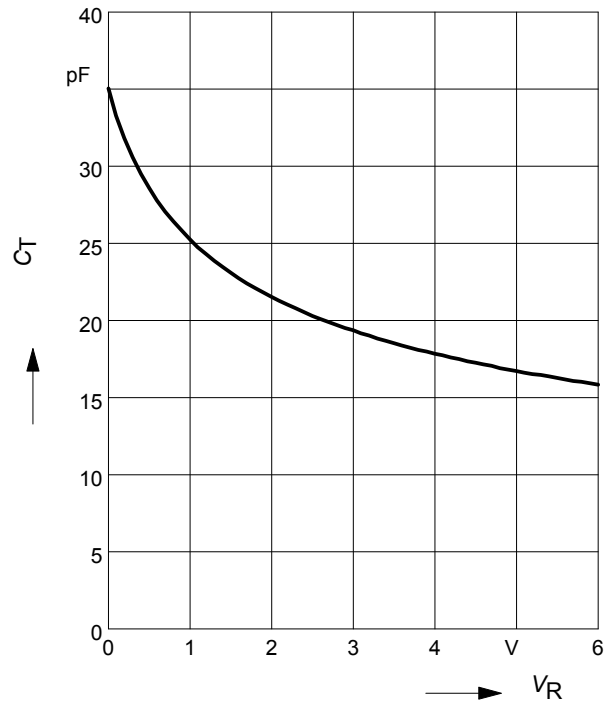
Breakdown voltage $V_{BR} = f(T_A)$

$I_R = 1 \text{ mA}$

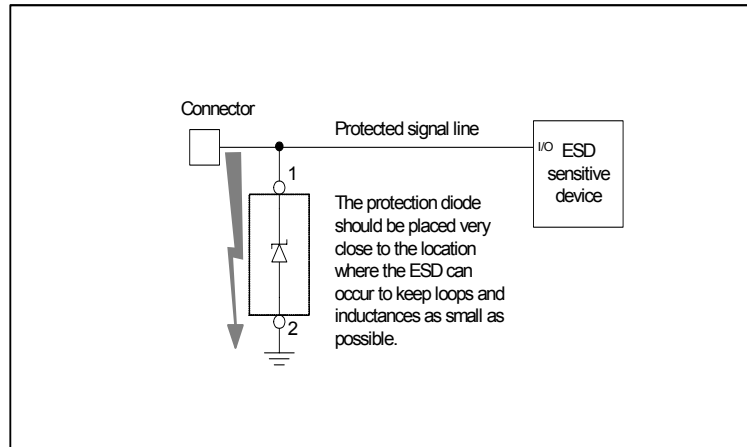


Diode capacitance $C_T = f(V_R)$

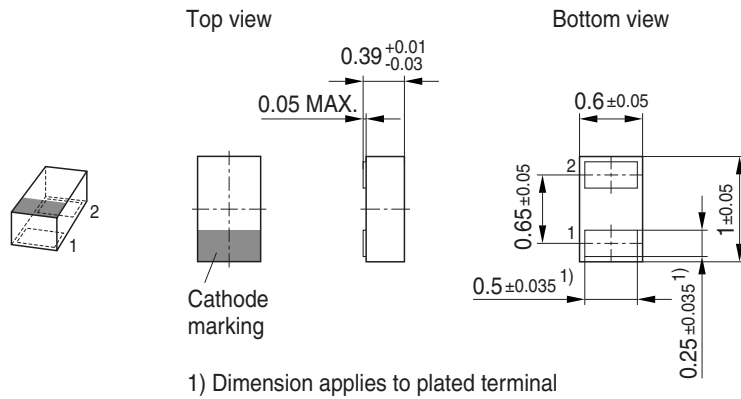
$f = 1 \text{ MHz}$



Application example
single channel, uni-directional

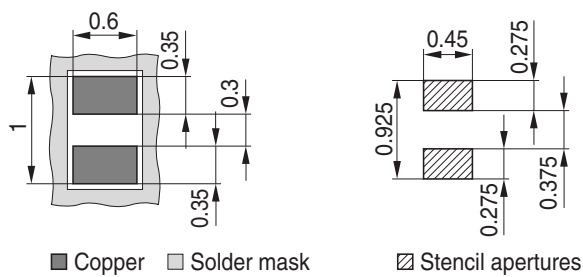


Package Outline

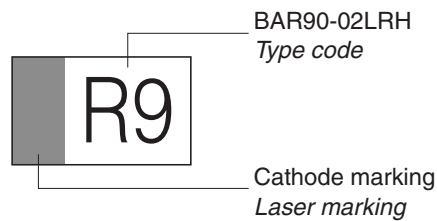


Foot Print

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

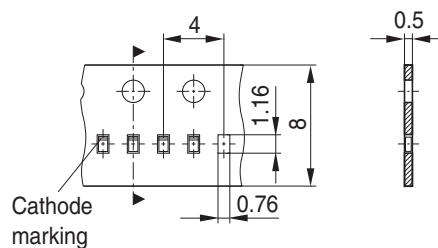


Marking Layout (Example)



Standard Packing

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



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