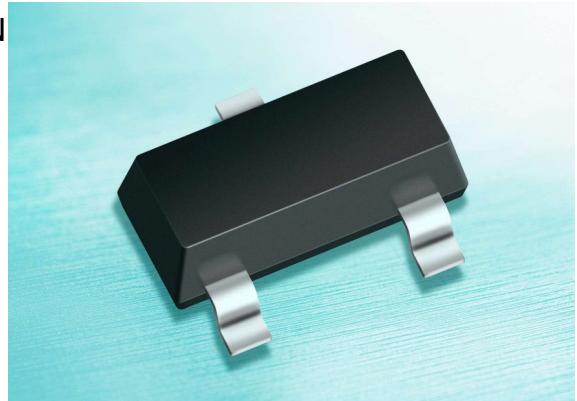


Silicon TVS diodes

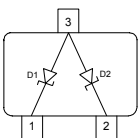
- ESD / transient protection of automotive CAN / LIN bus networks / transceivers, industrial bus systems and power supply lines according to:
IEC61000-4-2 (ESD): ± 30 kV (air / contact)
IEC61000-4-4 (EFT): 80 A (5/50 ns)
IEC61000-4-5 (surge): 5 A (8/20 μ s)
ISO7637-2: Pulse 1 (max. 50 V),
Pulse 2 (max. 125 V), Pulse 3a, b (max. 800 V)



- Max. working voltage: 24 V
- Low capacitance: 24 pF typ.
- Low clamping voltage: < 41 V
- Extremely low reverse current: < 1 nA typ.
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

Applications

- Low and High-Speed CAN
- Fault Tolerant CAN
- Industrial control networks
- 12/24 V DC power supply lines


ESD24VS2U


Type	Package	Configuration	Marking
ESD24VS2U	SOT23	2 lines, uni-directional*	EUs

* 1 line, bi-directional between pins 1 and 2, if pin 3 is not connected

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

Parameter	Symbol	Value	Unit
ESD contact discharge ¹⁾	V_{ESD}	30	kV
Peak pulse current ($t_p = 8 / 20 \mu\text{s}$) ²⁾	I_{pp}	5	A
Peak pulse power ($t_p = 8 / 20 \mu\text{s}$) ²⁾	P_{pk}	230	W
Operating temperature range	T_{op}	-55...150	°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 -

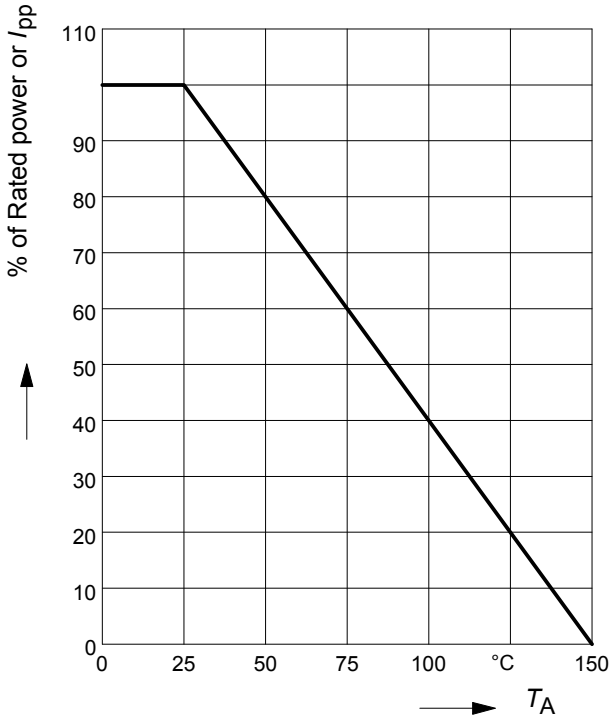
Reverse working voltage	V_{RWM}	-	-	24	V
Breakdown voltage $I_{(\text{BR})} = 1 \text{ mA}$	$V_{(\text{BR})}$	26	-	32	
Reverse current $V_{\text{R}} = 24 \text{ V}$	I_{R}	-	<1	10	nA
Clamping voltage $I_{\text{PP}} = 1 \text{ A}, t_p = 8/20 \mu\text{s}^2)$ $I_{\text{PP}} = 5 \text{ A}, t_p = 8/20 \mu\text{s}^2)$	V_{CL}	-	30 36	34 41	V
Line capacitance ³⁾ $V_{\text{R}} = 0 \text{ V}, f = 1 \text{ MHz}, \text{ESD24VS2U},$ (pins 1 to 2, pin 3 n.c.) $V_{\text{R}} = 0 \text{ V}, f = 1 \text{ MHz}, \text{ESD24VS2U},$ (pins 1 or 2 to 3)	C_{T}	-	24 48	28 52	

¹⁾ V_{ESD} according to IEC61000-4-2. Device stressed with 10 positive / negative ESD pulses.

²⁾ I_{pp} according to IEC61000-4-5. Non-repetitive current pulse.

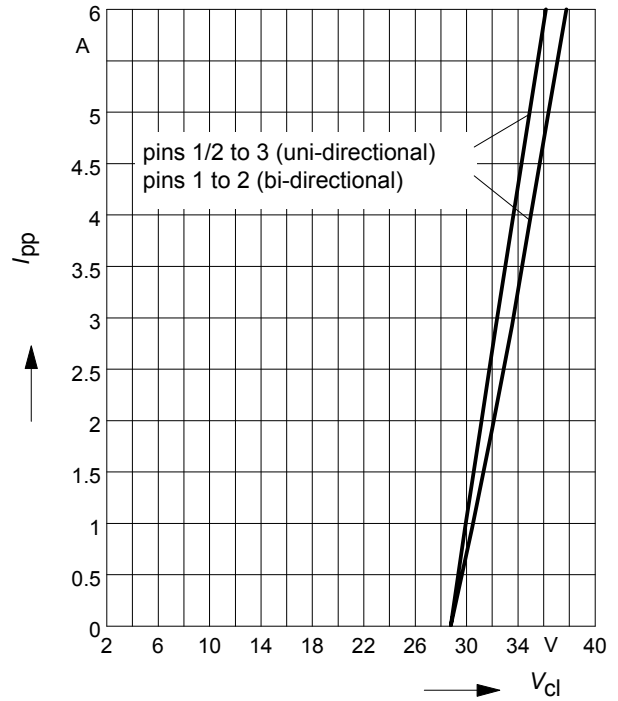
³⁾Total capacitance to ground (per line)

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



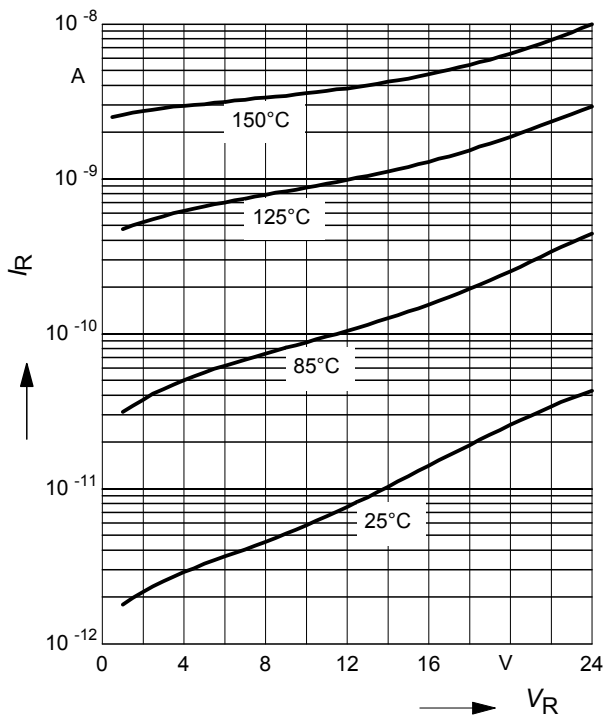
Clamping voltage, $V_{cl} = f(I_{pp})$

$t_p = 8 / 20 \mu s$



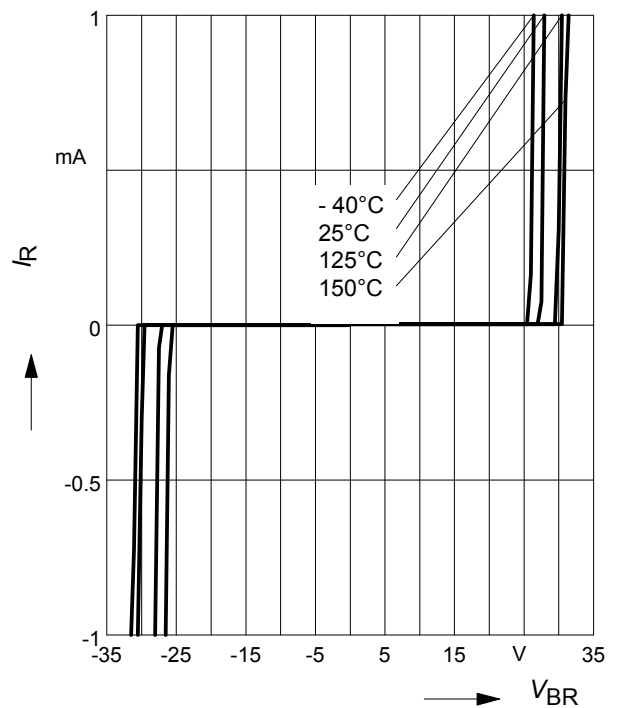
Reverse current $I_R = f(V_R)$

$T_A =$ Parameter, pins 1 / 2 to 3
(uni-directional)



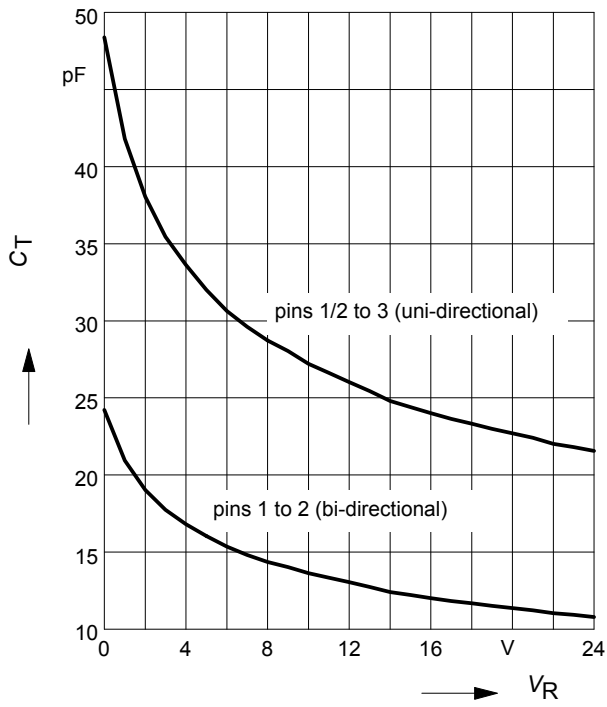
Breakdown voltage $V_{BR} = f(I_R)$

$T_A =$ Parameter, pins 1 to 2
(bi-directional)

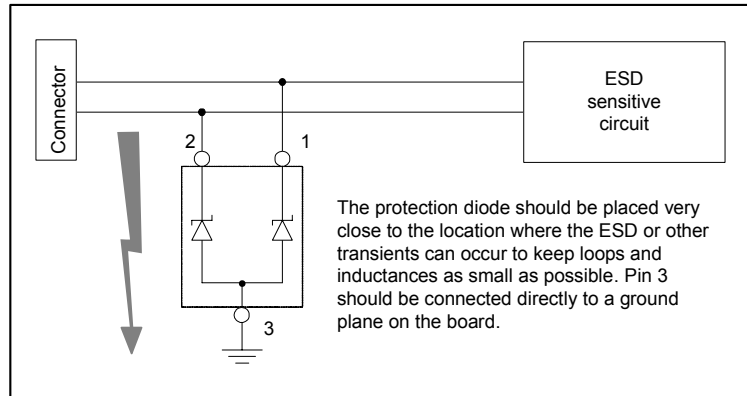


Line capacitance $C_T = f(V_R)$

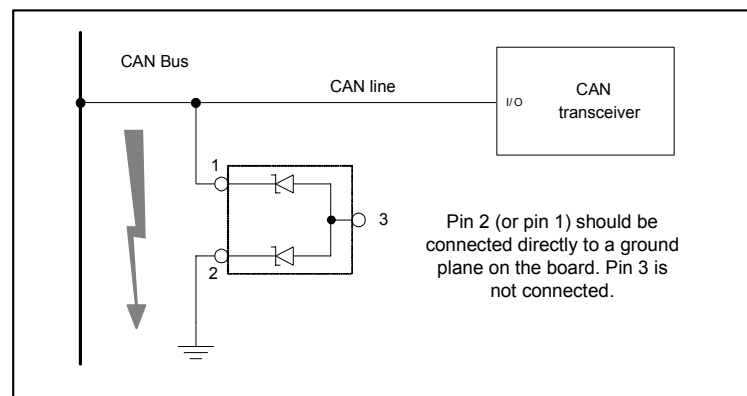
$f = 1\text{MHz}$



Application example ESD24VS2U (uni-directional)
 12V / 24V DC power supply line protection

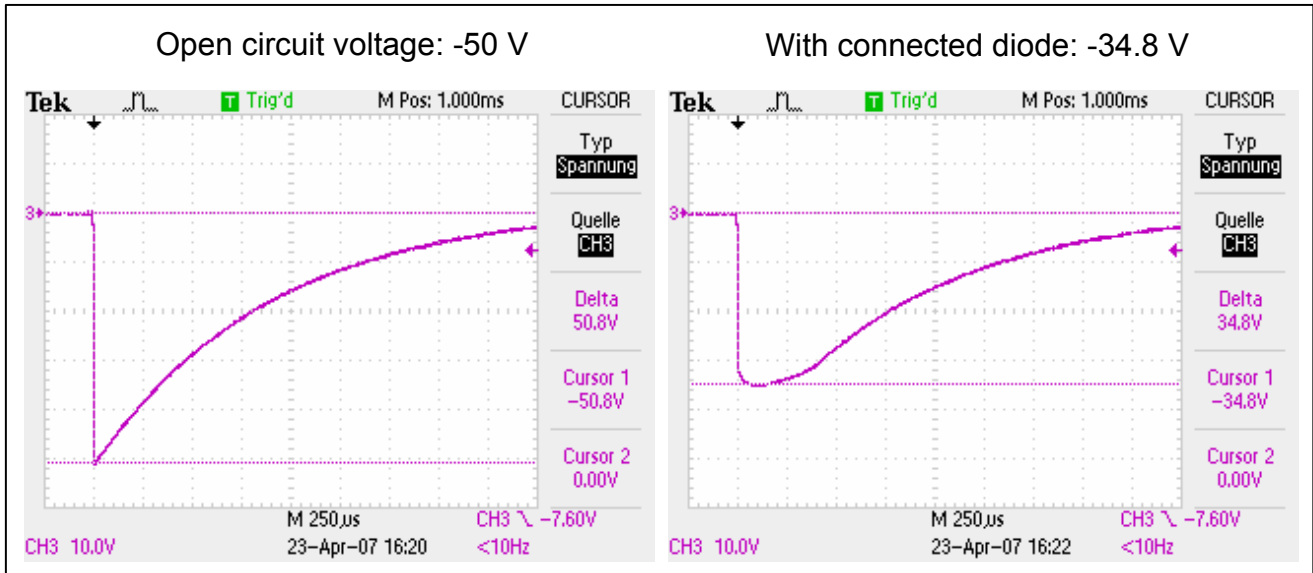


Application example ESD24VS2U (bi-directional)
 Single Wire CAN and LIN bus protection



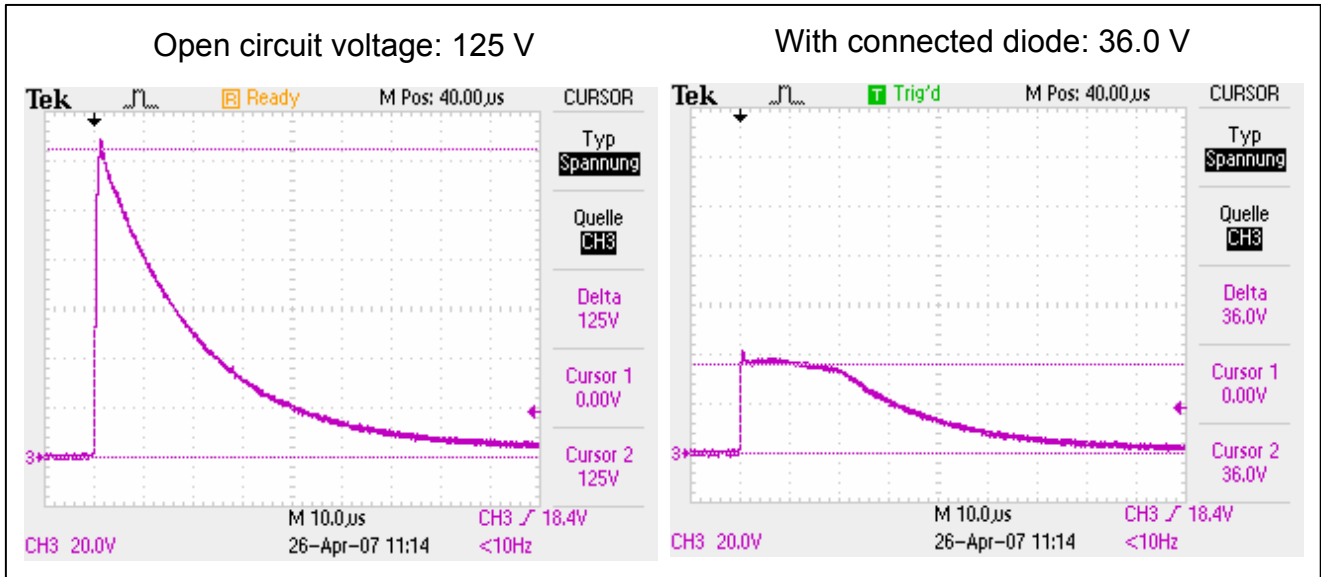
Clamping voltage according to ISO 7637-2: Pulse 1

Ri = 10 Ohm, td = 2 ms, 5000 pulses



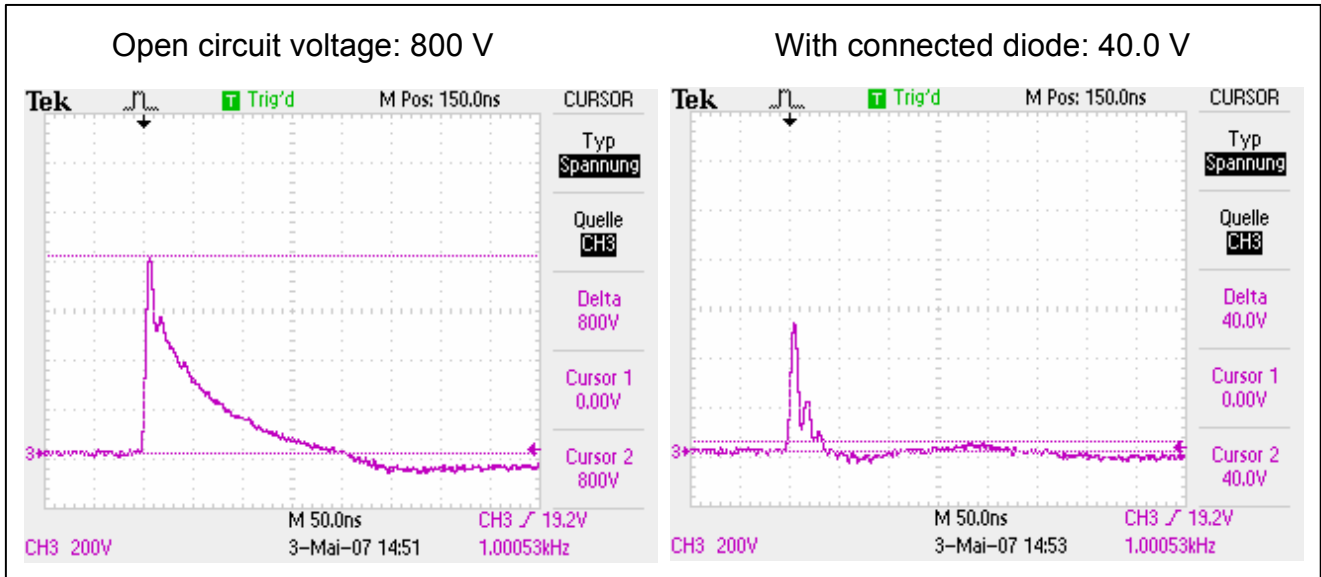
Clamping voltage according to ISO 7637-2: Pulse 2a

Ri = 10 Ohm, td = 2 us, 4000 pulses, 60 min

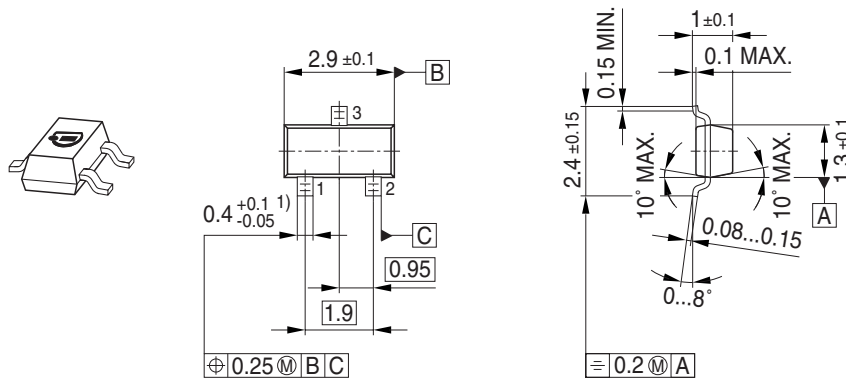


Clamping voltage according to ISO 7637-2: Pulse 3

Ri = 50 Ohm, td = 100 ns, 10 min

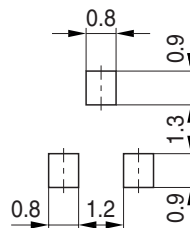


Package Outline

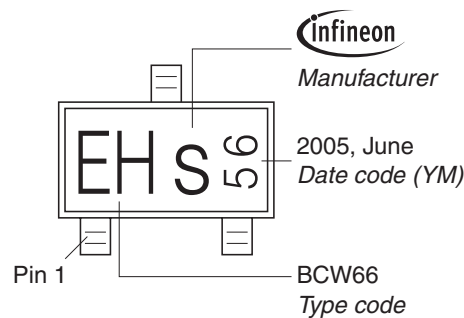


1) Lead width can be 0.6 max. in dambar area

Foot Print

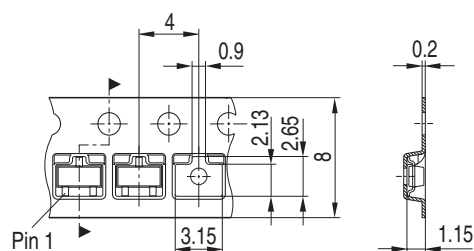


Marking Layout (Example)



Standard Packing

Reel ϕ 180 mm = 3.000 Pieces/Reel
 Reel ϕ 330 mm = 10.000 Pieces/Reel



Edition 2006-02-01

Published by

Infineon Technologies AG

81726 München, Germany

© Infineon Technologies AG 2007.

All Rights Reserved.

Attention please!

The information given in this dokument shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.

Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system.

Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.