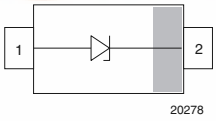
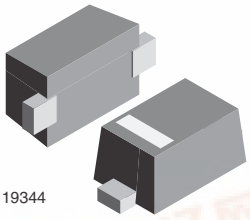
Single ESD-Protection Diode in SOD-523



20278


19344

FEATURES

- Single-line ESD-protection
- Capacitance typical C_D = 12 pF (V_R = 2.5 V, f = 1 MHz)
- Leakage current I_R < 1 µA (V_R = 5 V)
- ESD-protection acc. IEC 61000-4-2
  ± 20 kV contact discharge
  ± 30 kV air discharge
- e3 - Sn
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e3

RoHS COMPLIANT

GREEN (5-2008)**

MARKING (example only)

20279

Bar = cathode marking
X = date code
Y = type code (see table below)

ORDERING INFORMATION

DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL)	MINIMUM ORDER QUANTITY
VESD05A1B-02V	VESD05A1B-02V-G-08	3000	3000

PACKAGE DATA

DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VESD05A1B-02V	SOD-523	. H	1.4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	acc. IEC 61000-4-5, 8/20 µs/single shot	I_{PPM}	3	A
Peak pulse power	acc. IEC 61000-4-5, 8/20 µs/single shot	P_{PP}	33	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 20	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	- 40 to + 125	°C
Storage temperature		T_{stg}	- 55 to + 150	°C

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

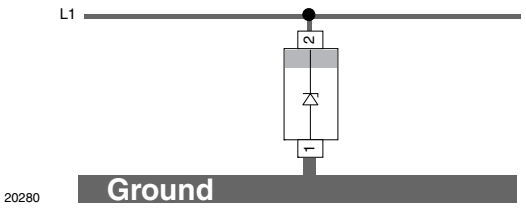
BiAs-MODE (bidirectional asymmetrical protection mode)

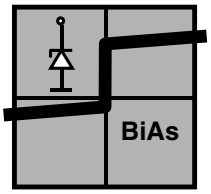
With the VESD05A1B-02V one signal- or data-lines (L1) can be protected against voltage transients. With pin 1 connected to ground and pin 2 connected to a signal- or data-line which has to be protected. As long as the voltage level on the data- or signal-line is between 0 V (ground level) and the specified maximum reverse working voltage (V_{RWM}) the protection diode between data line and ground offers a high isolation to the ground line. The protection device behaves like an open switch.

As soon as any positive transient voltage signal exceeds the break through voltage level of the protection diode, the diode becomes conductive and shorts the transient current to ground. Now the protection device behaves like a closed switch. The clamping voltage (V_C) is defined by the breakthrough voltage (V_{BR}) level plus the voltage drop at the series impedance (resistance and inductance) of the protection device.

Any negative transient signal will be clamped accordingly. The negative transient current is flowing in the forward direction of the protection diode. The low forward voltage (V_F) clamps the negative transient close to the ground level.

Due to the different clamping levels in forward and reverse direction the VESD05A1B-02V clamping behaviour is bidirectional and asymmetrical (BiAs).



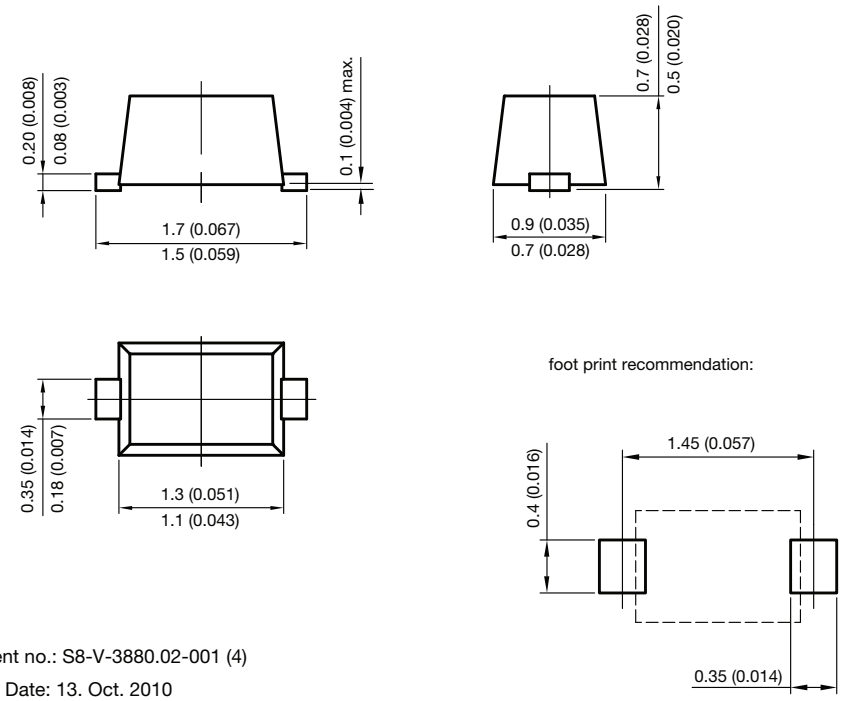


ELECTRICAL CHARACTERISTICS VESD05A1B-02V						
PARAMETER	**TEST CONDITIONS/REMARKS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse working voltage	at I_R = 1 µA	V_{RWM}	5	-	-	V
Reverse current	at V_R = 5 V	I_R	-	0.01	0.1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	6	6.8	7.5	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	8	9.5	V
	at I_{PP} = I_{PPM} = 3 A		-	8.9	11	V
Forward clamping voltage	at I_{PP} = 0.2 A	V_F	-	0.95	1.2	V
	at I_{PP} = 1 A		-	1.3	-	V
	at I_{PP} = I_{PPM} = 3 A		-	1.9	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	19	23	pF
	at V_R = 2.5 V; f = 1 MHz		-	12	-	pF

Note

- Ratings at 25 °C, ambient temperature unless otherwise specified. BiAs mode (between pin 1 and pin 2).

PACKAGE DIMENSIONS in millimeters (inches): **SOD-523**



Document no.: S8-V-3880.02-001 (4)
Rev. h - Date: 13. Oct. 2010
16864

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.