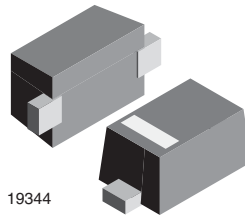


## Single ESD-Protection Diode in SOD-523



### FEATURES

- Single-line ESD-protection
- Low leakage current
- ESD-immunity acc. IEC 61000-4-2  
± 8 kV contact discharge  
± 15 kV air discharge
- e3 - Sn
- Material categorization:  
For definitions of compliance please see  
[www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
**GREEN**  
(5-2008)

### MARKING (example only)



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
VESD01-02V	VESD01-02V-G-08	3000	3000
VESD03-02V	VESD03-02V-G-08	3000	3000
VESD05-02V	VESD05-02V-G-08	3000	3000
VESD08-02V	VESD08-02V-G-08	3000	3000
VESD12-02V	VESD12-02V-G-08	3000	3000

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VESD01-02V	SOD-523	.V	1.4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals
VESD03-02V	SOD-523	.B	1.4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals
VESD05-02V	SOD-523	.C	1.4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals
VESD08-02V	SOD-523	.D	1.4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals
VESD12-02V	SOD-523	.E	1.4 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals



ABSOLUTE MAXIMUM RATINGS VESD01-02V				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	7	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	63	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	± 8	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 15	kV
Operating temperature	Junction temperature	T <sub>J</sub>	- 40 to + 125	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 150	°C

ABSOLUTE MAXIMUM RATINGS VESD03-02V				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	9	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	108	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	± 8	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 15	kV
Operating temperature	Junction temperature	T <sub>J</sub>	- 40 to + 125	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 150	°C

ABSOLUTE MAXIMUM RATINGS VESD05-02V				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	6	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	120	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	± 8	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 15	kV
Operating temperature	Junction temperature	T <sub>J</sub>	- 40 to + 125	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 150	°C

ABSOLUTE MAXIMUM RATINGS VESD08-02V				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	4	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	120	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	± 8	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 15	kV
Operating temperature	Junction temperature	T <sub>J</sub>	- 40 to + 125	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 150	°C

ABSOLUTE MAXIMUM RATINGS VESD12-02V				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	2	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	25	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	± 8	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 15	kV
Operating temperature	Junction temperature	T <sub>J</sub>	- 40 to + 125	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 150	°C

**ELECTRICAL CHARACTERISTICS VESD01-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	1	V
Reverse voltage	at I <sub>R</sub> = 100 μA	V <sub>R</sub>	1	-	-	V
Reverse current	at V <sub>R</sub> = 1 V	I <sub>R</sub>	-	-	100	μA
Reverse breakdown voltage	at I <sub>R</sub> = 1 mA	V <sub>BR</sub>	1.5	-	-	V
Reverse clamping voltage	at I <sub>PP</sub> (see fig. 1)	V <sub>C</sub>	-	9	-	V
Capacitance	at V <sub>R</sub> = 0 V; f = 1 MHz	C <sub>D</sub>	-	180	-	pF

**ELECTRICAL CHARACTERISTICS VESD03-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	3	V
Reverse voltage	at I <sub>R</sub> = 20 μA	V <sub>R</sub>	3	-	-	V
Reverse current	at V <sub>R</sub> = 3 V	I <sub>R</sub>	-	-	20	μA
Reverse breakdown voltage	at I <sub>R</sub> = 1 mA	V <sub>BR</sub>	4	-	-	V
Reverse clamping voltage	at I <sub>PP</sub> (see fig. 1)	V <sub>C</sub>	-	12	-	V
Capacitance	at V <sub>R</sub> = 0 V; f = 1 MHz	C <sub>D</sub>	-	110	-	pF

**ELECTRICAL CHARACTERISTICS VESD05-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	5	V
Reverse voltage	at I <sub>R</sub> = 0.1 μA	V <sub>R</sub>	5	-	-	V
Reverse current	at V <sub>R</sub> = 5 V	I <sub>R</sub>	-	-	0.1	μA
Reverse breakdown voltage	at I <sub>R</sub> = 1 mA	V <sub>BR</sub>	6.5	-	-	V
Reverse clamping voltage	at I <sub>PP</sub> (see fig. 1)	V <sub>C</sub>	-	20	-	V
Capacitance	at V <sub>R</sub> = 0 V; f = 1 MHz	C <sub>D</sub>	-	55	-	pF

**ELECTRICAL CHARACTERISTICS VESD08-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

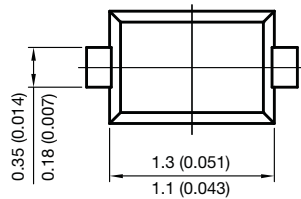
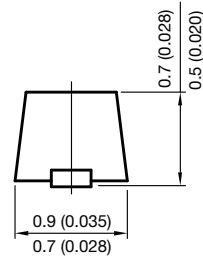
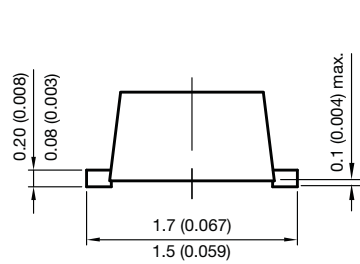
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	8	V
Reverse voltage	at I <sub>R</sub> = 0.1 μA	V <sub>R</sub>	8	-	-	V
Reverse current	at V <sub>R</sub> = 8 V	I <sub>R</sub>	-	-	0.1	μA
Reverse breakdown voltage	at I <sub>R</sub> = 1 mA	V <sub>BR</sub>	9	-	-	V
Reverse clamping voltage	at I <sub>PP</sub> (see fig. 1)	V <sub>C</sub>	-	30	-	V
Capacitance	at V <sub>R</sub> = 0 V; f = 1 MHz	C <sub>D</sub>	-	35	-	pF

**ELECTRICAL CHARACTERISTICS VESD12-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

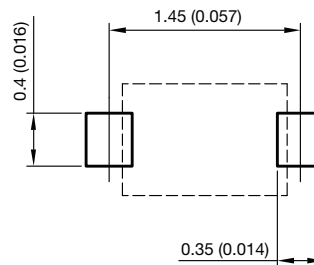
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	12	V
Reverse voltage	at I <sub>R</sub> = 0.1 μA	V <sub>R</sub>	12	-	-	V
Reverse current	at V <sub>R</sub> = 12 V	I <sub>R</sub>	-	-	0.1	μA
Reverse breakdown voltage	at I <sub>R</sub> = 1 mA	V <sub>BR</sub>	14	-	-	V
Reverse clamping voltage	at I <sub>PP</sub> (see fig. 1)	V <sub>C</sub>	-	25	-	V
Capacitance	at V <sub>R</sub> = 0 V; f = 1 MHz	C <sub>D</sub>	-	30	-	pF



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



foot print recommendation:



Document no.: S8-V-3880.02-001 (4)

Rev. h - Date: 13. Oct. 2010

16864



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**