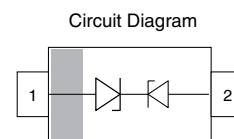
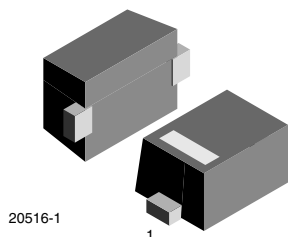


## Bidirectional Asymmetrical (BiAs) Single Line ESD-Protection Diode in SOD923

### Features

- Working range - 7 V up to + 14 V or - 14 V up to + 7 V
- Low leakage current < 0.1  $\mu$ A
- Low capacitance typ. 8.0 pF
- ESD-immunity acc. IEC 61000-4-2  $\pm$  25 kV contact discharge  $\pm$  30 kV air discharge
- Tiny SOD923 package
- Package height < 0.4 mm
- Lead (Pb)-free component
- Lead finish = "e3" = matte tin (Sn)
- Nonmagnetic package material
- "Green" molding compound
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



20503

### Marking (example only)



20279

Bar = Pin 1 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
VCUT0714A-02Z	VCUT0714A-02Z-GS08	8000	8000

### Package Data

Device name	Package name	Type code	Weight	Molding compound flammability rating	Soldering conditions
VCUT0714A-02Z	SOD923	A	0.45 mg	UL 94 V-0	260 °C/10 s at terminals

### Absolute Maximum Ratings

Parameter	Test conditions	Symbol	Value	Unit
Peak pulse current	Pin 1 to pin 2 acc. IEC 61000-4-5, 8/20 $\mu$ s/single shot	$I_{PPM}$	5	A
	Pin 2 to pin 1 acc. IEC 61000-4-5, 8/20 $\mu$ s/single shot	$I_{PPM}$	2	A
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5, 8/20 $\mu$ s/single shot	$P_{PP}$	63	W
	Pin2 to pin 1 acc. IEC 61000-4-5, 8/20 $\mu$ s/single shot	$P_{PP}$	54	W
ESD immunity	Contact discharge acc. IEC61000-4-2; 10 pulses	$V_{ESD}$	$\pm$ 25	kV
	Air discharge acc. IEC61000-4-2; 10 pulses		$\pm$ 30	
Operating temperature	Junction temperature	$T_j$	- 40 to + 125	°C
Storage temperature		$T_{STG}$	- 55 to + 150	°C

**Cut the spikes with VCUT0714A-02Z:**

The **VCUT0714A-02Z** is a **Bidirectional** but **Asymmetrical (BiAs)** ESD-protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the **VCUT0714A-02Z** offers a high isolation (low leakage current, small capacitance) within the specified working range of - 7 V to + 14 V or - 14 V and + 7 V. Due to the short leads and small package size of the tiny SOD923 package the line inductance is very low, so that fast transients like an ESD-strike can be clamped with minimal over- or undershoots.

**Electrical Characteristics**

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

**VCUT0714A-02Z**

(Measured from pin 2 to pin 1)

Parameter	Test conditions/remarks	Symbol	Min.	Typ.	Max.	Unit
Protection paths	Number of lines which can be protected	$N_{lines}$			1	lines
Reverse stand-off voltage	at $I = 0.1\text{ }\mu\text{A}$	$V_{RWM}$	14			V
Reverse current	at $V = 14\text{ V}$	$I_R$			0.1	$\mu\text{A}$
Reverse breakdown voltage	at $I = 1\text{ mA}$	$V_{BR}$	14.5			V
Reverse clamping voltage	at $I_{PP} = 1\text{ A}$	$V_C$			27	V
	at $I_{PP} = I_{PPM} = 2\text{ A}$	$V_C$			30	V
Capacitance	at $V = 0\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$		8	8.5	pF
	at $V = 7\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$		4		pF

**VCUT0714A-02Z**

(Measured from pin 1 to pin 2)

Parameter	Test conditions/remarks	Symbol	Min.	Typ.	Max.	Unit
Protection paths	Number of lines which can be protected	$N_{lines}$			1	lines
Reverse stand-off voltage	at $I = 0.1\text{ }\mu\text{A}$	$V_{RWM}$	7			V
Reverse current	at $V = 7\text{ V}$	$I_R$			0.1	$\mu\text{A}$
Reverse breakdown voltage	at $I_2 = 1\text{ mA}$	$V_{BR}$	7.3			V
Reverse clamping voltage	at $I_{PP} = 1\text{ A}$	$V_C$			13	V
	at $I_{PP} = I_{PPM} = 5\text{ A}$	$V_C$			17	V
Capacitance	at $V = 0\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$		8	8.5	pF
	at $V = 3.5\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$		6.4		pF

## Typical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

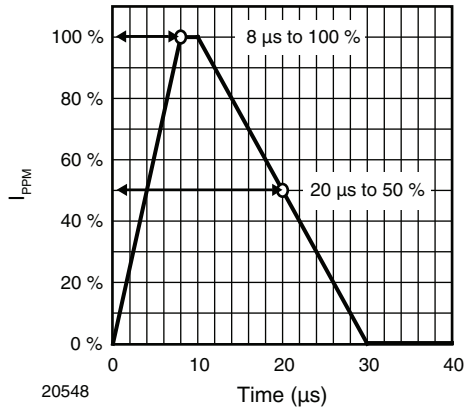


Figure 1. 8/20  $\mu\text{s}$  Peak Pulse Current Wave Form (acc. IEC 61000-4-5)

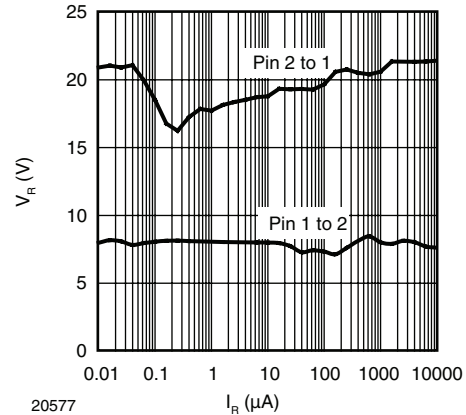


Figure 4. Typical Reverse Voltage  $V_R$  vs. Reverse Current  $I_R$

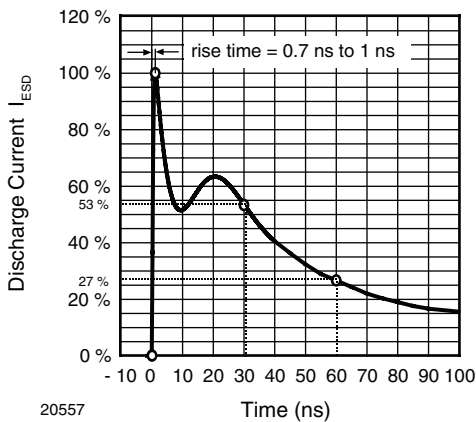


Figure 2. ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330  $\Omega$ /150 pF)

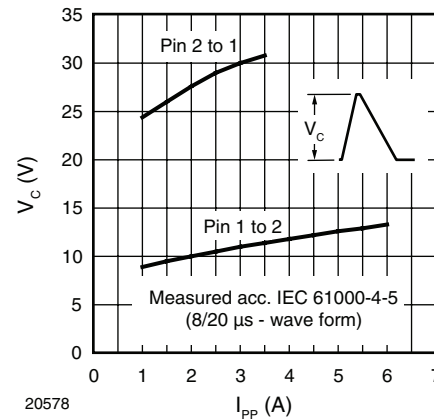


Figure 5. Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

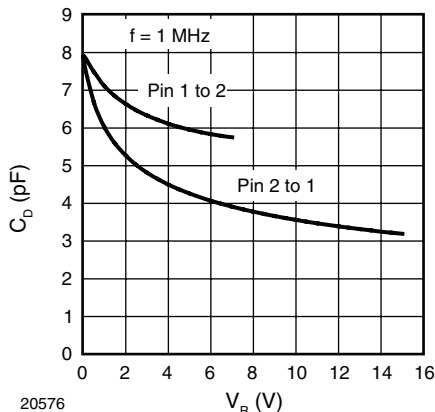


Figure 3. Typical Capacitance  $C_D$  vs. Reverse Voltage  $V_R$

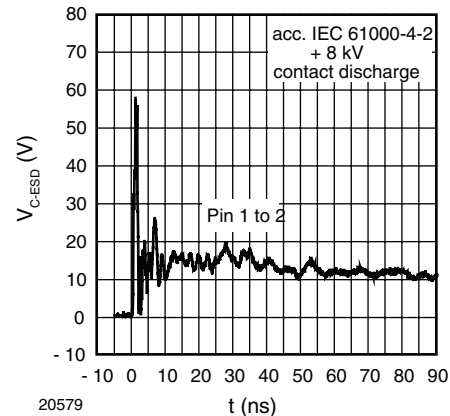


Figure 6. Typical Clamping Performance at +8 kV Contact Discharge (acc. IEC 61000-4-2)

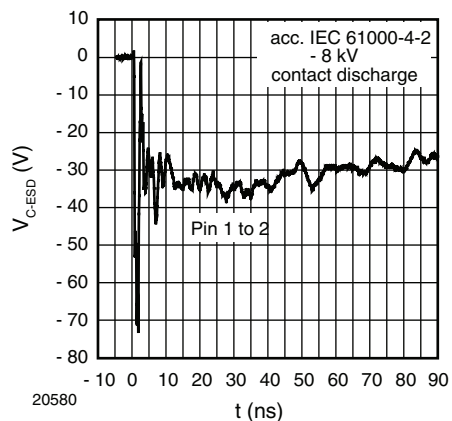


Figure 7. Typical Clamping Performance at -8 kV Contact Discharge (acc. IEC 61000-4-2)

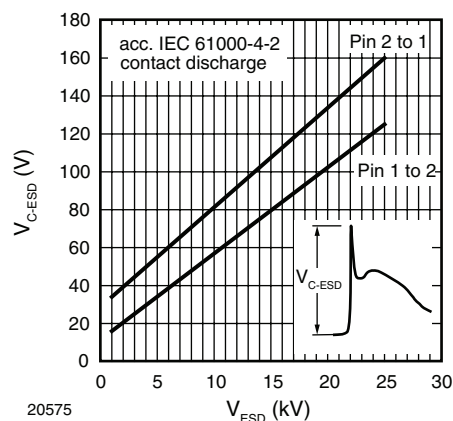
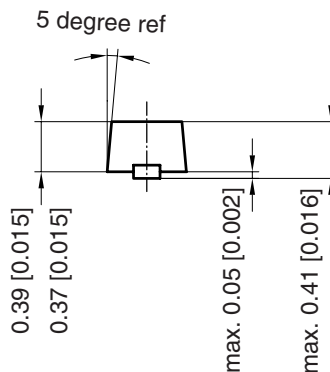
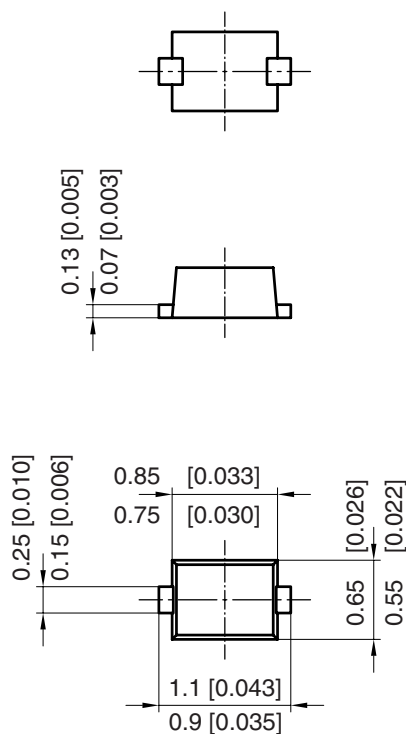
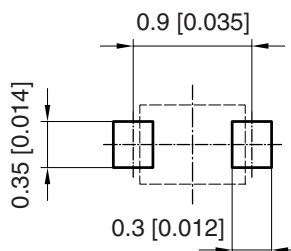


Figure 8. Typical Peak Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)

## Package Dimensions in millimeters (inches): SOD923



foot print recommendation:



Document no.: S8-V-3880.05-001 (4)

Rev. 1 - Date: 05.July.2006

20096

**Ozone Depleting Substances Policy Statement**

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively.
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA.
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design  
and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany



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