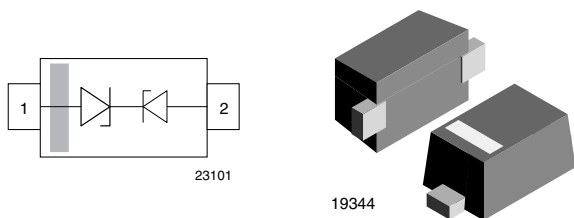


Bidirectional Asymmetrical (BiAs) Single Line ESD-Protection Diode in SOD-523



MARKING (example only)



Bar = pin 1 marking

X = date code

Y = type code (see table below)

LINKS TO ADDITIONAL RESOURCES



FEATURES

- Compact SOD-523 package
- Low package height < 0.75 mm
- 1-line ESD-protection
- AEC-Q101 qualified available
- Working range -7 V up to +14 V or -14 V up to +7 V
- Low leakage current < 0.1 μ A
- Low load capacitance typical $C_D = 8$ pF
- ESD-protection acc. IEC 61000-4-2
± 25 kV contact discharge
± 30 kV air discharge
- Lead plating: Sn (e3)
Soldering can be checked by standard vision inspection
AOI = automated optical inspection
No X-ray necessary
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



ORDERING INFORMATION

PART NUMBER (EXAMPLE)	AEC-Q101 QUALIFIED	ENVIRONMENTAL AND QUALITY CODE			ORDERING CODE (EXAMPLE)
		RoHS COMPLIANT + LEAD (Pb)-FREE TERMINATIONS	TIN PLATED	8K PER 7" REEL (8 mm TAPE)	
		GREEN		MOQ = 8K/BOX	
VCUT0714A02V	-	G	3	-08	VCUT0714A02V-G3-08
VCUT0714A02V	H	G	3	-08	VCUT0714A02VHG3-08

PACKAGE DATA

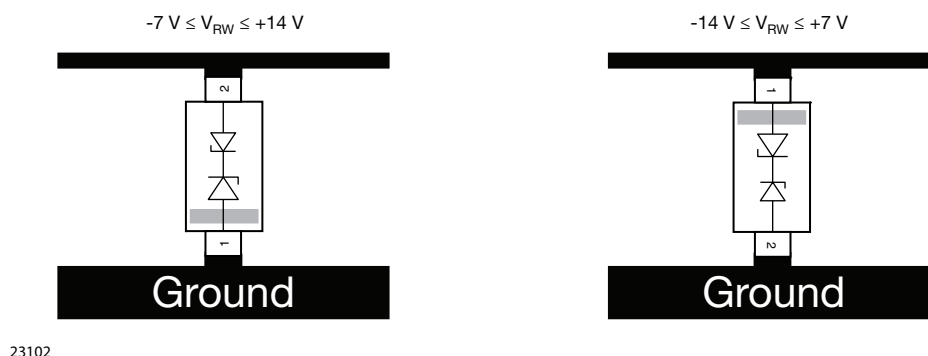
DEVICE NAME	PACKAGE NAME	PIN PLATING	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT0714A02V	SOD-523	e3	N	1.32 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Pin 1 to pin 2 Acc. IEC 61000-4-5, 8/20 μ s/single shot	I_{PPM}	4.6	A
	Pin 2 to pin 1 Acc. IEC 61000-4-5, 8/20 μ s/single shot		2.7	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μ s/single shot	P_{PP}	70	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 25	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

CUT THE SPIKES WITH VCUT0714A02V

The VCUT0714A02V 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 VCUT0714A02V 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 small SOD-523 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 (pin 2 to pin 1)

(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N _{channel}	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V _{RWM}	-	-	14	V
Reverse voltage	at I _R = 0.1 μA	V _R	14	-	-	V
Reverse current	at V _{RWM} = 14 V	I _R	-	-	0.1	μA
Reverse breakdown voltage	at I _R = 1 mA	V _{BR}	14.5	-	-	V
Reverse clamping voltage	at I _{PP} = 1 A; t _p = 8/20 μs	V _C	-	-	27	V
	at I _{PP} = I _{PPM} = 2.7 A; t _p = 8/20 μs	V _C	-	-	35	V
Capacitance	at V _R = 0 V; f = 1 MHz	C _D	-	8	8.5	pF
	at V _R = 7 V; f = 1 MHz	C _D	-	4	-	pF

ELECTRICAL CHARACTERISTICS (pin 1 to pin 2)

(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N _{channel}	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V _{RWM}	-	-	7	V
Reverse voltage	at I _R = 0.1 μA	V _R	7	-	-	V
Reverse current	at V _{RWM} = 7 V	I _R	-	-	0.1	μA
Reverse breakdown voltage	at I _R = 1 mA	V _{BR}	7.3	-	-	V
Reverse clamping voltage	at I _{PP} = 1 A; t _p = 8/20 μs	V _C	-	-	13	V
	at I _{PP} = I _{PPM} = 4.6 A; t _p = 8/20 μs	V _C	-	-	19	V
Capacitance	at V = 0 V; f = 1 MHz	C _D	-	8	8.5	pF
	at V = 3.5 V; f = 1 MHz	C _D	-	6.4	-	pF

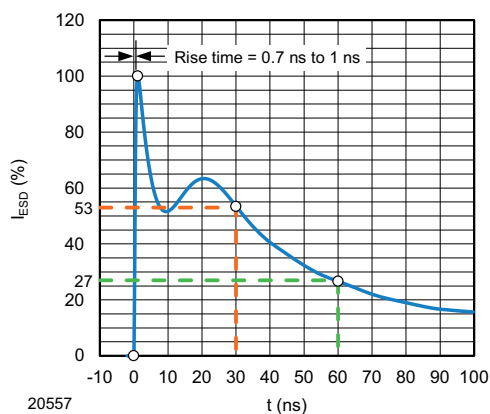
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω /150 pF)

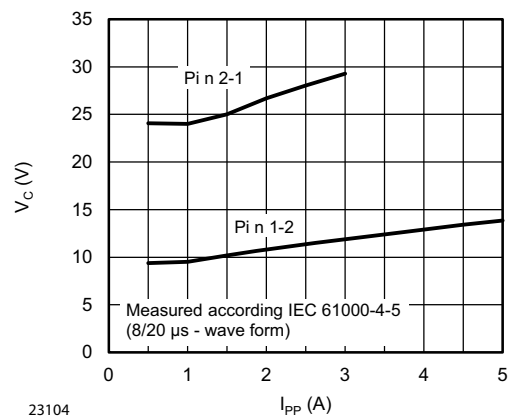


Fig. 4 - Typical Peak Clamping Voltage vs. Peak Pulse Current

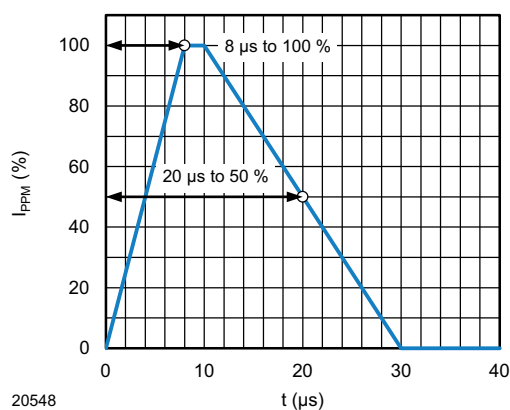


Fig. 2 - 8/20 μ s Peak Pulse Current Wave Form acc. IEC 61000-4-5

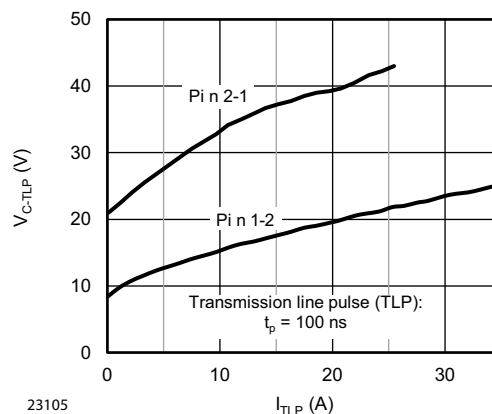


Fig. 5 - Typical Peak Clamping Voltage vs. Peak Pulse Current

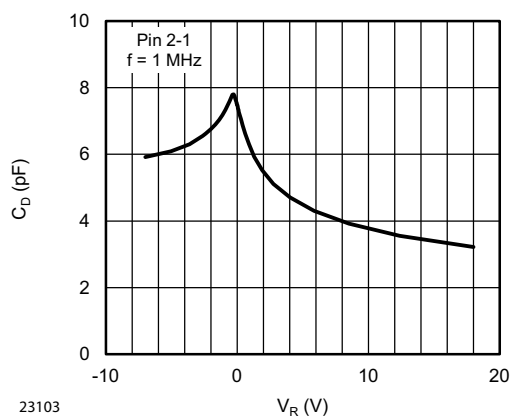


Fig. 3 - Typical Capacitance vs. Reverse Voltage

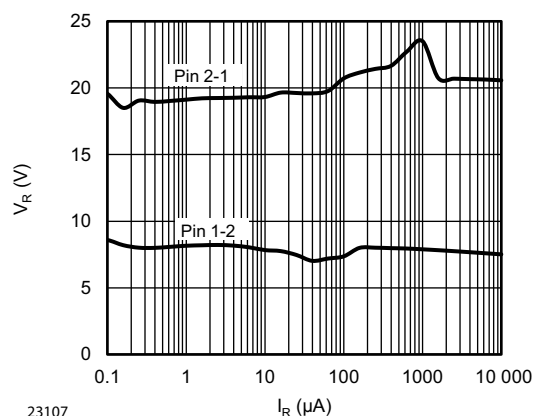
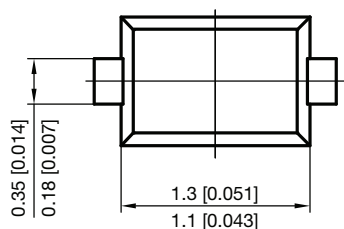
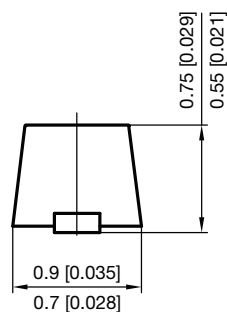
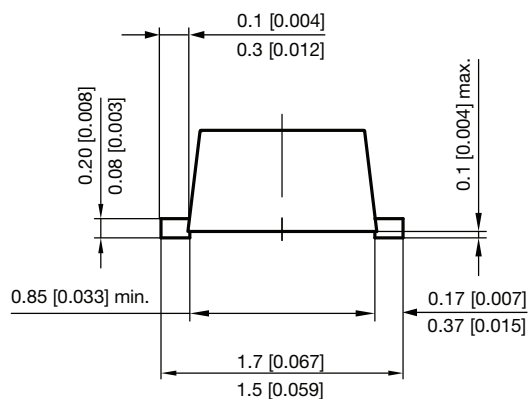
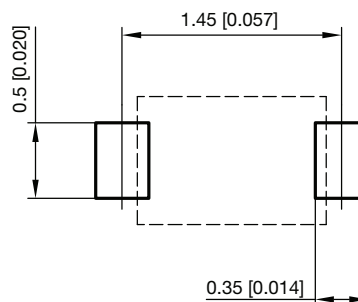


Fig. 6 - Typical Reverse Voltage vs. Reverse Current

PACKAGE DIMENSIONS in millimeters [inches]: **SOD-523**


Footprint recommendation:

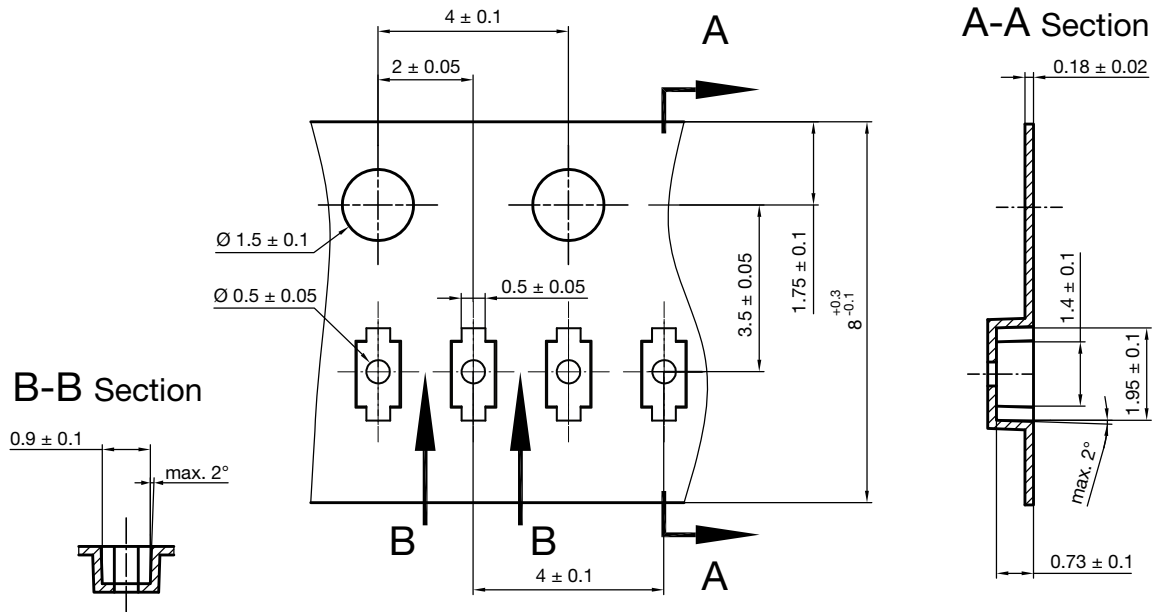


Document no.: S8-V-3880.02-003 (4)

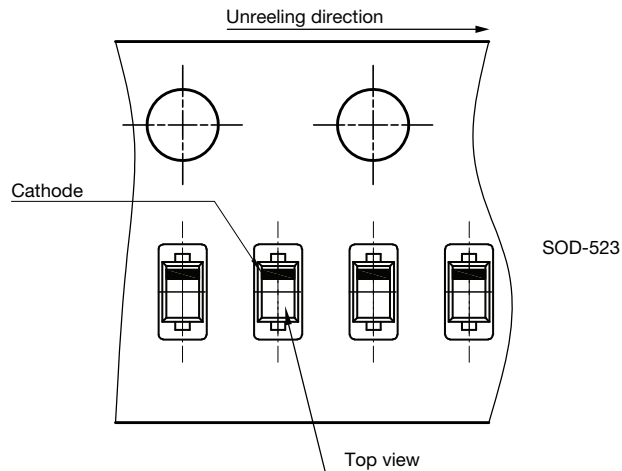
Created - Date: 04. April 2017

Rev. 4 - Date: 03. Aug. 2020

23093

CARRIER TAPE SOD-523


S8-V-3717.03-005 (4)
05.07.2018
22959

ORIENTATION IN CARRIER TAPE SOD-523


S8-V-3717.03-006 (4)
05.07.2018
22958



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