

### LINKS TO ADDITIONAL RESOURCES



www.vishay.com

### MECHANICAL DATA

Case: SOD-123

Weight: approx. 10.6 mg

#### Packaging codes/options:

18/10K per 13" reel (8 mm tape), 10K/box 08/3K per 7" reel (8 mm tape), 15K/box

#### FEATURES

- These diodes feature very low turn-on voltage and fast switching. These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- Autoritie GRADE Available Pb-free RoHS

COMPLIANT

- For general purpose applications
- AEC-Q101 qualified available
- Molding compound meets UL 94 V-0
  flammability rating
- Moisture Sensitivity Level (MSL) 1
- Base P/N-E3 RoHS-compliant, commercial grade
- Base P/N-HE3 RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

PARTS TABLE							
PART	ORDERING CODE	AEC-Q101 QUALIFIED	TYPE MARKING	CIRCUIT CONFIGURATION	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY	
BAT42W	BAT42W-E3-08	no	LC		3 000	15 000	
	BAT42W-HE3_A-08	yes		Single	(8 mm tape on 7" reel)	13 000	
	BAT42W-E3-18	no		Single	10 000	10 000	
	BAT42W-HE3_A-18	yes			(8 mm tape on 13" reel)	10 000	
BAT43W	BAT43W-E3-08	no			3 000	15 000	
	BAT43W-HE3_A-08	yes	LD	Single	(8 mm tape on 7" reel)	10 000	
	BAT43W-E3-18	no		Single	10 000		
	BAT43W-HE3_A-18	yes	Ĩ		(8 mm tape on 13" reel)	10 000	

PACKAGE						
		MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS		
SOD-123	10.6 mg	UL 94 V-0	MSL 1 (according J-STD-020)	Peak temperature max. 260 °C		

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Repetitive peak reverse voltage		V <sub>RRM</sub>	30	V		
Forward continuous current (1)		I <sub>F</sub>	300	mA		
Repetitive peak forward current <sup>(1)</sup>		I <sub>FRM</sub>	500	mA		
Surge forward current <sup>(1)</sup>	Duty cycle t <sub>p</sub> / T < 0.5	I <sub>FSM</sub>	4	A		
Power dissipation	On FR-4 board with recommended soldering footprint	Р	230	mW		
	Infinite heatsink	P <sub>tot</sub>	350	mW		

Note

(1) Infinite heatsink

Rev. 1.0, 19-Dec-2023 1 Document Number: 86404 For technical questions within your region: <u>DiodesAmericas@vishay.com</u>, <u>DiodesAsia@vishay.com</u>, <u>DiodesEurope@vishay.com</u> THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT <u>www.vishay.com/doc?91000</u>



THERMAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Thermal resistance junction to ambient air	according to JEDEC <sup>®</sup> 51-3 on FR-4 board with recommended soldering footprint	R <sub>thJA</sub>	420	K/W		
Thermal resistance junction lead	Infinite heatsink	R <sub>thJL</sub>	280	K/W		
Maximum junction temperature		Tj	125	°C		
Storage temperature range		T <sub>stg</sub>	-65 to +150	°C		
Operating temperature range		T <sub>op</sub>	-55 to +125	°C		

<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Reverse breakdown voltage	$I_R = 100 \ \mu A \ (pulsed)$		V <sub>(BR)</sub>	30			V
Leakage current <sup>(1)</sup>	V <sub>R</sub> = 25 V		I <sub>R</sub>			0.5	μA
Leakage current ()	V <sub>R</sub> = 25 V, T <sub>j</sub> = 100 °C		I <sub>R</sub>			100	μA
	I <sub>F</sub> = 200 mA		V <sub>F</sub>			1000	mV
	I <sub>F</sub> = 10 mA	BAT42W	V <sub>F</sub>			400	mV
Forward voltage <sup>(1)</sup>	I <sub>F</sub> = 50 mA	BAT42W	V <sub>F</sub>			650	mV
	I <sub>F</sub> = 2 mA	BAT43W	V <sub>F</sub>	260		330	mV
	I <sub>F</sub> = 15 mA	BAT43W	V <sub>F</sub>			450	mV
Diode capacitance	V <sub>R</sub> = 1 V, f = 1 MHz		CD		7		pF
Reverse recovery time	$I_F = 10 \text{ mA}, I_R = 10 \text{ mA}, \\ i_R = 1 \text{ mA}, R_L = 100 \Omega$		t <sub>rr</sub>			5	ns

Note

 $^{(1)}$  Pulse test;  $t_p \leq 300~\mu s,~duty~cycle~t_p/T < 0.02$ 



## **TYPICAL CHARACTERISTICS** ( $T_{amb} = 25$ °C, unless otherwise specified)

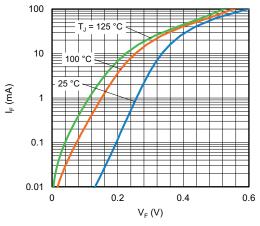


Fig. 1 - Typical Forward Current vs. Forward Voltage

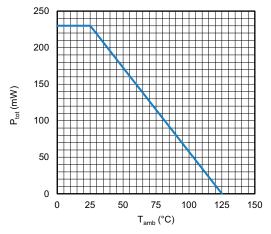


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

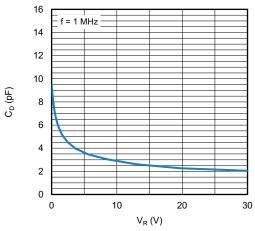


Fig. 3 - Typical Reverse Characteristics

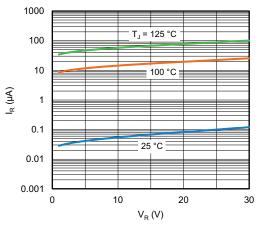
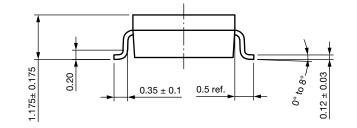
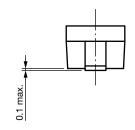


Fig. 4 - Typical Capacitance vs. Reverse Voltage



### PACKAGE DIMENSIONS in millimeters (inches): SOD-123





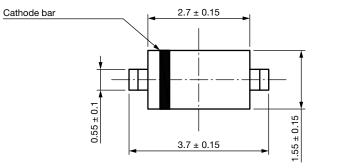
0.85

Foot print recommendation

2.5

0.85

٦



Rev. 01 - Date: 18. Jan. 2022 Document no.: S8-V-3910.01-003 (4)

23223

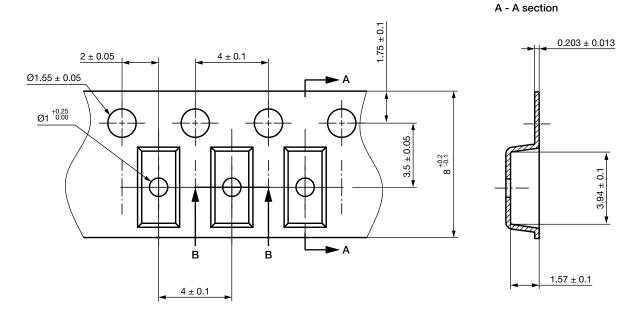
0.85



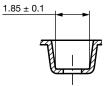


www.vishay.com

VISHAY



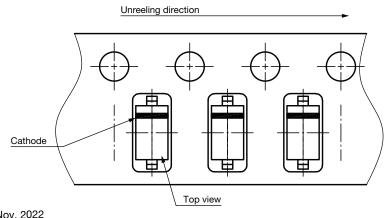
B - B section



Rev. 02 - Date: 21. Jan. 2014 Document no.: S8-V-3717.10-002 (4)

23224

#### **ORIENTATION IN CARRIER TAPE SOD-123**



Rev. 02 - Date: 07. Nov. 2022 Document no.: S8-V-3717.10-003 (4)

23225



Vishay

# 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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.

© 2025 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Revision: 01-Jan-2025

1