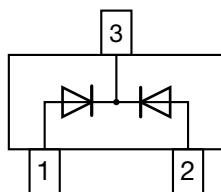


RF PIN Diodes - Dual, Common Cathode in SOT-323



FEATURES

- High voltage current controlled RF resistor
- Small diode capacitance
- AEC-Q101 qualified available
- Low series inductance
- Low forward resistance
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES



DESCRIPTION

Characterized by low reverse capacitance the PIN diode BAR64-05W was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (RF) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for these PIN diodes are switches and attenuators in wireless, mobile, and TV-systems.

APPLICATIONS

- For frequencies up to 3 GHz
- RF-signal tuning
- Signal attenuator and switches
- Mobile, wireless, and TV-applications

MECHANICAL DATA

Case: SOT-323

ORDERING INFORMATION

| PART NUMBER | ENVIRONMENTAL AND QUALITY CODE | | | | PACKAGING CODE | | ORDERING CODE (EXAMPLE) |
|-------------|--------------------------------|--|------------|---------------|---|---|-------------------------|
| | AEC-Q101 QUALIFIED | RoHS-COMPLIANT + LEAD (Pb)-FREE TERMINATIONS | TIN PLATED | REVISION CODE | 3K PER 7" REEL (8 mm TAPE) 15K/BOX = MOQ | 10K PER 13" REEL (8 mm TAPE) 10K/BOX = MOQ | |
| BAR64-05W- | | E | 3 | - | 08 | | BAR64-05W-E3-08 |
| BAR64-05W- | H | E | 3 | A | 08 | | BAR64-05W-HE3A08 |
| BAR64-05W- | | E | 3 | - | | 18 | BAR64-05W-E3-18 |
| BAR64-05W- | H | E | 3 | A | | 18 | BAR64-05W-HE3A18 |

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

| PART | TEST CONDITION | SYMBOL | VALUE | UNIT |
|----------------------------|--|------------------|-------|------|
| Reverse voltage | | V _R | 100 | V |
| Forward continuous current | | I _F | 100 | mA |
| ESD-immunity | HBM (Human Body Model) acc. AEC-Q101-001 | V _{ESD} | 750 | V |

PACKAGE DATA

| DEVICE NAME | PACKAGE NAME | TYPE CODE | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
|-------------|--------------|-----------|--------|--------------------------------------|-----------------------------------|------------------------------|
| BAR64-05W | SOT-323 | R64 | 5.2 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | Peak temperature max. 260 °C |

| PARTS TABLE | |
|--------------------|------------------------------|
| PART | CIRCUIT CONFIGURATION |
| BAR64-05W | Common cathode |

| THERMAL CHARACTERISTICS ($T_{amb} = 25 \text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | |
|--|-----------------------|---------------|--------------|--------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Junction temperature | | T_j | 150 | $^{\circ}\text{C}$ |
| Storage temperature range | | T_{stg} | -65 to +150 | $^{\circ}\text{C}$ |
| Operating temperature range | | T_{op} | -55 to +125 | $^{\circ}\text{C}$ |

| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25 \text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|---|---------------|-------------|-------------|-------------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F = 50 \text{ mA}$ | V_F | - | - | 1.1 | V |
| Reverse voltage | $I_R = 10 \text{ } \mu\text{A}$ | V_R | 100 | - | - | V |
| Reverse current | $V_R = 50 \text{ V}$ | I_R | - | - | 0.05 | μA |
| Diode capacitance | $f = 1 \text{ MHz}, V_R = 0 \text{ V}$ | C_D | - | 0.5 | - | pF |
| | $f = 1 \text{ MHz}, V_R = 1 \text{ V}$ | C_D | - | 0.37 | 0.5 | pF |
| | $f = 1 \text{ MHz}, V_R = 20 \text{ V}$ | C_D | - | 0.23 | 0.35 | pF |
| Differential forward resistance | $f = 100 \text{ MHz}, I_F = 1 \text{ mA}$ | r_f | - | 10 | 20 | Ω |
| | $f = 100 \text{ MHz}, I_F = 10 \text{ mA}$ | r_f | - | 2 | 3.8 | Ω |
| | $f = 100 \text{ MHz}, I_F = 100 \text{ mA}$ | r_f | - | 0.8 | 1.35 | Ω |
| Charge carrier lifetime | $I_F = 10 \text{ mA}, I_R = 6 \text{ mA}, i_R = 3 \text{ mA}$ | t_{rr} | - | 1.4 | - | μs |
| Series inductance | | L_S | - | 1.4 | - | nH |

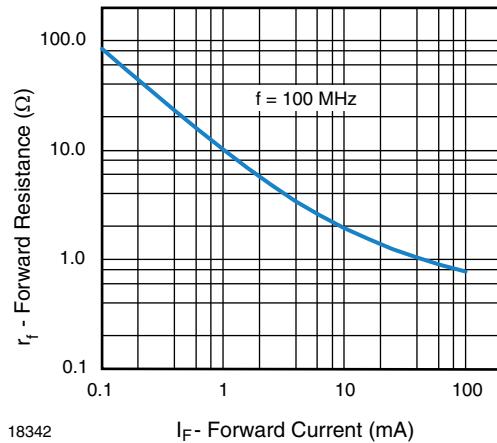
TYPICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)

18342 I_F - Forward Current (mA)

Fig. 1 - Forward Resistance vs. Forward Current

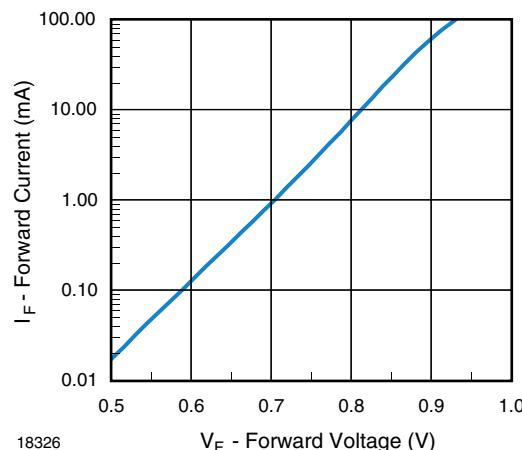
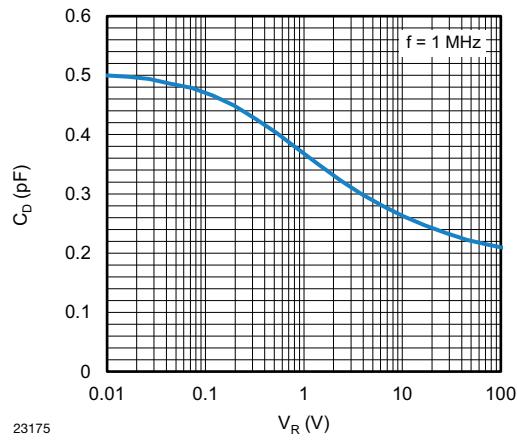

18326 V_F - Forward Voltage (V)

Fig. 3 - Forward Current vs. Forward Voltage



23175

Fig. 2 - Diode Capacitance vs. Reverse Voltage

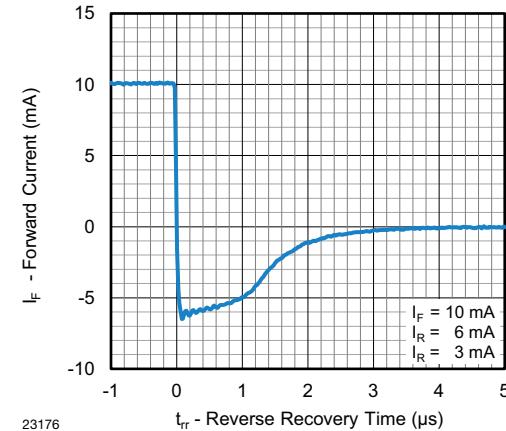
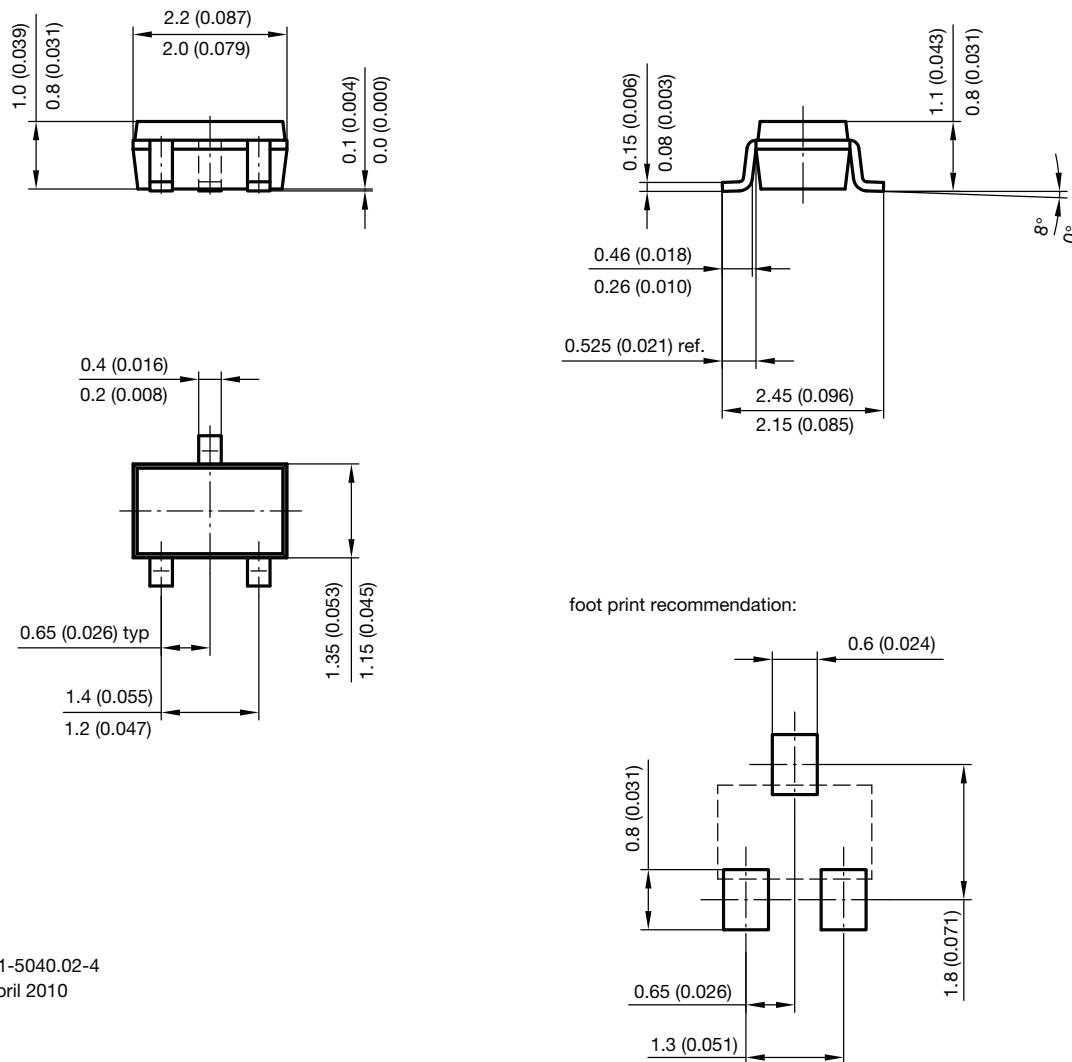
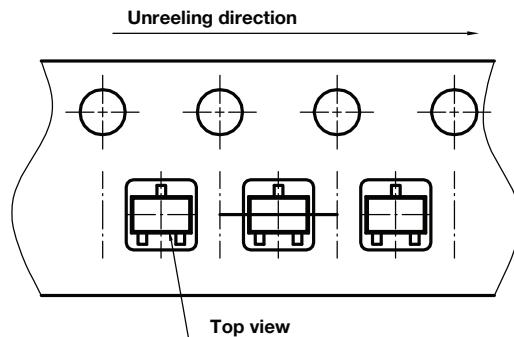

23176 t_{rr} - Reverse Recovery Time (μs)

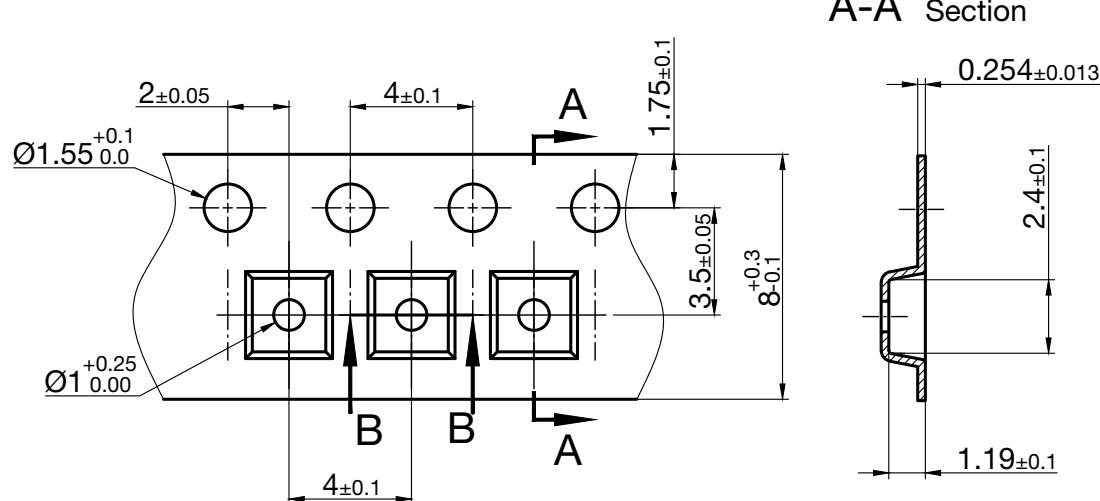
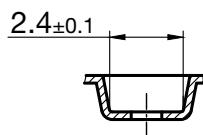
Fig. 4 - Typical Charge Recovery Curve

PACKAGE DIMENSIONS in millimeters (inches): **SOT-323**


Document no.: 6.541-5040.02-4
Rev. 1 - Date: 06. April 2010
21113

ORIENTATION IN CARRIER TAPE SOT-323


Document no.: S8-V-3717.08-002 (4)
Created - Date: 09. Feb. 2010
22761

CARRIER TAPE SOT-323

B-B Section


Document No. S8-V-3717.08-002 (4)
Rev. 20.01.2025
23260

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.