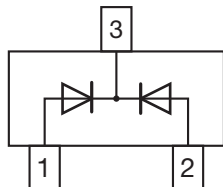


## RF PIN Diodes - Dual, Common Cathode in SOT-323



### FEATURES

- High voltage current controlled RF resistor
- Small diode capacitance
- Low series inductance
- Low forward resistance
- Improved performance due to two separate dice
- Base P/N-E3 - RoHS-compliant, commercial grade
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### APPLICATIONS

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

### MECHANICAL DATA

**Case:** SOT-323

**Weight:** approx. 5.7 mg

**Packaging codes/options:**

18/10K per 13" reel (8 mm tape), 10K/box

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

**DESIGN SUPPORT TOOLS** click logo to get started


### DESCRIPTION

Characterized by low reverse capacitance the PIN diodes BAR64V-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.

### PARTS TABLE

PART	ORDERING CODE	TYPE MARKING	CIRCUIT CONFIGURATION	REMARKS
BAR64V-05W	BAR64V-05W-E3-08 or BAR64V-05W-E3-18	DW5	Common cathode	Tape and reel

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)

PART	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	100	V
Forward continuous current		$I_F$	100	mA

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

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Junction temperature		$T_j$	150	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	-55 to +150	$^{\circ}\text{C}$
Operating temperature range		$T_{op}$	-55 to +125	$^{\circ}\text{C}$

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 50\text{ mA}$		$V_F$			1.1	V
Reverse voltage	$I_F = 10\text{ }\mu\text{A}$		$V_R$	100			V
Reverse current	$V_R = 50\text{ V}$		$I_R$			0.05	$\mu\text{A}$
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	$\Omega$
	$f = 100\text{ MHz}, I_F = 10\text{ mA}$		$r_f$		2	3.8	$\Omega$
	$f = 100\text{ MHz}, I_F = 100\text{ mA}$		$r_f$		0.8	1.35	$\Omega$
Charge carrier lifetime	$I_F = 10\text{ mA}, I_R = 6\text{ mA}, i_R = 3\text{ mA}$		$t_{rr}$		1.8		$\mu\text{s}$
Series inductance			$L_S$		1		nH

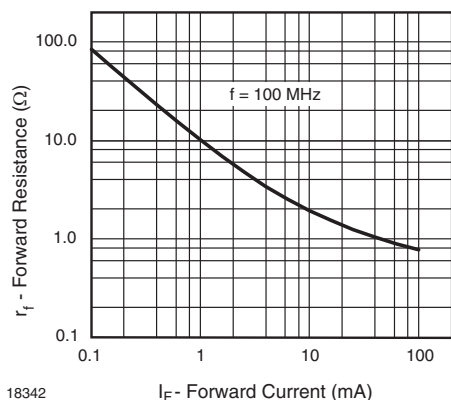
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Resistance vs. Forward Current

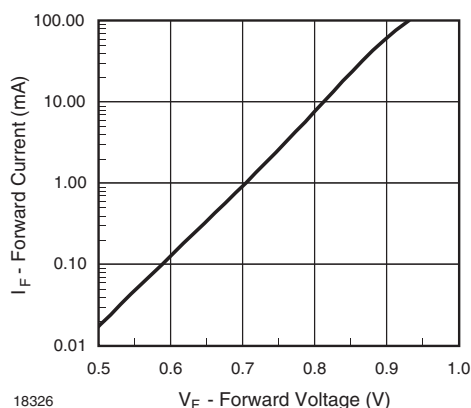


Fig. 3 - Forward Current vs. Forward Voltage

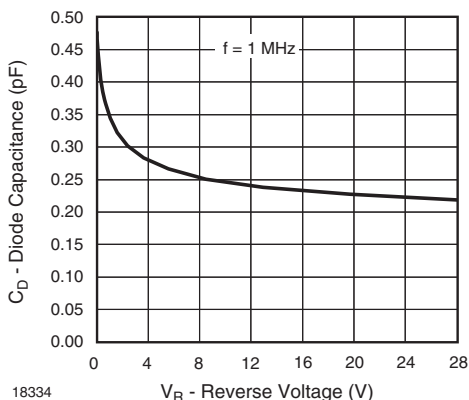


Fig. 2 - Diode Capacitance vs. Reverse Voltage

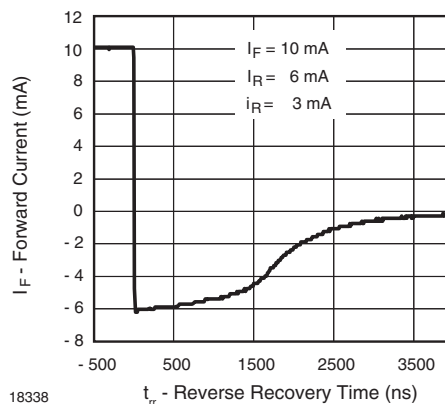


Fig. 4 - Typical Charge Recovery Curve

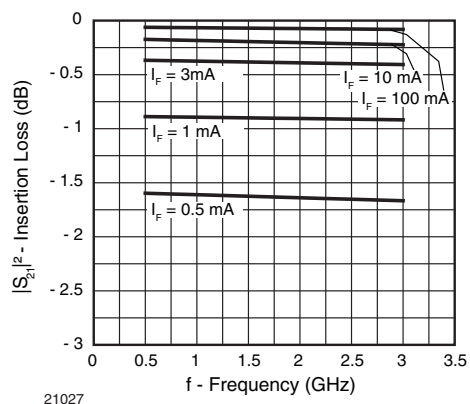


Fig. 5 - Insertion Loss of One Diode Inserted in Series with 50  $\Omega$  Strip Line

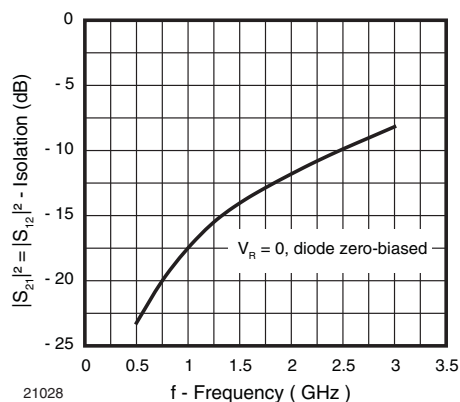


Fig. 6 - Isolation of One Diode Inserted in Series with 50  $\Omega$  Strip Line

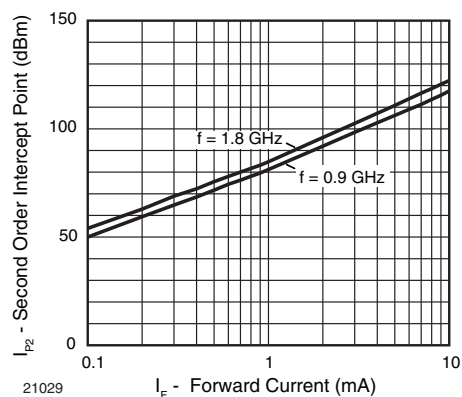
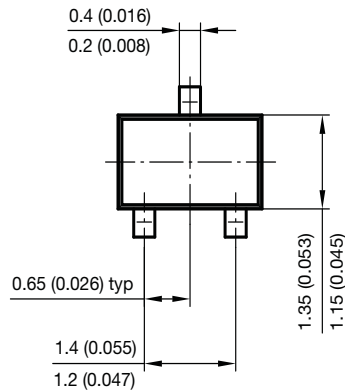
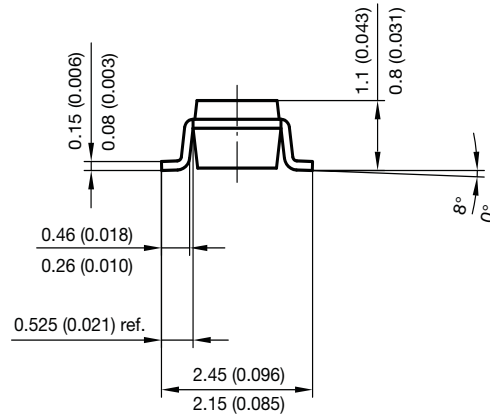
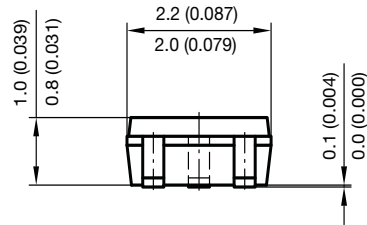


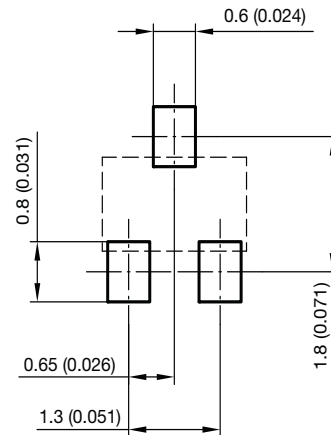
Fig. 7 - Second Order Intercept Point for One Diode Inserted in 50  $\Omega$  Strip Line



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



foot print recommendation:



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Rev. 1 - Date: 06. April 2010  
21113



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