430 to 1100

RoHS

GREEN (5-2008)\*\*



# Vishay Semiconductors

## Silicon PIN Photodiode



BPW34 is a PIN photodiode with high speed and high

radiant sensitivity in miniature, flat, top view, clear plastic

package. It is sensitive to visible and near infrared radiation. BPW34S is packed in tubes, specifications like BPW34.

### **FEATURES**

Package type: leaded





• Radiant sensitive area (in mm<sup>2</sup>): 7.5

· High photo sensitivity

· High radiant sensitivity

· Suitable for visible and near infrared radiation

• Fast response times

• Angle of half sensitivity:  $\varphi = \pm 65^{\circ}$ 

 Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

#### Note

\*\* Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

#### **APPLICATIONS**

· High speed photo detector

± 65

PRODUCT SUMMARY			
COMPONENT	I <sub>ra</sub> (μA)	φ (deg)	λ <sub>0.1</sub> (nm)
BPW34	50	± 65	430 to 1100

### Note

BPW34S

**DESCRIPTION** 

Test condition see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
BPW34	Bulk	MOQ: 3000 pcs, 3000 pcs/bulk	Top view	
BPW34S	Tube	MOQ: 1800 pcs, 45 pcs/tube	Top view	

### Note

MOQ: minimum order quantity

<b>ABSOLUTE MAXIMUM RATINGS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	60	V
Power dissipation	T <sub>amb</sub> ≤ 25 °C	P <sub>V</sub>	215	mW
Junction temperature		Tj	100	°C
Operating temperature range		T <sub>amb</sub>	- 40 to + 100	°C
Storage temperature range		T <sub>stg</sub>	- 40 to + 100	°C
Soldering temperature	t ≤ 3 s	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm <sup>2</sup>	R <sub>thJA</sub>	350	K/W



# Vishay Semiconductors

<b>BASIC CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 100 μA, E = 0	V <sub>(BR)</sub>	60			V
Reverse dark current	V <sub>R</sub> = 10 V, E = 0	I <sub>ro</sub>		2	30	nA
Diode capacitance	V <sub>R</sub> = 0 V, f = 1 MHz, E = 0	C <sub>D</sub>		70		pF
	V <sub>R</sub> = 3 V, f = 1 MHz, E = 0	C <sub>D</sub>		25	40	pF
Open circuit voltage	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	Vo		350		mV
Temperature coefficient of Vo	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	TK <sub>Vo</sub>		- 2.6		mV/K
Short circuit current	E <sub>A</sub> = 1 klx	l <sub>k</sub>		70		μΑ
Short circuit current	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	I <sub>k</sub>		47		μΑ
Temperature coefficient of I <sub>k</sub>	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	TK <sub>lk</sub>		0.1		%/K
Reverse light current	E <sub>A</sub> = 1 klx, V <sub>R</sub> = 5 V	I <sub>ra</sub>		75		μΑ
	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, \ V_R = 5 \text{ V}$	I <sub>ra</sub>	40	50		μΑ
Angle of half sensitivity		φ		± 65		deg
Wavelength of peak sensitivity		$\lambda_{p}$		900		nm
Range of spectral bandwidth		λ <sub>0.1</sub>		430 to 1100		nm
Noise equivalent power	V <sub>R</sub> = 10 V, λ = 950 nm	NEP		4 x 10 <sup>-14</sup>		W/√Hz
Rise time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	t <sub>r</sub>		100		ns
Fall time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	t <sub>f</sub>		100		ns

### **BASIC CHARACTERISTICS** (T<sub>amb</sub> = 25 °C, unless otherwise specified)

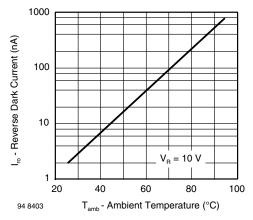


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

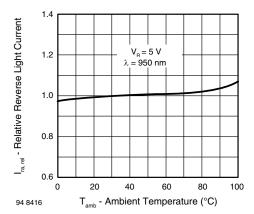


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature



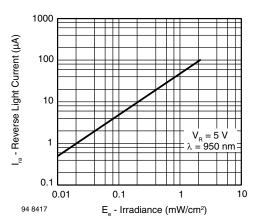


Fig. 3 - Reverse Light Current vs. Irradiance

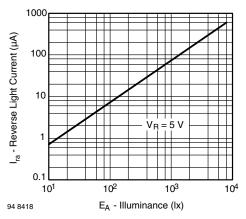


Fig. 4 - Reverse Light Current vs. Illuminance

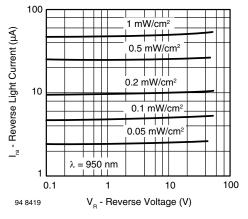


Fig. 5 - Reverse Light Current vs. Reverse Voltage

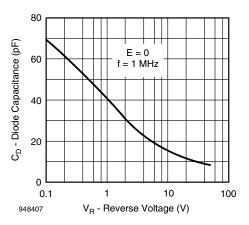


Fig. 6 - Diode Capacitance vs. Reverse Voltage

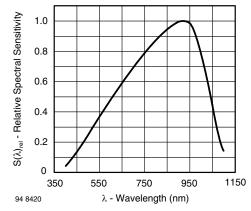


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

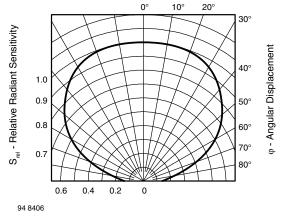
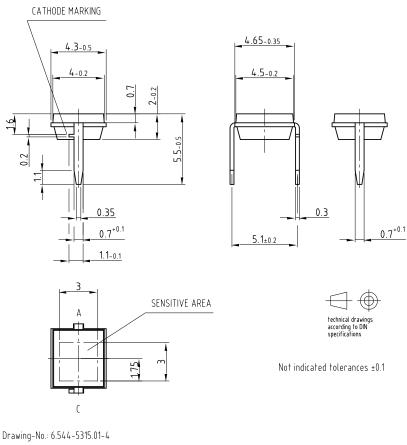


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

# Vishay Semiconductors

### **PACKAGE DIMENSIONS** in millimeters



Drawing-No.: 6.544-5315.01-4 Issue: 1; 19.10.07 96 12186

### **TUBE PACKAGING DIMENSIONS** in millimeters

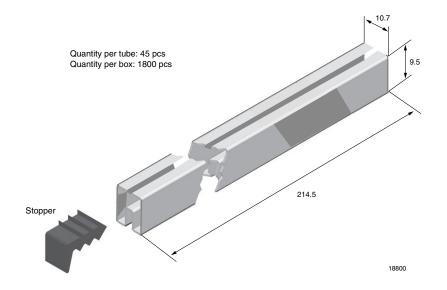


Fig. 9 - Drawing Proportions not scaled



## **Legal Disclaimer Notice**

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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.