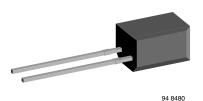
GREEN (5-2008)\*\*



# Vishay Semiconductors

### Silicon PIN Photodiode



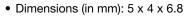
BPW41N is a PIN photodiode with high speed and high

radiant sensitivity in a black, side view plastic package with

daylight blocking filter. Filter bandwidth is matched with

#### **FEATURES**

Package type: leadedPackage form: side view



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

High radiant sensitivity

Daylight blocking filter matched with 940 nm emitters

• Fast response times

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

 Compliant to RoHS Directive to 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 detector for infrared radiation
- Infrared remote control and free air data transmission systems, e.g. in combination with TSALxxxx series IR emitters

PRODUCT SUMMARY				
COMPONENT	I <sub>ra</sub> (μΑ)	φ (deg)	λ <sub>0.5</sub> (nm)	
BPW41N	45	± 65	870 to 1050	

### Note

**DESCRIPTION** 

900 nm to 950 nm IR emitters.

• Test condition see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
BPW41N	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view	

#### Note

• MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Reverse voltage		$V_{R}$	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 ≤ 5 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	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	l <sub>k</sub>		38		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	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, \ V_R = 5 \text{ V}$	I <sub>ra</sub>	43	45		μΑ
Angle of half sensitivity		φ		± 65		deg
Wavelength of peak sensitivity		λρ		950		nm
Range of spectral bandwidth		λ <sub>0.5</sub>		870 to 1050		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)

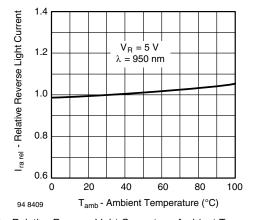


Fig. 1 - Relative Reverse Light Current vs. Ambient Temperature

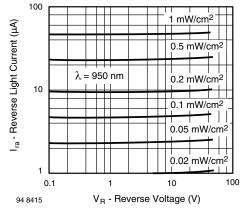


Fig. 3 - Reverse Light Current vs. Reverse Voltage

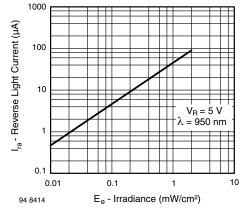


Fig. 2 - Reverse Light Current vs. Irradiance

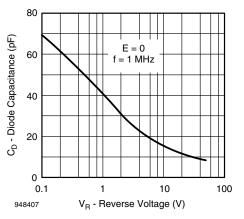


Fig. 4 - Diode Capacitance vs. Reverse Voltage



# Vishay Semiconductors

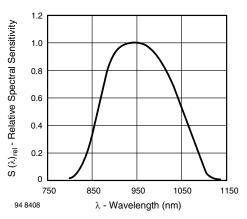


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

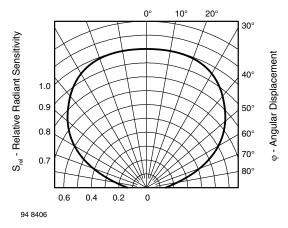
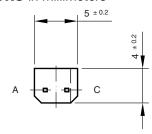


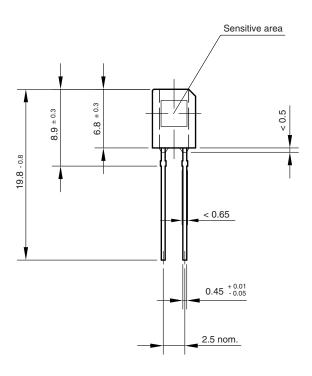
Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

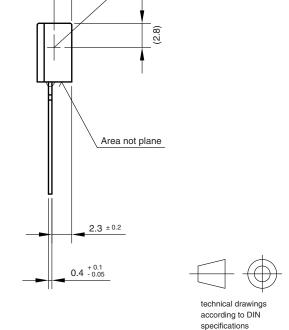
Chip position

(2.05)

### **PACKAGE DIMENSIONS** in millimeters







Drawing-No.: 6.544-5108.01-4

Issue:1; 01.07.96

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