

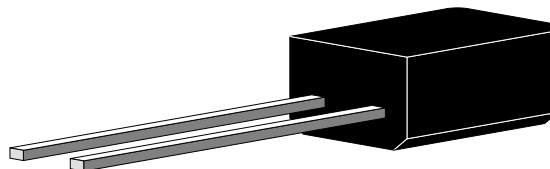
Silicon PIN Photodiode

Description

BPW41N is a high speed and high sensitive PIN photo-diode in a flat side view plastic package.

The epoxy package itself is an IR filter, spectrally matched to GaAs or GaAs on GaAlAs IR emitters ($\lambda_p = 950 \text{ nm}$).

The large active area combined with a flat case gives a high sensitivity at a wide viewing angle.



Features

- Large radiant sensitive area ($A=7.5 \text{ mm}^2$)
- Wide angle of half sensitivity $\phi = \pm 65^\circ$
- High radiant sensitivity
- Fast response times
- Small junction capacitance
- Plastic case with IR filter ($\lambda=950 \text{ nm}$)
- Suitable for near infrared radiation

94 8480

Applications

High speed photo detector

Absolute Maximum Ratings

$T_{\text{amb}} = 25^\circ\text{C}$

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	60	V
Power Dissipation	$T_{\text{amb}} \leq 25^\circ\text{C}$	P_V	215	mW
Junction Temperature		T_j	100	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55\dots+100$	$^\circ\text{C}$
Soldering Temperature	$t \leq 5 \text{ s}$	T_{sd}	260	$^\circ\text{C}$
Thermal Resistance Junction/Ambient		R_{thJA}	350	K/W

Basic Characteristics

 $T_{amb} = 25^{\circ}\text{C}$

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Breakdown Voltage	$I_R = 100\ \mu\text{A}$, $E = 0$	$V_{(BR)}$	60			V
Reverse Dark Current	$V_R = 10\ \text{V}$, $E = 0$	I_{r0}		2	30	nA
Diode Capacitance	$V_R = 0\ \text{V}$, $f = 1\ \text{MHz}$, $E = 0$	C_D		70		pF
	$V_R = 3\ \text{V}$, $f = 1\ \text{MHz}$, $E = 0$	C_D		25	40	pF
Open Circuit Voltage	$E_e = 1\ \text{mW}/\text{cm}^2$, $\lambda = 950\ \text{nm}$	V_0		350		mV
Temp. Coefficient of V_0	$E_e = 1\ \text{mW}/\text{cm}^2$, $\lambda = 950\ \text{nm}$	TK_{V_0}		-2.6		mV/K
Short Circuit Current	$E_e = 1\ \text{mW}/\text{cm}^2$, $\lambda = 950\ \text{nm}$	I_k		38		μA
Temp. Coefficient of I_k	$E_e = 1\ \text{mW}/\text{cm}^2$, $\lambda = 950\ \text{nm}$	TK_{I_k}		0.1		%/K
Reverse Light Current	$E_e = 1\ \text{mW}/\text{cm}^2$, $\lambda = 950\ \text{nm}$, $V_R = 5\ \text{V}$	I_{ra}	43	45		μA
Angle of Half Sensitivity		ϕ		± 65		deg
Wavelength of Peak Sensitivity		λ_p		950		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		870...1050		nm
Noise Equivalent Power	$V_R = 10\ \text{V}$, $\lambda = 950\ \text{nm}$	NEP		4×10^{-14}		$\text{W}/\sqrt{\text{Hz}}$
Rise Time	$V_R = 10\ \text{V}$, $R_L = 1\ \text{k}\Omega$, $\lambda = 820\ \text{nm}$	t_r		100		ns
Fall Time	$V_R = 10\ \text{V}$, $R_L = 1\ \text{k}\Omega$, $\lambda = 820\ \text{nm}$	t_f		100		ns

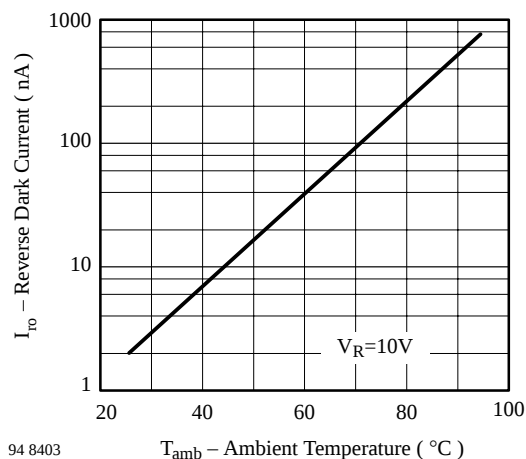
Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

Figure 1. Reverse Dark Current vs. Ambient Temperature

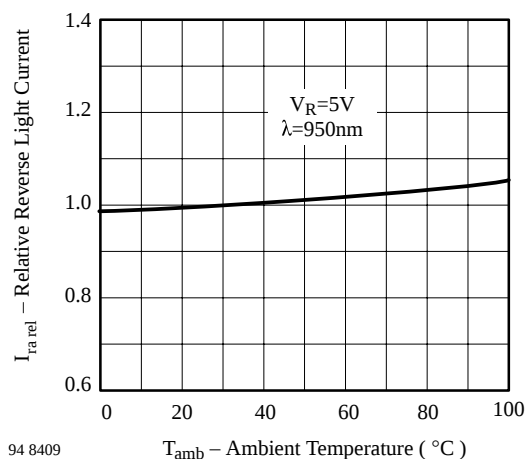


Figure 2. Relative Reverse Light Current vs. Ambient Temperature

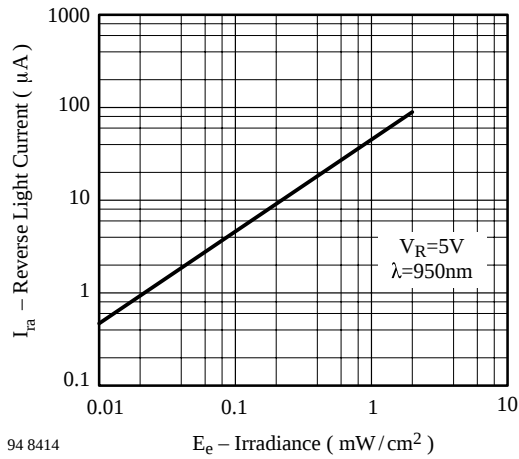


Figure 3. Reverse Light Current vs. Irradiance

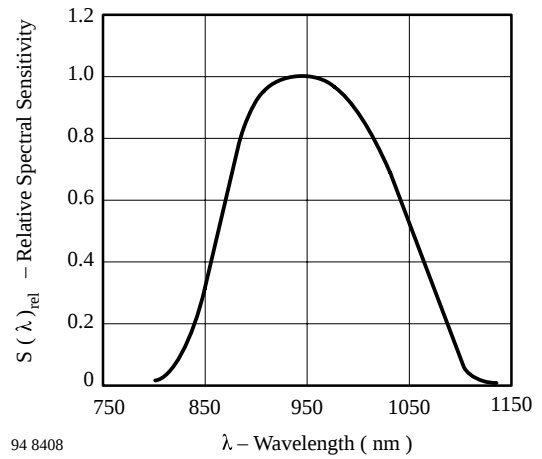


Figure 6. Relative Spectral Sensitivity vs. Wavelength

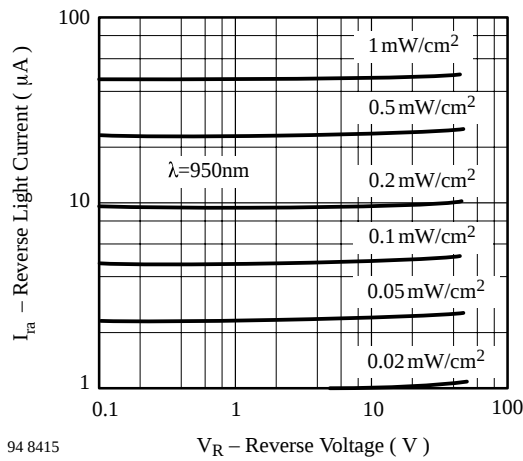


Figure 4. Reverse Light Current vs. Reverse Voltage

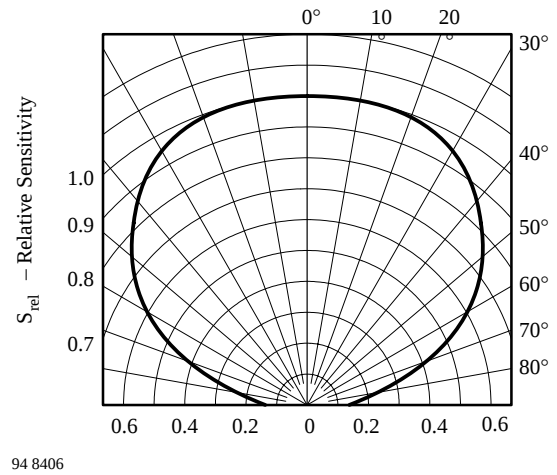


Figure 7. Relative Radiant Sensitivity vs. Angular Displacement

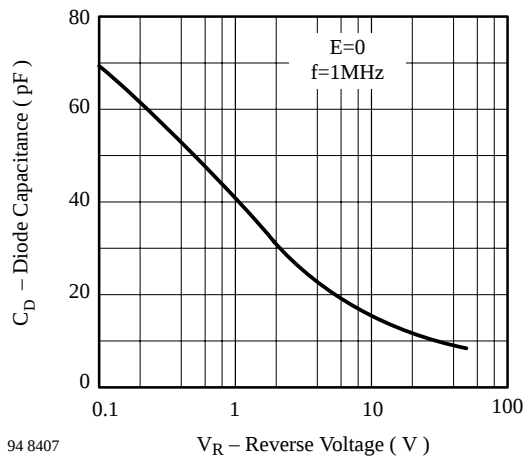


Figure 5. Diode Capacitance vs. Reverse Voltage

Dimensions in mm

