SIEMENS

BPY 12

Silicon PIN Photodiode

FEATURES

- **Especially suitable for applications from 400 nm to 1100 nm**
- **Short switching time (typ. 25 ns)**

APPLICATIONS

- **Industrial electronics**
- **For control and drive circuits**

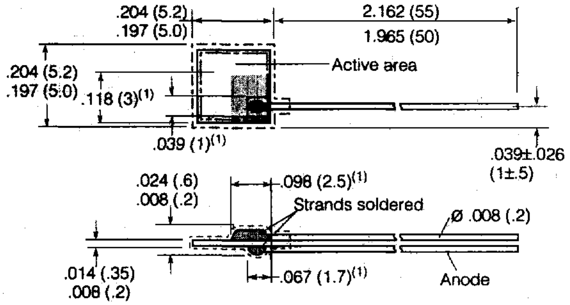
DESCRIPTION

The BPY 12 is a silicon planar PIN photodiode. N-Si material provides positive front and negative back contact. These photodetectors can operate as reverse voltage photodiodes or as photovoltaic cells.

Maximum Ratings

Operating/Storage Temperature
Range (T_{OP}, T_{STG})..................–55° to +100°C
Reverse Voltage (V_R)....................................20 V
Power Dissipation (P_{TOT}) T_A=25°C.........150 mW

Dimensions in inches (mm)



[1] Max. solder areas on front and back side

GS006016

Characteristics T_A=25°C, Std. Light A, T=2856 K

Parameter	**Sym**	**Value**	**Unit**	**Condition**
Spectral Sensitivity	S	180 (≥100)	nA/lx	V_R=5 V,
Wavelength, Maximum Sensitivity	λ_{Smax}	920	nm	
Spectral Sensitivity Range	λ	400 to 1100		S=10% of S_{MAX}
Radiant Sensitive Area	A	20	mm^2	
Radiant Sensitive Area Dimensions	L x W	4.47x4.47	mm	
Half Angle	φ	±60	Deg.	
Dark Current	I_R	10 (≤100)	nA	V_R=20 V
Spectral Sensitivity	S_λ	0.60	A/W	λ=850 nm
Quantum Yield	η	0.86	electrons / photon	
Open Circuit Voltage[1]	V_O	365 (≥310)	mV	E_V=1000 lx
Short Circuit Current[1]	I_{SC}	180	µA	
Rise and Fall Time, Photocurrent	t_R, t_F	25	ns	R_L=50 Ω, V_R=5 V, λ=850 nm, I_P=800 µA
Forward Voltage	V_F	1.3	V	I_F=100 mA, E=0
Capacitance	C_0	140	pF	V_R=0 V, f=1 MHz, E=0
Temp. Coefficient V_O	TC_V	-2.6	mV/K	
Temp. Coefficient I_{SC}	TC_I	0.15	%/K	
Noise Equivalent Power	NEP	9.4×10^{-14}	W/√Hz	V_R=20 V, λ=850 nm
Detection Limit	D*	4.7×10^{12}	cm•√Hz/W	

Figure 1. Directional characteristic $S_{REL}=f(\varphi)$

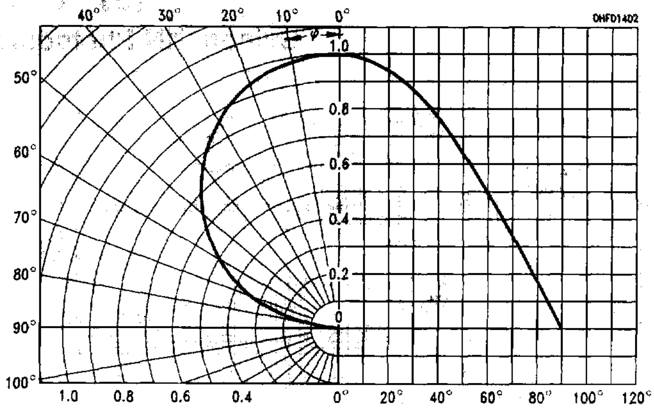


Figure 2. Relative spectral sensitivity
$S_{REL}=f(\lambda)$

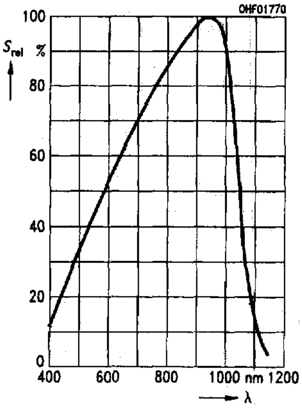


Figure 3. Photocurrent $I_P=f(E_V)$, V_R=5 V
Open circuit voltage $V_O=f(E_V)$

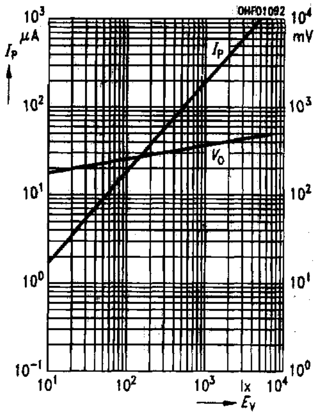


Figure 4. Power dissipation $P_{TOT}=f(T_A)$

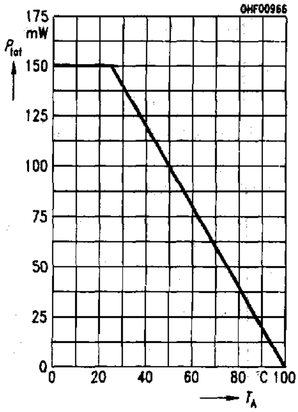


Figure 5. Dark current
$I_R=f(V_R)$, E=0

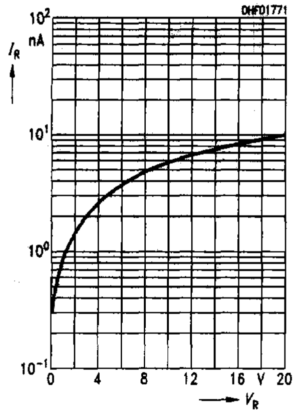


Figure 6. Capacitance
$C=f(V_R)$, f=1 MHz, E=0

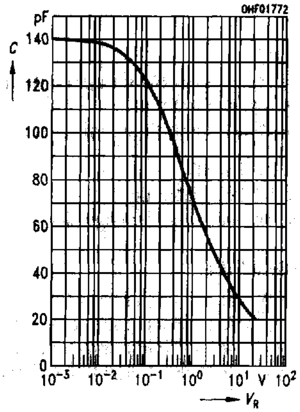


Figure 7. Dark current
$I_R=f(T_A)$, V_R=20 V, E=0