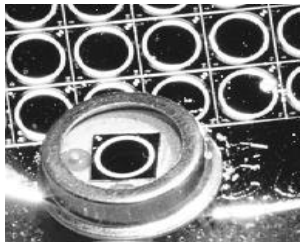
N-TYPE SILICON PIN PHOTODIODE
FD5N1



PIN photodiode FD5N1 is optimized for detection of radiation at 900nm. A photodiode illuminated by visible and near infrared light behaves as a current source with photocurrent proportional to the power of detected radiation. Reverse bias increases parallel internal resistance and decreases capacity of diode. Decrease of capacity and of load resistance R_L decreases response time. Low capacity with relatively low bias is achieved by using extremely pure, high resistance silicon for the base I-region of the diode (> 2 kΩcm). Background radiation flux increases noise current, thus filters or darkening are recommanded to decrease this radiation.

FEATURES

- Peak responsivity at 900nm
- Fast response time
- Low capacity
- Low noise
- Low dark current
- Wide spectral range
- Linearity over wide spectral range
- High reliability
- Selection upon request
- Fast delivery

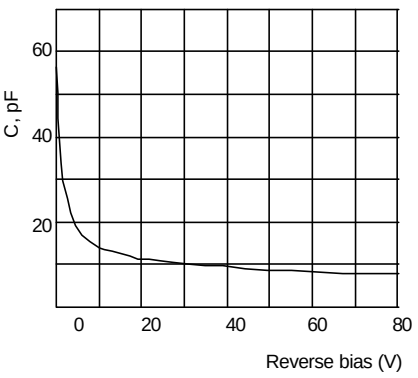
APPLICATIONS

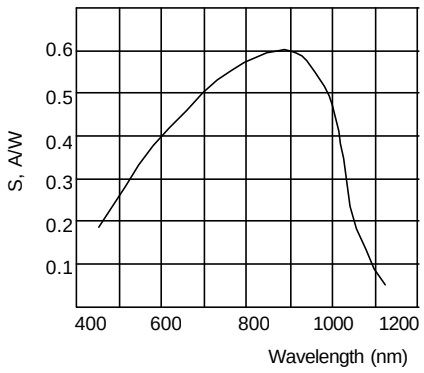
- Fiber optics communications
- High speed fluctuation detection
- Precision light meters
- Flow monitoring
- Alarm systems
- Inspection and control
- Flame and exhaust monitoring
- Optical encoding
- Event counting
- Optical pyrometers

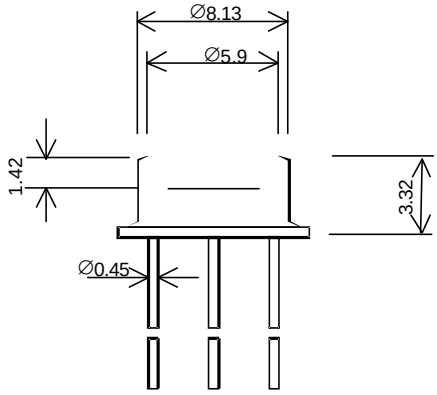
SPECIFICATIONS

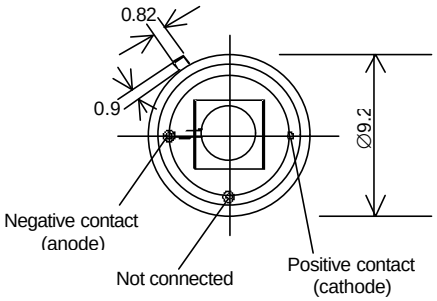
- Ambient temperature 25^{o}C, DC reverse operating voltage 45 V

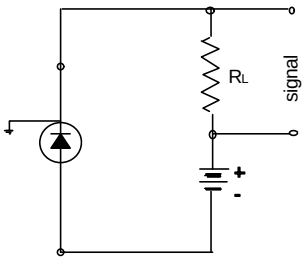
Parameter	typical	min	max	Per request, up to	Note
Breakdown voltage (V)	250	100		300	1 μA
Dark current (nA)	2		20	<1	
Responsivity at 900 nm (A/W)	0.6	0.5		0.65	
Responsivity at 1060 nm (A/W)	0.4	0.3		0.41	
NEP at 900nm ($x10^{-12}W/Hz^{1/2}$)	<1.5		7	<1	
NEP at 1060nm ($x10^{-12}W/Hz^{1/2}$)	<4		20	<2	
Capacitance (pF)	8		10	<7.8	1 MHz
Response time (ns)	4			>3.5	900 nm, R=50Ω, 50%
Approx. full angle for totally illuminated active area (^{o})	100				The values are dependent on dimensional tolerances of the package
Approx. full angle for partially illuminated active area(^{o})	143				The values are dependent on dimensional tolerances of the package
Active area (mm^2)	5				


C, pF
60
40
20
0
20
40
60
80
Reverse bias (V)


S, A/W
0.6
0.5
0.4
0.3
0.2
0.1
400
600
800
1000
1200
Wavelength (nm)


∅8.13
∅5.9
1.42
3.32
∅0.45


0.82
0.9
∅9.2
Negative contact
(anode)
Not connected
Positive contact
(cathode)


RL
signal
+
-