P-TYPE SILICON PIN QUADRANT PHOTODIODE
QDY7P

Quadrant PIN photodiode QDY7P is optimized for detection of radiation at 1060nm. 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 (> 10 kΩcm). Background radiation flux increases noise current, thus filters or darkening are recommended to decrease this radiation. Influences of transition area width and cross-talk influence are minimized.

FEATURES

- High responsivity at 1060 nm
- Guard ring construction
- Fast response time
- Low capacity
- Low noise
- Low dark current
- Wide spectral range
- Linearity over wide dynamic range
- High reliability
- Selection upon request
- Fast delivery

APPLICATIONS

- Nd YAG laser pulse detection
- Navigation
- Tracking and aligning

TEHNICAL CHARACTERISTICS

- At 25°C, DC reverse operating voltage 200 V.
- Values are given per quadrant.

Parameter	typical	min	max	Request	Operating condition
Breakdown voltage (V)	450	250		>500	1 μA
Dark current (nA)	1.4		50	<1.2	
Responsivity at 900 nm (A/W)	0.6	0.5		0.65	
Responsivity at 1060 nm (A/W)	0.45	0.40			
NEP at 900nm ($\times 10^{-11}$W/Hz$^{1/2}$)	<1.5		7	<1	
NEP at 1060nm ($\times 10^{-11}$W/Hz$^{1/2}$)	<2.5		12	<1.5	
Capacitance (pF)	1.2		1.4	1.0	1 MHz
Response time (ns)	11			10	1060 nm, R=50Ω, 10%-90%
Approx. full angle for totally illuminated active area ($^{\circ}$)	40				The values are dependent on dimensional tolerances of the package
Approx. full angle for partially illuminated active area($^{\circ}$)	91				The values are dependent on dimensional tolerances of the package
Active area (mm^2)	7				Total for all quadrants
Uniformity (%)	1		2		
Crosstalk (%)			4.0		

Reverse bias (V)

Wavelength (nm)

φ8.33
φ6.35
4.57
6.60
φ0.45

Negative lead
(anode)

Positive lead
(cathode)

Positive lead 04
(cathode)

Positive lead 01
(cathode)

Positive lead
(guard ring)

φ9.2

Guard ring

01 02 03 04

R_L R_L R_L R_L