



Quadrature Silicon Photodiode – 11 mm active Area

Description

The QSP-TO-11 is a Silicon Quadrant photodiode with a 11 mm active area packaged in a hermetic TO-can. The device offers high responsivity and balanced responsivity between the quadrants. Low cross talk between the quadrants makes the device suitable for detection applications.

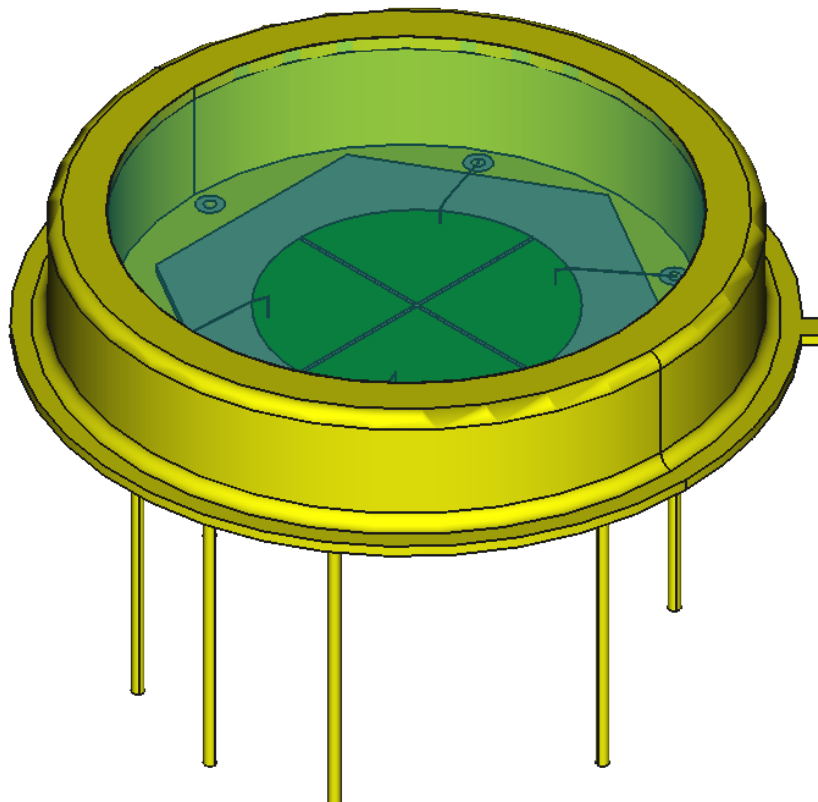
Features

- Dark Current ~ 20 nA
- Spectral Noise Density $\sim 8 \frac{pA}{\sqrt{Hz}}$
- Terminal Capacitance 4.2 pF at VBR_{90%}
- 10 M Ω Shunt resistance
- Balanced responsivity across quadrants



Applications

- Position Measurement
- Optical Guidance



Electro-Optical Characteristics ($T_{op} 23 \pm 3^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Breakdown Voltage	V_{BR}		250		V	ID = 100
Dark Current	ID		20	80	nA	Vr = 180
Terminal Capacitance	Ct		15		Pf	Taken at 90% VBR at f = 1 MHz
Responsivity	R		0.6		A/W	$\lambda = 850 \text{ nm}$, M = 1
			0.7			$\lambda = 1064 \text{ nm}$, M = 1
Active Area	A_{PD}		95		mm ²	Photodiode area
Gap	D		130		um	Between quadrants
Spectral Range	λ	500		1100	nm	
Cross Talk			1		%	
Rise Time	t_r		20		ns	10% - 90%
Shunt Resistance	R_s		10		M Ω	Between two quadrants
Spectral Noise Density	SN		8		$\frac{pA}{\sqrt{Hz}}$	Vr = 140

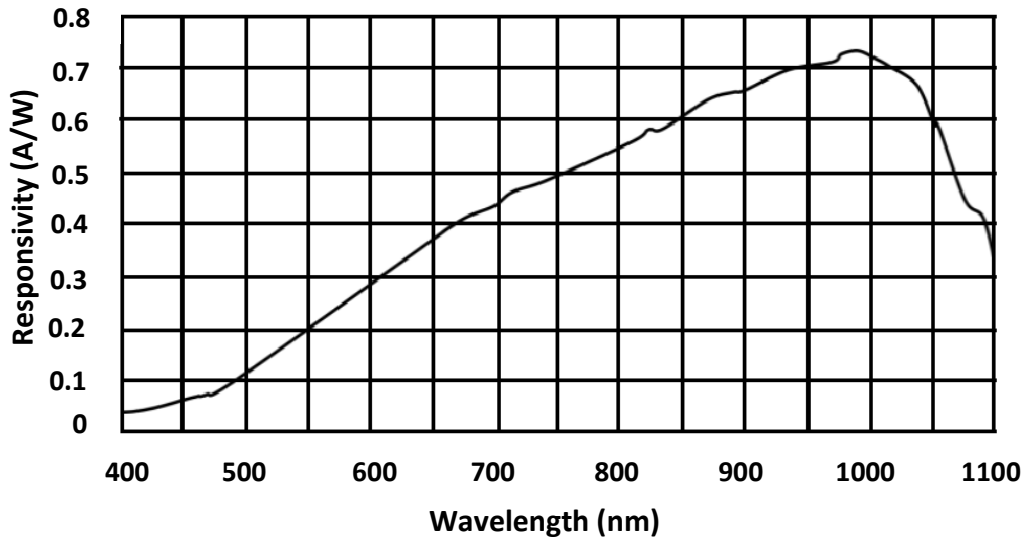
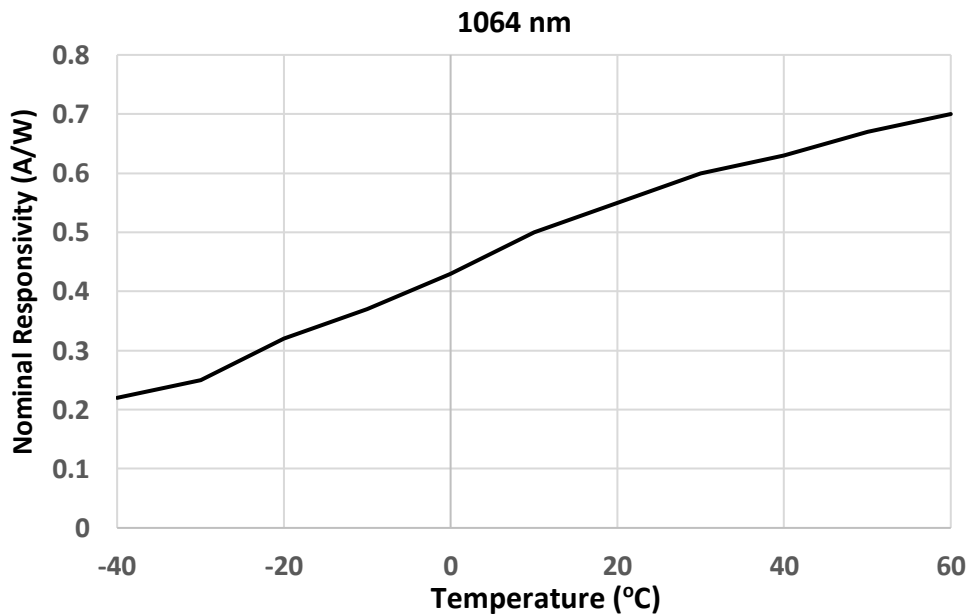
Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Max.	Unit
Reverse Voltage	V_r			200	V
Saturated Incident Intensity	P_{sat}			0.3	W/cm ²
Reverse Current	I_R			0.5	mA
Storage Temperature	T_{stg}		-55	120	°C
Storage Humidity	H_{stg}			85	% r.H.
Operating Temperature	T_{op}		-40	105	°C
Soldering Temperature	T_{st}	10 sec		260	°C
ESD Susceptibility ¹		HBM		500	V

Operating at maximum ratings for a prolonged period will cause damage to the device.

¹ ESD Sensitive device. Proper ESD procedures must be followed



Spectral response ($T_{op} 23 \pm 3^{\circ}C$)**Typical Increase in responsivity as a function of photodiode temperature**

Data taken between -40°C and 60°C at 10°C increments. Data was interpolated to fill in data points.



Device Dimensions (all units in mm) and Pin Configuration

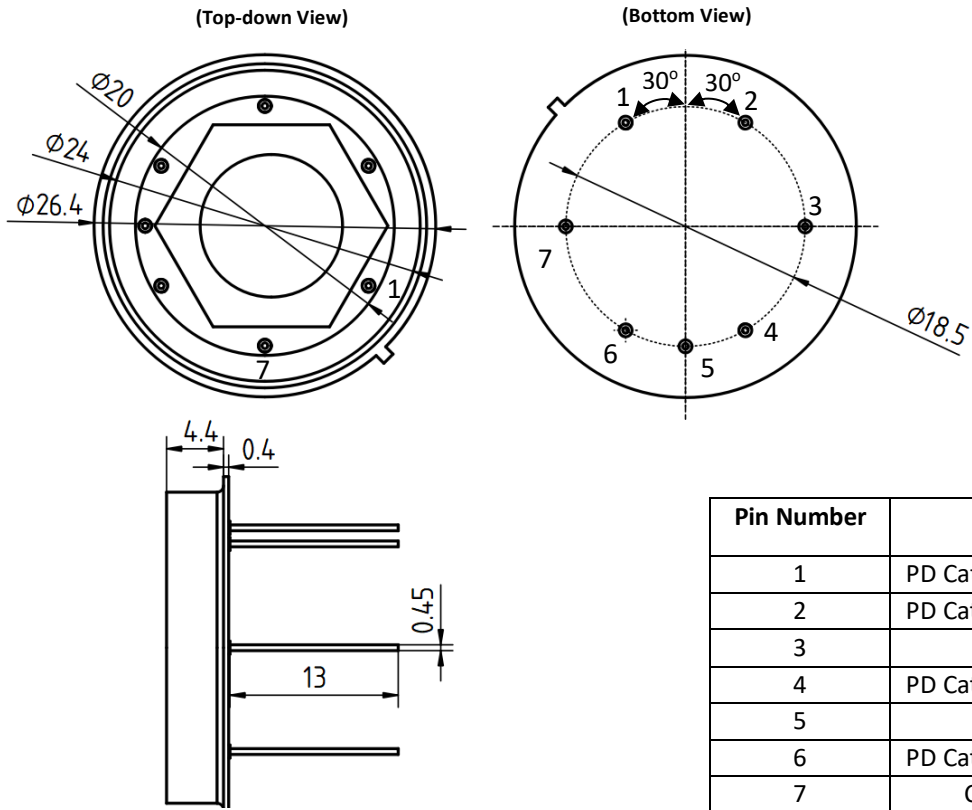


Table 1: Device Pin out

Inquiry Information

Sales: All inquiries regarding sales please contact Sales@NuPhotonics.com

General: If you are interested in a custom solution, general information, or engineering related information please contact Inquiry@NuPhotonics.com



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