Detectors

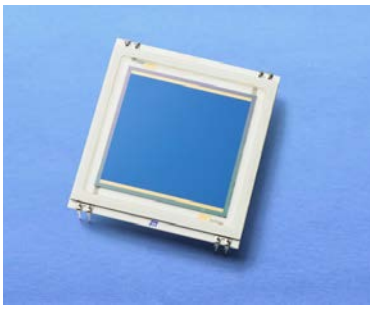
SiTek® ELECTRO OPTICS

LASER COMPONENTS

High Linearity Position Sensing Detector

Part number: **S2 – 0425**
Description: **2L30_SU106**

The SiTek 2L30 PSD functions according to the lateral effect photodiode principle. It is an analogue device and therefore displays excellent position resolution. The resolution is determined by the system signal-to-noise-ratio.
The 2L30 is operated in the biased mode. Typical applications include: distance and height measurements, position and motion measurements and vibration studies.
Special UV-or YAG-enhanced versions are available.



Electrical specification

Parameter	Symbol	Min.	Typ.	Max.	Unit
Active area			30 x 30		mm^2
Position non-linearity			0,3	0,8	%
Detector resistance	R_{det}	7	10	16	kΩ
Leakage current	I_d		200	2000	nA
Noise current	I_{noise}		1,3	1,8	pA/√Hz
Responsivity	r		0,63		A/W
Capacitance	C_j		730	900	pF
Rise time (10% - 90%)	t_r		3,3	6,4	µs
Bias voltage (reverse)	V_R	5	15	30	V
Thermal drift			40	200	ppm/°C

Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	$V_{R\text{-}max}$	30	V
Operating temperature	Toper	70	°C
Storage temperature	Tstg	100	°C

Test conditions: Room temperature 23 °C, bias voltage ± 15 V, light source wavelength 940 nm. Position non-linearity and thermal drift are valid within 80 % of the detector length.

Package: 8 pin DIP ceramic substrate, 48 x 44 mm^2, with solderable pins and protective window.

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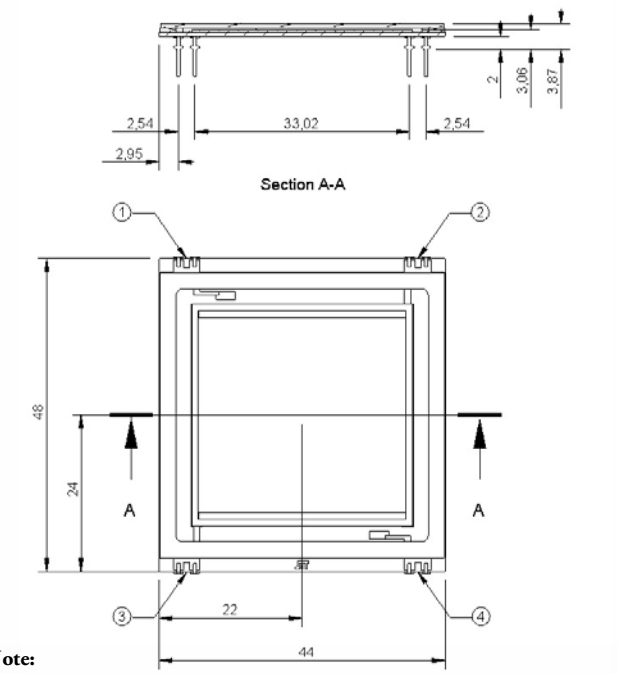


Pin no.	Output
1	Y1
2	X1
3	X2
4	Y2

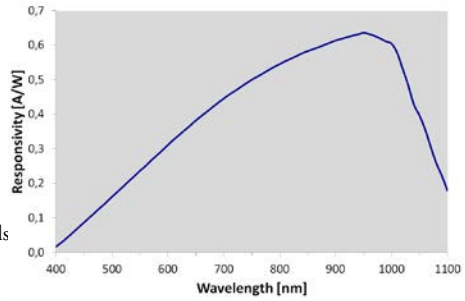
Note:
Outputs Y1, Y2 are interchangeable. The anodes Y1, Y2 must be at negative potential compared to the cathodes X1, X2.

Application Information

The inherent resolution of a PSD is very good. It is proven to be better than one part in one million. The performance of a PSD based measurement system is thus limited by its mechanical, optical electrical components.
To get the best performance you have to consider:

- Modulated light source. Modulation makes it possible
- to avoid influence of other light sources.
- Stable temperature.
- Mechanical stable system.
- High optical resolution.
- High resolution in division of sum- and difference signals

Resolution, optical sensitivity and measurement speed are related to each other in the PSD measurement system and you have to make the proper choices and tradeoffs for your system.



SEEPOS - SiTek PSD Signal Processing System

For most position measurement application the SiTek SEEPOS system offers a complete and easy-to use solution. It is a versatile PSD signal processing tool optimized for development of PSD systems. High speed PSD electronics combined with digital signal processing and high speed USB transfer makes it possible to build your own powerful measurement system.

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