Stand 02.07.2018

Tetra-Lateral PSD's

Position Sensing Detectors (PSD)

Features

- Single Resistivity Layer
- High Speed Response
- High Dynamic Range
- Very High Resolution
- Spot Size & Shape Independence

Applications

- Tool Alignment and Control
- Leveling Measurements
- Angular Measurements
- 3 Dimensional Vision
- Position Measuring

Tetra-lateral position sensing detectors are manufactured with one single resistive layer for both one and two dimensional measurements. They feature a common anode and two cathodes for one dimensional position sensing or four cathodes for two dimensional position sensing.

These detectors are best when used in applications that require measurement over a wide spacial range. They offer high response uniformity, low dark current and good position linearity over 64% of the sensing area.

A reverse bias should be applied to these detectors to achieve optimum current linearity when large light signals are present. The circuit on the opposite page represents a typical circuit set up for two dimensional tetra-lateral PSDs.
For further details as well as the set up for one dimensional PSDs refer to the "Photodiode Characteristics" section of the catalog. Note that the maximum recommended incident power density is 10 mW / cm^2. Furthermore, typical uniformity of response for a 1 mm ϕ spot size is ± 5% for SC-25D and SC-50D and ± 2% for all other tetra-lateral devices.

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Opto-Electronic Components

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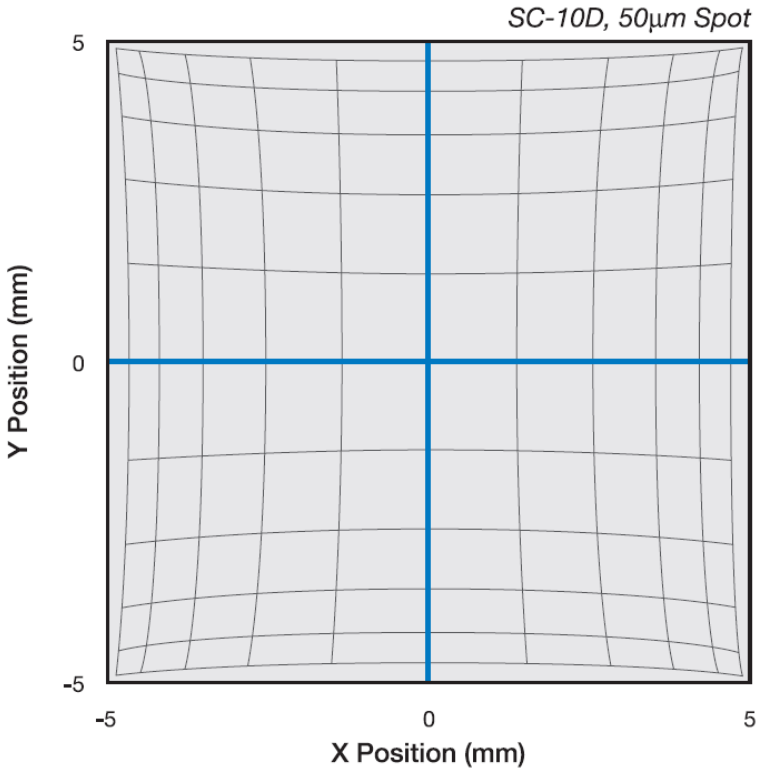
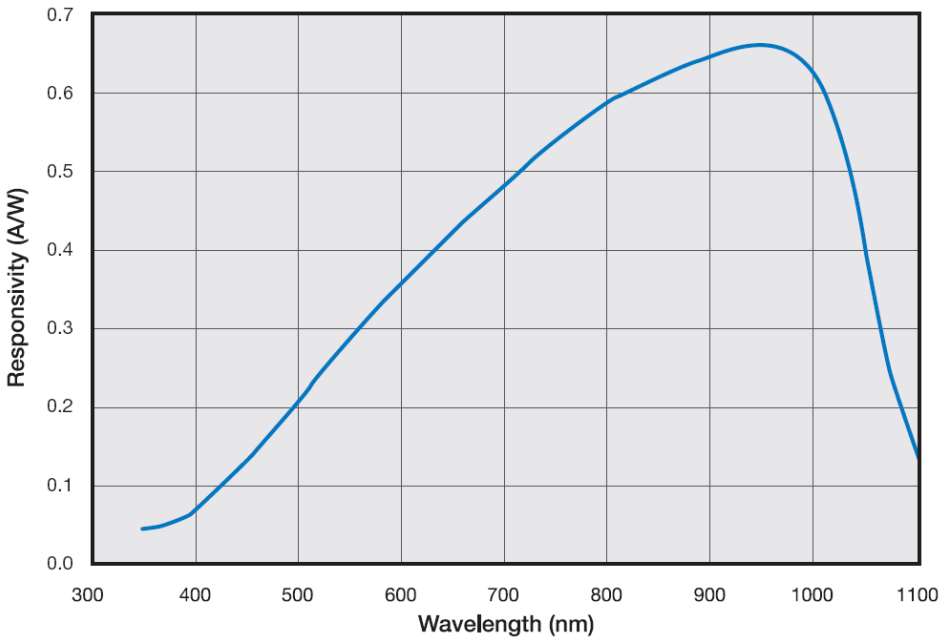
Typical Position Detectability



Typical Spectral Response



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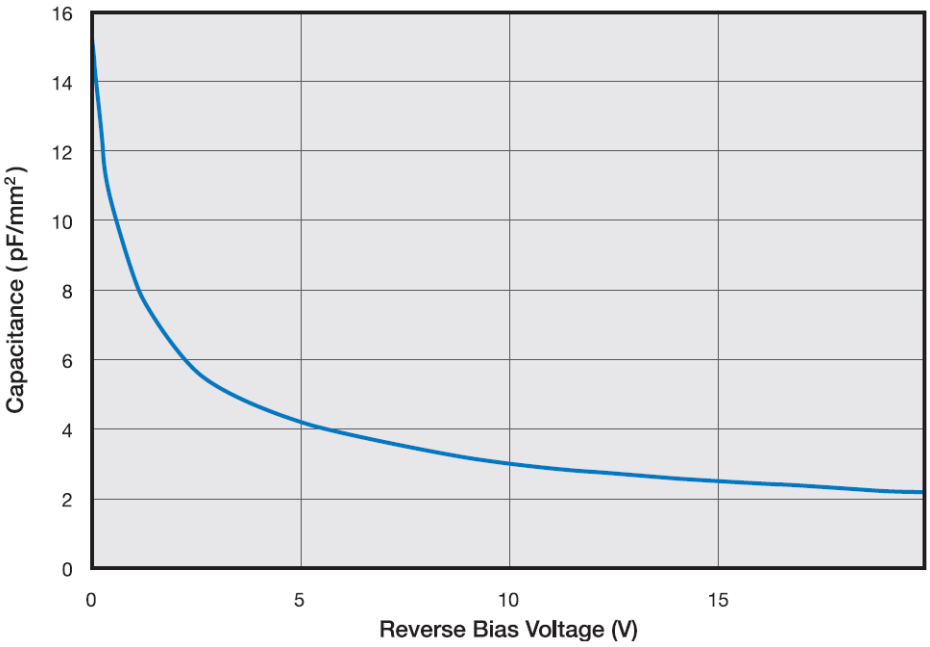
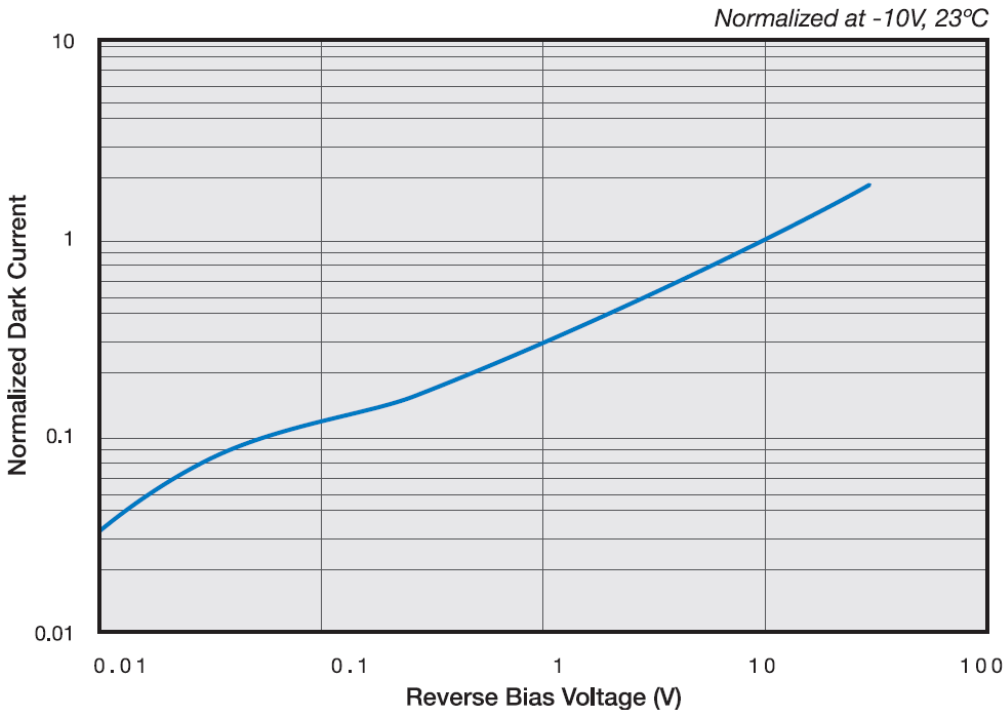
Typical Capacitance vs. Reverse Bias Voltage



Typical Dark Current vs. Reverse Bias



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Typical Electro-Optical Specifications (at T_A = 23°C)

Model Number	Position Sensing Area		Responsivity (A/W) 670nm		Absolute Position Detection Error (mm) Over 80% of length 64% of Area	Dark Current (µA) -15V		Capacitance (pF) -15V
	Area (mm²)	Dimensions (mm)	Min	Typ	Typ	Typ		Typ
One-Dimensional Series, Plastic Package								
LSC-5D	11.5	5.3 x 2.2	0.35	0.42	0.040	0.01	0.10	50
LSC-30D	122	30 x 4.1			0.240	0.025	0.250	300
Two-Dimensional Series, Metal Package								
SC-4D	6.45	2.54 sq	0.35	0.42	0.080	0.005	0.050	20
SC-10D	103	10.16 sq			1.30	0.025	0.250	300
SC-25D	350	18.80 sq			2.5	0.10	1.0	1625
SC-50D	957	30.94 sq			5.0	0.25	2.5	3900
Two-Dimensional Series, Plastic Package §								
FIL-C4DG	6.45	2.54 sq	0.35	0.42	0.080	0.005	0.050	20
FIL-C10DG	103	10.16 sq			1.30	0.025	0.250	300

Model Number	Rise Time* (µs) -15V, 670nm, 50Ω	Interelectrode Resistance (kΩ)		Temp.** Range (°C)		Package Style
	Typ	Min	Max	Operating	Storage	
One-Dimensional Series, Plastic Package						
LSC-5D	0.25	2	50	-10 ~ +60	-20 ~ +70	47/ Plastic
LSC-30D	3.00	4	100			46/ Plastic
Two-Dimensional Series, Metal Package						
SC-4D	0.66	3	30	0 ~ +70	-20 ~ +80	41/ TO-5
SC-10D	1.00					44/ Special
SC-25D	5.00					45/ Special
SC-50D	13.00					21/ Special
Two-Dimensional Series, Plastic Package §						
FIL-C4DG	0.66	3	30	-10 ~ +60	-20 ~ +70	14/ Plastic
FIL-C10DG	1.00					15/ Plastic

* Rise Time specifications are with a 1mm spot size at the center of the device.
** Non-condensing temperature and Storage Range, Non-condensing Environment.
§ The photodiode chips in "FIL" series are isolated in a low profile plastic package. They have a large field of view as well as "in line" pins.

Chip centering within ± 0.010".
For mechanical drawings please refer to "Mechanical Drawings".

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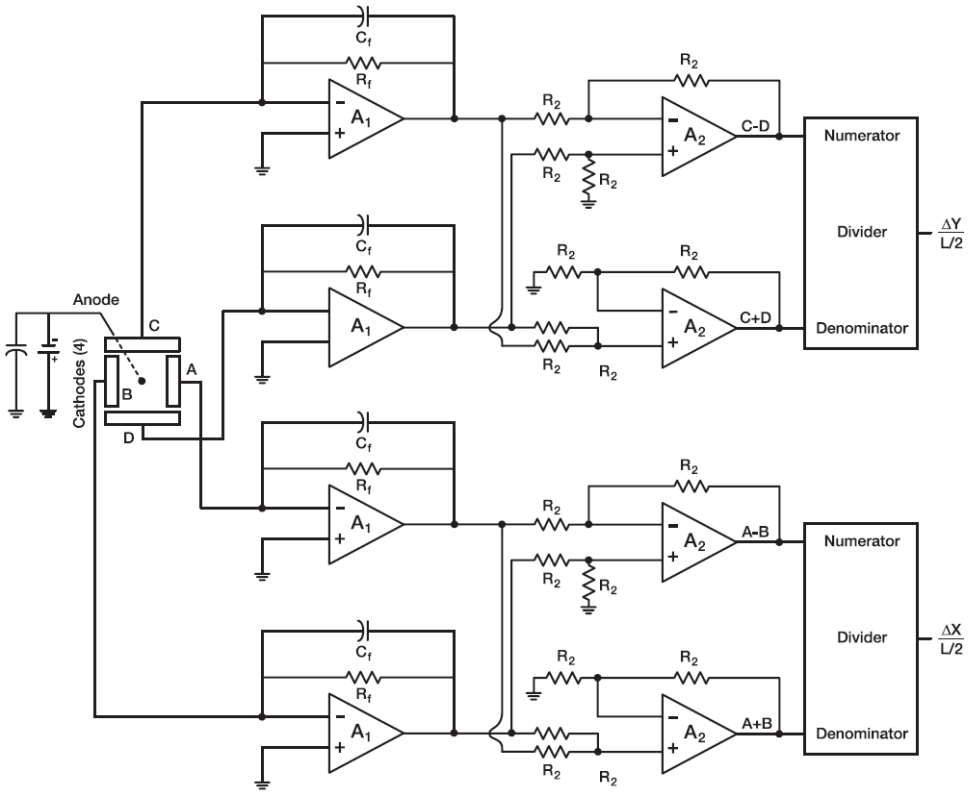
Dimensions



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