

DUO-LATERAL, SUPER LINEAR PSD'S

POSITION SENSING DETECTORS (PSD)



APPLICATIONS

- Beam Alignment
- Position Sensing
- Angle Measurement
- Surface Profiling
- Height Measurements
- Targeting
- Guidance System
- Motion Analysis

FEATURES

- Super Linear
- Ultra High Accuracy
- Wide Dynamic Range
- High Reliability
- Duo Lateral Structure

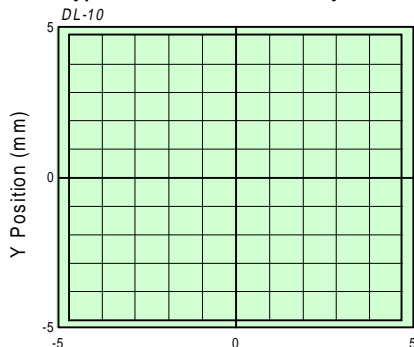
The Super Linear Position Sensors feature state of the art duo-lateral technology to provide a continuous analog output proportional to the displacement of the centroid of a light spot from the center, on the active area. As continuous position sensors, these detectors are unparalleled; offering position accuracies of 99% over 64% of the sensing area. These accuracies are achieved by duo-lateral technology, manufacturing the detectors with two separate resistive layer, one located on the top and the other at the bottom of the chip. One or two dimensional position measurements can be obtained using these sensors.

A reverse bias should be applied to these detectors to achieve optimum current

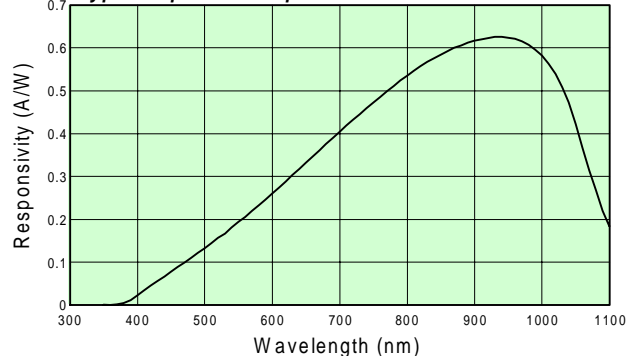
linearity at high light levels. **For position calculations and further details on circuit set up, refer to the "Photodiode Characteristics" section of the catalog.**

The maximum recommended power density incident on the duo lateral PSDs are $1 \text{ mW} / \text{cm}^2$. For optimum performance, incident beam should be perpendicular to the active area with spot size less than 1 mm in diameter.

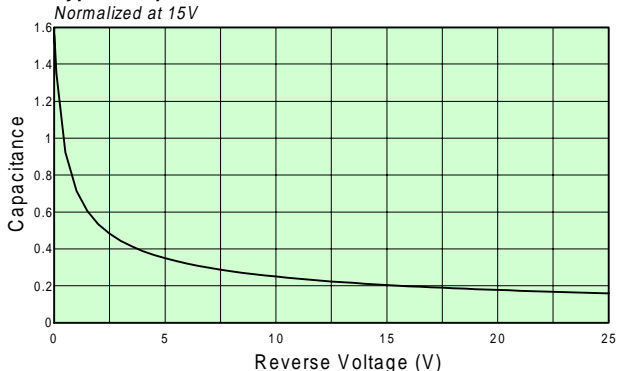
Typical Position Detectability



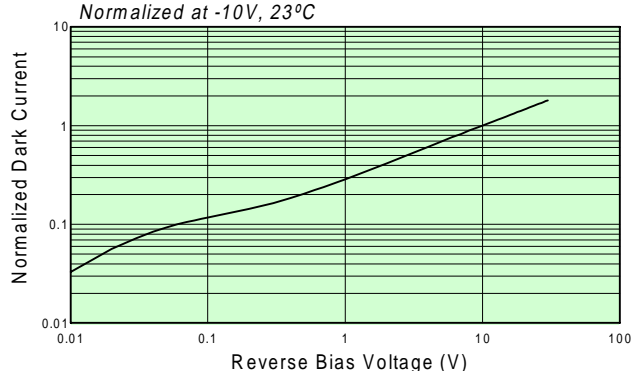
Typical Spectral Response



Typical Capacitance vs Reverse Bias



Typical Dark Current vs Reverse Bias



Model No.	Position Sensing Area		Responsivity (A/W)		Position Detection Error (µm)	Dark Current (nA)		Capacitance (pF)		Rise Time (µs)	Position Detection Drift * (µm / ° C)	Inter-electrode Resistance (KΩ)		Temp Range (°C)		Package Style ¶
	Area (mm ²)	Dimension (mm)	670 nm		Over 80% of Length 64% of Sensing Area	-15V, SL Series -5 V, DL Series		-15V, SL Series -5V, DL Series		670 nm 50Ω		min	max	Operating	Storage	
			min	typ		typ	typ	max	typ							
ONE-DIMENSIONAL SERIES METAL PACKAGE (V_{BIAS}=-15V)																
SL3-1	3	3 X 1	0.3	0.4	3	5	50	3	7	0.04	0.06	15	80	-10 ~ +60	-20 ~ +80	38 / TO-5
SL5-1	5	5 X 1			5	10	100	5	9	0.10	0.10	20	100			39 / TO-8
ONE-DIMENSIONAL SERIES CERAMIC PACKAGE (V_{BIAS}=-15V)																
SL3-2	3	3 X 1	0.3	0.4	3	5	50	3	7	0.04	0.06	15	80	-10 ~ +60	-20 ~ +80	45 / 8-pin DIP
SL5-2	5	5 X 1			5	10	100	5	9	0.10	0.10	20	100			
SL15	15	15 x 1			15	150	300	15	25	0.60	0.10	60	300			46 / 24-pin DIP
SL76-1	190	76 x 2.5			76	100	1000	190	250	14.00	1.4	120	600			47 / Special
TWO-DIMENSIONAL SERIES METAL PACKAGE § (V_{BIAS}=-5V)																
DL-2	4	2 sq	0.3	0.4	30	30	600	10	30	0.25	0.20	5	25	-10 ~ +60	-20 ~ +80	36 / TO-8
DLS-2						10	175	8	14		0.40					
DL-4	16	4 sq			50	50	1000	35	60	0.08	0.20					
DLS-4						25	300	30	40		0.40					
DL-10	100	10 sq			100	500	5000	175	375	0.20	0.20					33 / Special
DL-20	400	20 sq			200	2000	12000	600	1500	1.00	0.40					34 / Special
TWO-DIMENSIONAL SERIES CERAMIC PACKAGE § ** (V_{BIAS}=-5V)																
DLS-10	100	10 sq	0.3	0.4	100	50	400	160	200	0.20	0.2	5	25	-10 ~ +60	-20 ~ +80	35 / Ceramic
DLS-20	400	20 sq			200	100	1000	580	725	1.00	0.4					

* The position temperature drift specifications are for the die mounted on a copper plate without a window and the beam at the electrical center of the sensing area.

§ The DLS Series are packaged with A/R coated windows and have a lower dark current than the DL series.

** Also available in the same package as DL-10. Specify DL-10-1.

NOTES:

- DL(S) series are available with removable windows.
- Chip centering within ± 0.010".

For MECHANICAL DRAWINGS Click Here