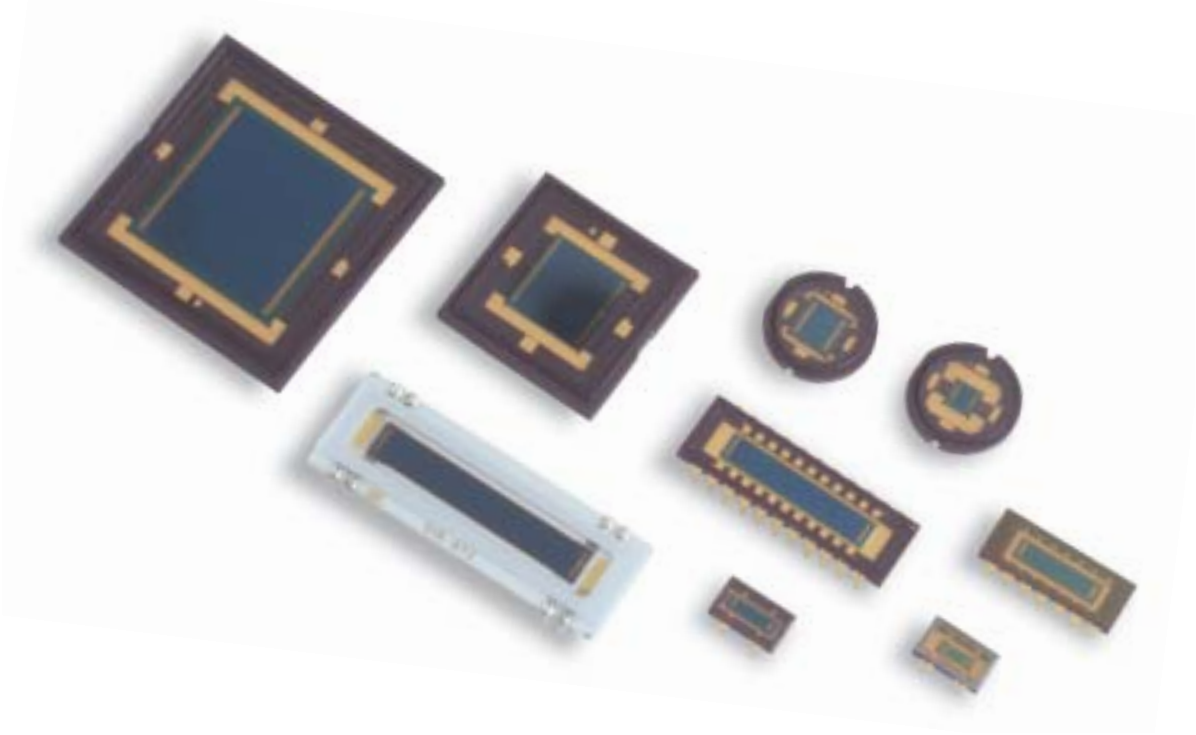
Position Sensing Detectors

For Non-Contact Measurement Of Position, Motion, Distance And Vibration



Features

- Superior Linearity — Better Than 99.95% Over 80% of Active Area
- Proven Analog Resolution Better Than 1 Part Per Million
- Low Thermal Drift, Less Than 40 ppm/°C
- Fast Response Time
- Simultaneous Position and Intensity Measurement
- Wide Spectral Range
- Independent of Light Spot Size

ON-TRAK® Photonics, Inc.

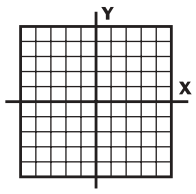
PSD General Description

On-Trak offers a broad range of Position Sensing Detectors (PSD) that enable you to simultaneously monitor position and light intensity.

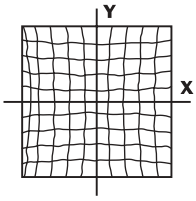
Ideal for non-contact measurement of position, motion, distance and vibration, all devices are silicon-based detectors that provide an analog output directly proportional to the position of a light spot on the detector's active area.

The continuous analog-output of silicon-based detectors provides numerous advantages over discrete element devices. These advantages include superior position linearity, unsurpassed analog resolution, faster response time and simpler operating circuits.

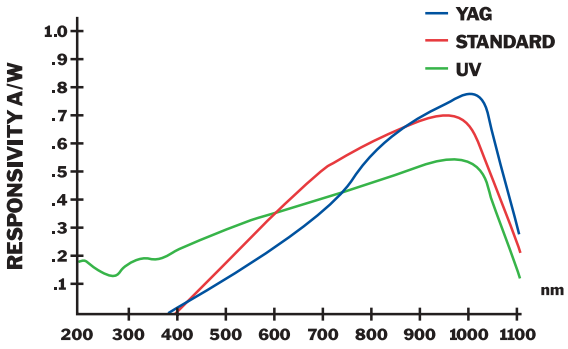
For more information on On-Trak Position Sensing Detectors, and how they can benefit your particular application, please call (949) 587-0769.



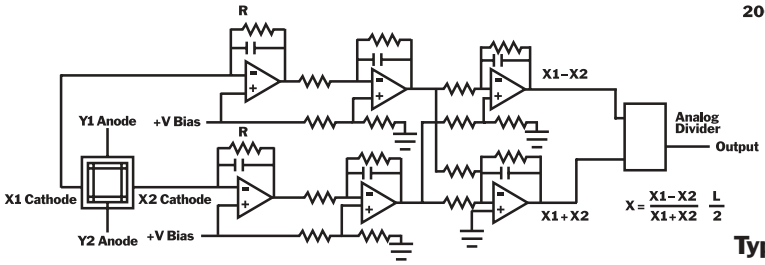
On-Trak Duolateral PSD Linearity (typical)



Competitor PSD Linearity (typical)

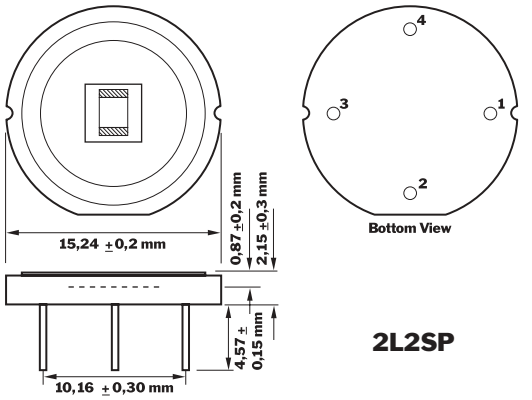


Spectral Response

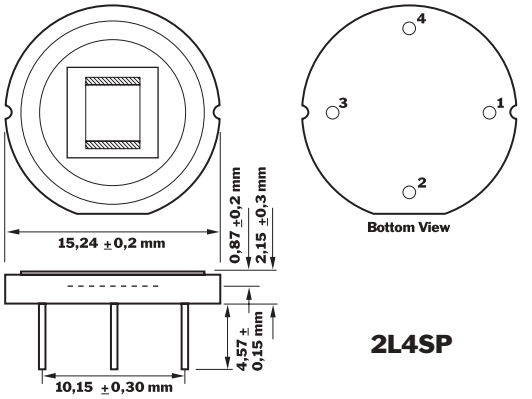


Typical Operating Circuit

Model	Active Area mm	Responsivity @ 940 nm A/W	Dark Current nA		Noise Current pA/Hz$^{1/2}$		Capacitance pF@15V	
			Typ.	Max	Typ.	Max	Typ.	Max
One Dimensional PSD Series								
1L2.5SP	2.5 x 0.6	0.63	2	10	0.4	1.0	1.6	2.0
1L5SP	5.0 x 1.0	0.63	4	20	0.4	1.0	5	6
1L10	10.0 x 2.0	0.63	8	50	0.4	1.0	15	20
1L20	20.0 x 3.0	0.63	50	250	0.5	1.0	45	55
1L30	30.0 x 4.0	0.63	150	1000	0.5	1.0	90	110
One Dimensional PSD Series With Stray Light Elimination								
1L5NT	5.0 x 0.25	0.63	4	20	0.3	0.6	5	6
1L10NT	10.0 x 0.5	0.63	8	50	0.3	0.6	15	20
Two Dimensional PSD Series — Duolateral								
2L2SP	2.0 x 2.0	0.63	50	200	1.3	2.5	7	8
2L4SP	4.0 x 4.0	0.63	50	200	1.3	2.5	20	25
2L10SP	10.0 x 10.0	0.63	100	500	1.3	2.5	90	110
2L20SP	20.0 x 20.0	0.63	200	2000	1.5	3.5	360	430



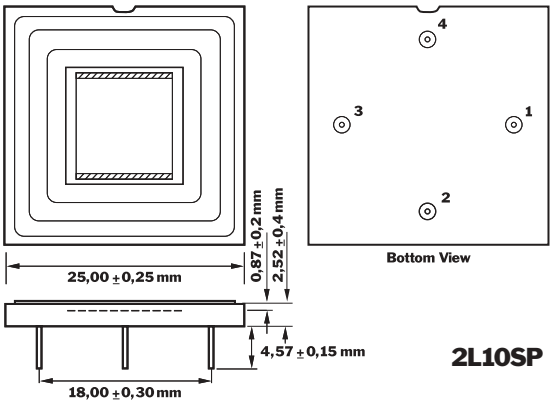
2L2SP



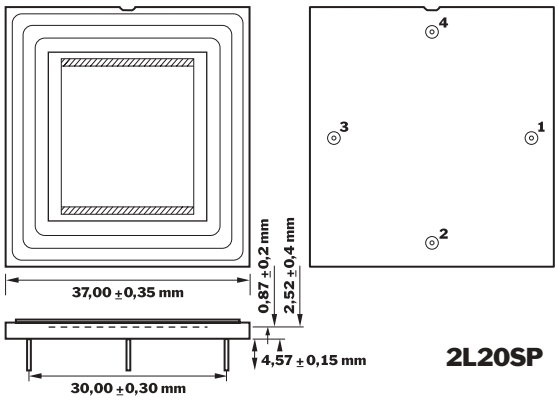
2L4SP

Pin Configuration
1. Output X1
2. Output Y1
3. Output X2
4. Output Y2

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

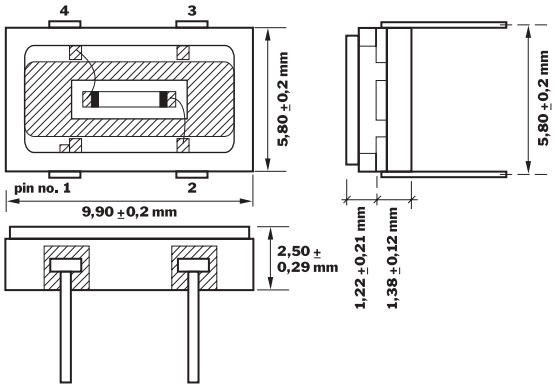


2L10SP



2L20SP

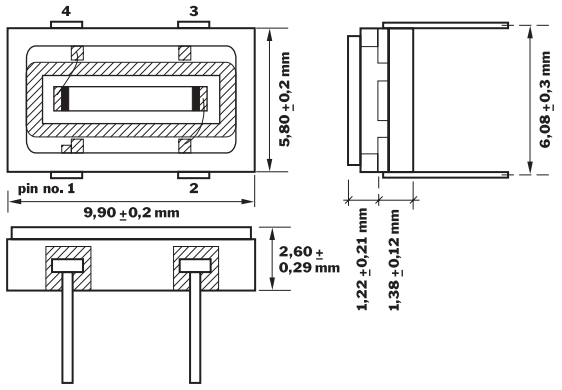
Rise Time µs 10-90% 15V		Reverse Bias V			Detector Resistance (kΩ)			Thermal Drift ppm/C°		Position Non-Linearity ±%	
Typ.	Max	Min	Typ.	Max	Min	Typ.	Max	Typ.	Max	Typ.	Max
.03	.05	5	15	20	40	50	80	20	100	0.1	0.2
.05	.08	5	15	20	40	50	80	20	100	0.1	0.2
.20	.40	5	15	20	40	50	80	20	100	0.1	0.2
.50	1.0	5	15	20	40	50	80	20	100	0.1	0.2
1.0	1.8	5	15	20	40	50	80	20	100	0.1	0.2
.25	.40	5	15	20	160	200	300	20	100	0.1	0.2
0.7	1.4	5	15	20	160	200	300	20	100	0.1	0.2
.03	0.6	5	15	20	7	10	16	40	200	0.3	1.0
.08	.16	5	15	20	7	10	16	40	200	0.3	0.8
.40	.80	5	15	20	7	10	16	40	200	0.3	0.8
1.6	3.0	5	15	20	7	10	16	40	200	0.3	0.8



1L2, 5SP

Pin Configuration
1. Bias
2. Output Y1
3. N/C
4. Output Y2

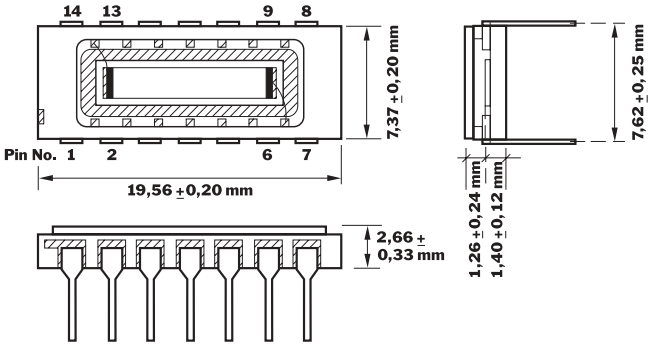
Notes:
Outputs Y1, Y2 are interchangeable.
The anodes Y1, Y2 must be at negative potential compared to the cathode.



1L5SP

Pin Configuration
1. Bias
2. Output Y1
3. N/C
4. Output Y2

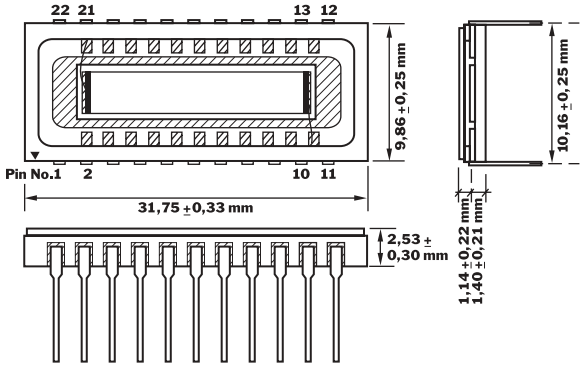
Notes:
Outputs Y1, Y2 are interchangeable.
The anodes Y1, Y2 must be at negative potential compared to the cathode.



1L10

Pin Configuration
1: Bias
7: Output Y1
14: Output Y2
2-6 & 8-13: N/C

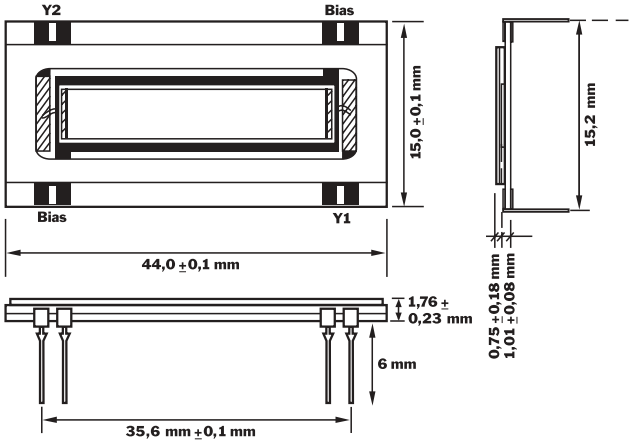
Notes:
Outputs Y1, Y2 are interchangeable.
The anodes Y1, Y2 must be at negative potential compared to the cathode.



1L20

Pin Configuration
12: Bias
11: Output Y1
22: Output Y2
1-10 & 13-21: N/C

Notes:
Outputs Y1, Y2 are interchangeable.
The anodes Y1, Y2 must be at negative potential compared to the cathode.

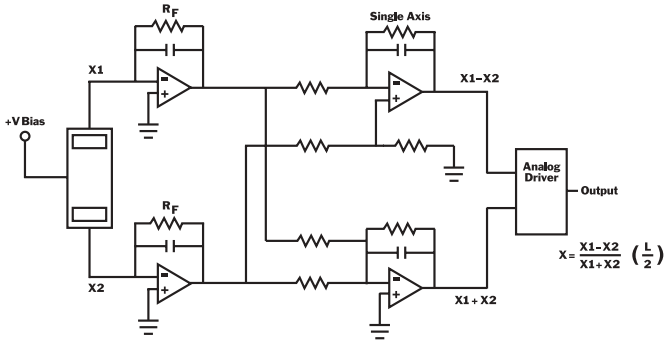


1L30

Pin Configuration
See Drawing

Notes:
Outputs Y1, Y2 are interchangeable.
The anodes Y1, Y2 must be at negative potential compared to the cathode.

Typical Operating Circuit



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