

## Segmented Photodiodes (SPOT Series)

### Position Sensing Detector (PSD)

The SPOT Series are common substrate photodetectors segmented into either two (2) or four (4) separate active areas. They are available with either a 0.005" or 0.0004" well defined gap between the adjacent elements resulting in high response uniformity between the elements. The SPOT series are ideal for very accurate nulling or centering applications. Position information can be obtained when the light spot diameter is larger than the spacing between the cells.

Spectral response range is from 350-1100nm. Notch or bandpass filters can be added to achieve specific spectral responses.

These detectors exhibit excellent stability over time and temperature, fast response times necessary for high speed or pulse operation, and position resolutions of better than 0.1  $\mu\text{m}$ .

Maximum recommended power density is 10 mW /  $\text{cm}^2$  and typical uniformity of response for a 1 mm diameter spot is  $\pm 2\%$ .

The circuit on the opposite page represents a typical biasing and detection circuit set up for both bi-cells and quad-cells. For position calculations and further details, refer to "Photodiode Characteristics" section of the catalog.



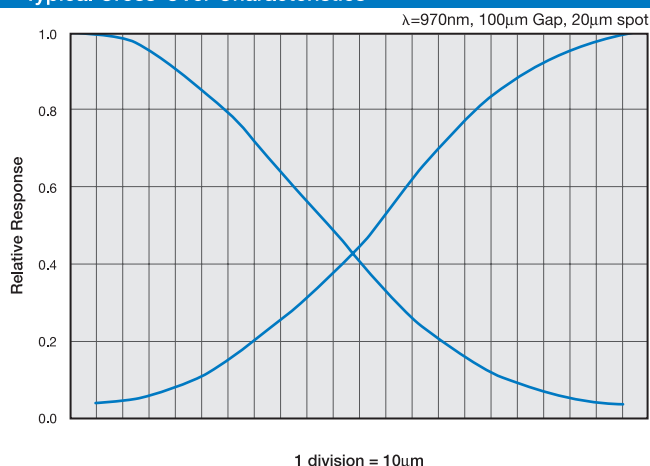
### APPLICATIONS

- Machine Tool Alignment
- Position Measuring
- Beam Centering
- Surface Profiling
- Targeting
- Guidance Systems

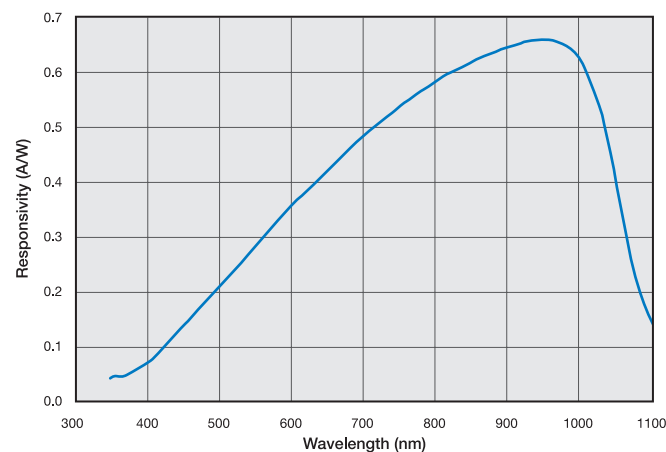
### FEATURES

- High Accuracy
- Excellent Resolution
- High-Speed Response
- Ultra Low Dark Current
- Excellent Response Match
- High Stability over Time and Temperature

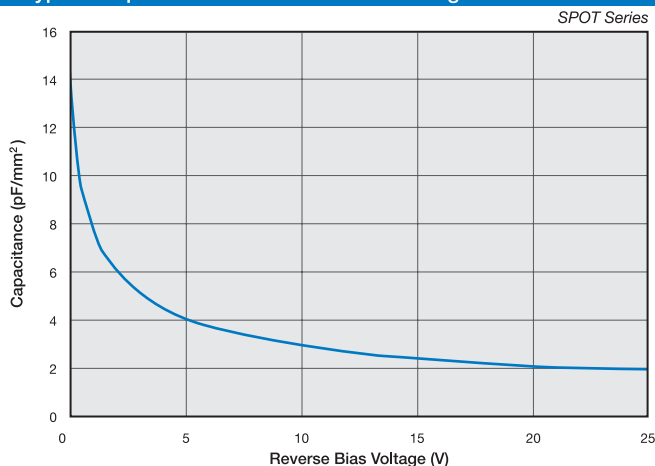
### Typical Cross-Over Characteristics



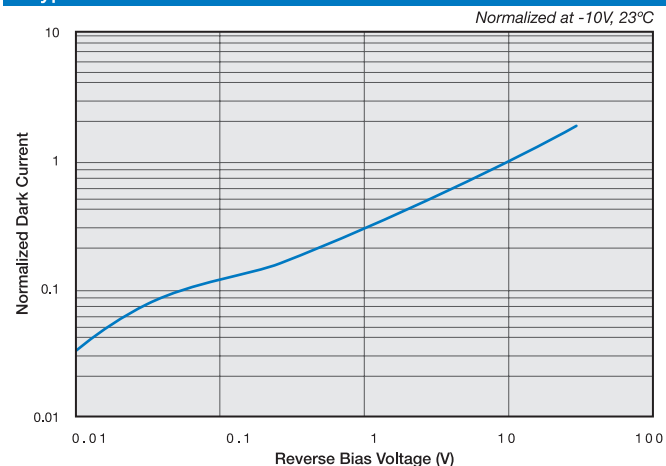
### Typical Spectral Response



### Typical Capacitance vs. Reverse Bias Voltage



### Typical Dark Current vs. Reverse Bias



### Typical Electro-Optical Specifications at $T_A=23^{\circ}\text{C}$

### Two-Element Series, Metal Package

### Four Element Series, Metal Package

## UV-Enhanced Four Elements, Metal Package S

‡ Overall Diameter (All four Quads)  
¶ For mechanical drawings please refer to pages 58 thru 69.  
Chip centering within  $\pm 0.010$ ".

