

# DATA SHEET

# QP50-6SD-DIAG

## QUAD PHOTODIODE SUM AND DIFFERENCE AMPLIFIER SPECIFICATIONS

The **QP50-6SD-DIAG** is a quad photodiode array with current-to-voltage amplifiers that provide top minus bottom and diagonal pair difference signals. Additionally the **QP50-6SD-DIAG** provides a signal that is the sum of all four quadrant diode signals. The difference signals are voltage analogs of the light intensity difference sensed by the pairs of photodiode elements in the array.

The **QP50-6SD-DIAG** outputs are labeled as T-B for top minus bottom, DIAG for diagonal pairs. The output voltages are obtained by routing the diode element currents into current-to-voltage amplifiers with a gain of  $10^4$ :

$$V_{T-B} = -[(I_{1,2}) - (I_{3,4})] \cdot (10^4) \text{ on Pad 2.}$$

$$V_{DIAG} = -[(I_{2,4}) - (I_{1,3})] \cdot (10^4) \text{ on Pad 3.}$$

$$V_{SUM} = (I_{1,2,3,4}) \cdot (10^4) \text{ on Pad 4.}$$

$I_{x,y}$  is the sum of the currents generated by photodiode elements x and y. Looking down through the window of the photodiode, the quadrants are identified as in Fig. 1.

Power supply voltage  $V_S$ : minimum  $\pm 4.5$  volts;  
maximum  $\pm 18$  volts; recommended  $\pm 15$  volts

Maximum  $\pm$  output voltage (all outputs):  $+V_S - 3$  volts;  
 $-V_S + 3$  volts

Maximum output current limit: 25 ma

Maximum applied bias voltage: 0 to  $+V_S$  (applied on Pad 1)  
Actual bias voltage to photodiode: Pad 1 voltage times 0.91  
Do not apply negative voltages to Pad 1.

Maximum slew rate: 10 volts per microsecond

Theoretical noise:  $15 \text{ nV} / \sqrt{\text{Hz}}$

Operating temperature: 0 to  $70^\circ \text{C}$

Bandwidth (dependent on bias voltage): 257 kHz maximum

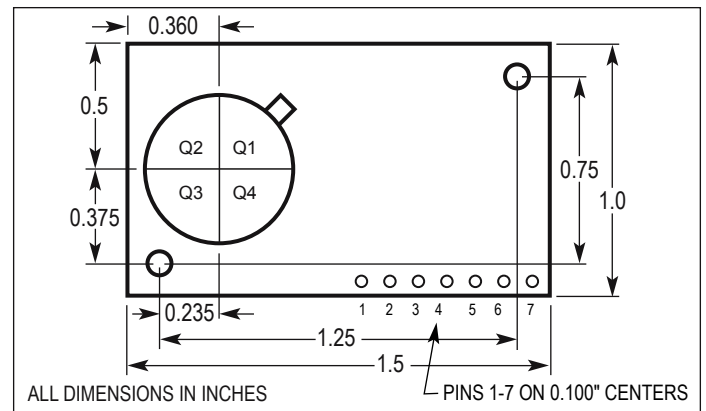
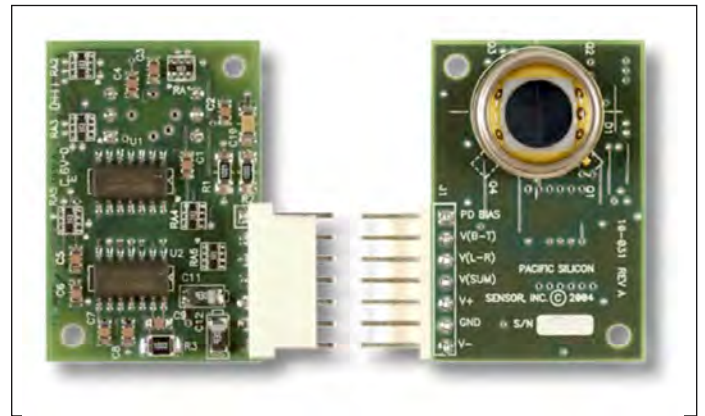
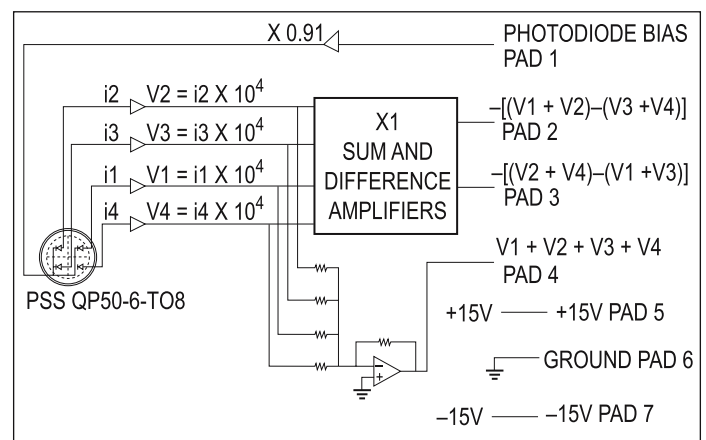


Figure 1: Quadrant Identification



Block Diagram



5700 Corsa Avenue, #105 • Westlake Village, CA 91362  
Tel: (818) 706-3400 • Fax (818) 889-7053  
Email: sales@pacific-sensor.com • www.pacific-sensor.com