PCB-Mounted Thermal Position Detector

TD4HR18XP

Description

TD4HR18XP is a position sensitive device (PSD) with four mechanically coupled but electrically independent thermopile sensors, surface-mounted on a metal-core PCB in a quadrant configuration. The TD4HR18XP features a position resolution of 30 µm. Its sensing area possesses a nearly flat broadband spectral absorption ranging from the UV through the MIR, has negligible dependency on angle of incidence, and a homogeneous response over the full sensing area. The TD4HR18XP can measure beams with powers from 100 µW to 5 W.

The mechanical integration of the quadrants ensures that they are thermally coupled, so that heat generated by absorbing the incident beam flows across all four quadrants. The thermal signal intensity measured for each quadrant is directly related to the beam's intensity or proximity. Therefore, the X and Y position of the beam can be determined by comparing the signal intensities measured for all quadrants. The PCB includes copper solder pads used to make electrical contact with each quadrant and four mounting holes to facilitate integration of the TD4HR18XP.

Please read the *Handling Instructions* document for information on mounting the thermal detector, making electrical connections, maintenance, and safety.

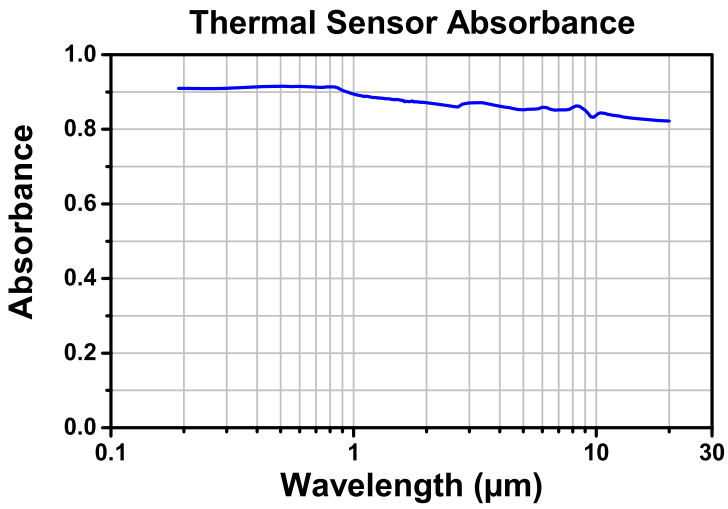
The *Handling Instructions* document can be downloaded at www.thorlabs.com/manuals.cfm.

Specifications

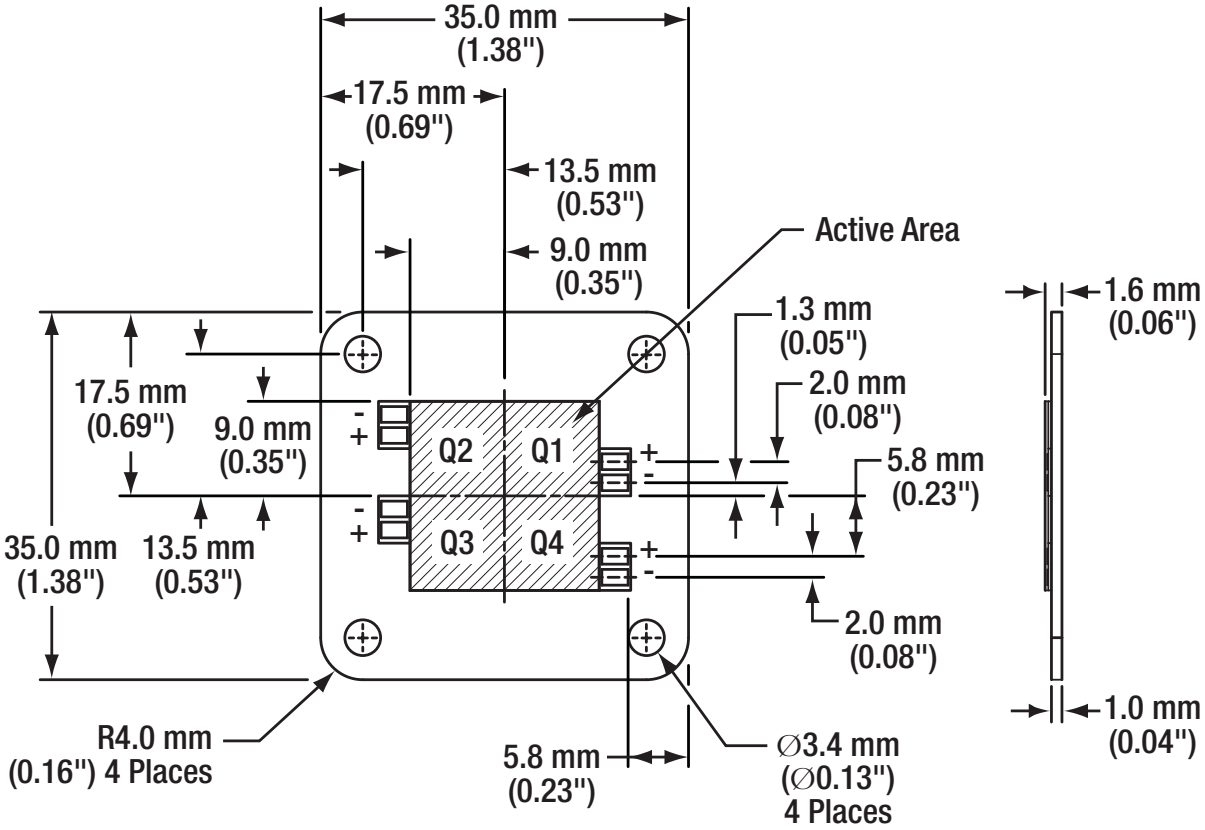
TD4HR18XP	
Detector Type	Four Thermopiles in Quadrant Configuration
Wavelength Range	190 nm - 20 µm
Optical Power Working Range[a]	100 µW - 5 W
Spatial Resolution	30 µm
Max Average Power Density[b]	1.5 kW/cm²
Max Pulse Energy Density	0.3 J/cm² (1 ns Pulse), 5 J/cm² (1 ms Pulse)
Minimum Responsivity of Each Quadrant	80 mV/W
Linearity with Optical Power	±0.2%
Rise Time[c]	1.1 s
Active Sensor Area	18.0 mm x 18.0 mm (0.71" x 0.71")
Active Area Uniformity	±1% (>1 mm Beam Diameter)
Detector Dimensions	35.0 mm x 35.0 mm x 1.6 mm (1.38" x 1.38" x 0.06")
Mounting	Four Ø3.4 mm (Ø0.13") Mounting Holes
Connection	Wire

a. Mounting on appropriate heat sink is required.
b. Damage Threshold
c. Typical Natural Response Time (0 - 95%)

Specifications (Continued)



Drawing



Notes:

+ Indicates Detector Positive Terminal for Each Quadrant

- Indicates Detector Negative Terminal for Each Quadrant

Dimensions of Each Terminal: 2.0 mm x 1.5 mm (0.79" x 0.59")