

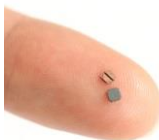
Comparison to photodiode detectors

OVERVIEW

Compared to silicon photodiodes, thermopile sensors score with a large range of detectable wavelengths - especially outside the visible range. The gRAY B0.5-SC with a sensing area of $2 \times 2 \text{ mm}^2$ comes in a convenient SMD package which additionally ensures a superior thermal contact after soldering. This makes it a compact, affordable choice for measuring power levels larger than $100 \mu\text{W}$ in confined spaces. Photodiodes, however, possess a superior response time and are thus well-suited for the detection of fast power changes (such as single pulses) and very low intensities in the nW range.

FEATURES

- Very compact thermal detector
- Sensitive to all wavelengths from UV to MIR
- Powers of up to 500 mW
- Linear power response
- Attractive OEM pricing



gRAY B0.5-SC

	gRAY B0.5-SC	Silicon photodiode
Spectral range	0.19 – 15 μm	0.35 – 1.1 μm
Response time	0.7 s / 2.1 s	$\approx 10 \text{ ns}$
Sensing Area (a x b)	2 mm x 2 mm	2.4 mm x 2.4 mm
Min. Sensitivity	80 mV/W	0.6 A/W
Noise Equivalent Power	100 μW (0.02% of max. power)	$\approx 10 \text{ nW}$ (0.01% of max. power)
Max. Power	0.5 W	$\approx 10 \text{ mW}$ (@1k Ω load, 5V bias)
Wavelength-dependent sensitivity (see graph below)	No	Yes
Linearity with power	Yes, >99%	Yes, up to saturation
Susceptibility to small variations of incident angle	Negligible	Significant
Homogeneous response over sensor area	Yes	Spot should be focused and centered on sensor

