

# D2250 Single-Wavelength Detector

## Data sheet

- 2.2 – 5.0  $\mu\text{m}$  center wavelength
- Tuning optional
- Down to 10 fW/ $\sqrt{\text{Hz}}$  noise-equivalent power
- DC – 10 GHz bandwidth
- Plug-and-play



The greatest challenge for mid-infrared detectors is typically the substantial inherent noise and that they collect large amounts of radiation from the surroundings. Our detectors alleviates both limitations by using narrowband and efficient upconversion technology together with low-noise silicon-based detectors.

Besides the excellent sensitivity, speed and low noise properties, the output of all our detectors is pre-amplified to voltage levels easily measurable with standard oscilloscopes. There is no need to apply further noisy amplification, all detectors are designed to be plug-and-play for user who are looking for the most sensitive mid-infrared detectors commercially available.

	D2250-DC	D2250-2M	D2250-100M	D2250-240M	D2250-1G	D2250-10G
<b>Center wavelength</b>	2.2 – 5.0 $\mu\text{m}$ (Tuning optional from 2.7 to 4.3 $\mu\text{m}$ )					
<b>Optical bandwidth</b> <sup>1, 2</sup>	15 – 200 nm					
<b>Electrical bandwidth, 3 dB</b>	DC – 20 Hz	DC – 2 MHz	10 kHz – 100 MHz	10 kHz – 240 MHz	10 kHz – 1 GHz	20 kHz – 10 GHz
<b>Noise-equivalent power</b>	10 fW/ $\sqrt{\text{Hz}}$	300 fW/ $\sqrt{\text{Hz}}$	0.5 pW/ $\sqrt{\text{Hz}}$	0.5 pW/ $\sqrt{\text{Hz}}$	2 pW/ $\sqrt{\text{Hz}}$	1 nW/ $\sqrt{\text{Hz}}$
<b>Minimum detectable power</b> <sup>3</sup>	45 fW	400 pW	5 nW	8 nW	0.6 nW	100 nW
<b>AC Responsivity</b> <sup>4</sup>	-	20 mV/nW	0.6 mV/nW	0.3 mV/nW	3 mV/ $\mu\text{W}$	120 V/W
<b>DC Responsivity</b> <sup>4</sup>	200 mV/pW	20 mV/nW	-	-	-	50 V/W
<b>Dark noise (std)</b>	9 mV	3.5 mV	6 mV	4 mV	4 mV	6 mV
<b>Output voltage, limit (50 <math>\Omega</math>)</b>	10 V	4.7 V	1.5 V	1.5 V	1 V	0.45 V
<b>Rise time (10-90%)</b>	-	170 ns	3.4 ns	1.41 ns	0.34 ns	0.034 ns
<b>Optical input</b> <sup>5</sup>	SMA fiber port (detachable for free-space use)					
<b>Polarization direction</b>	Vertical					
<b>Optimal input beam size</b>	0.5 mm (customizable)					
<b>Maximum operating temperature</b>	30 $^{\circ}\text{C}$					
<b>Physical dimensions (H x L x W)</b>	100 x 306 x 200 mm					
<b>Weight</b>	5 kg					
<b>Mounting</b>	4 x 1" posts					

<sup>1</sup> The minimum bandwidth depends on the center wavelength; higher center wavelengths implies higher minimum bandwidth (at 4.2  $\mu\text{m}$  the bandwidth is 200 nm).

<sup>2</sup> Broadband options are available upon request; broader bandwidth typically reduces the response.

<sup>3</sup> Minimum power in full electrical bandwidth.

<sup>4</sup> Specification valid for smallest optical bandwidth at center wavelength 3.5  $\mu\text{m}$ .

<sup>5</sup> Optimized for 200  $\mu\text{m}$  diameter fiber with NA 0.26.