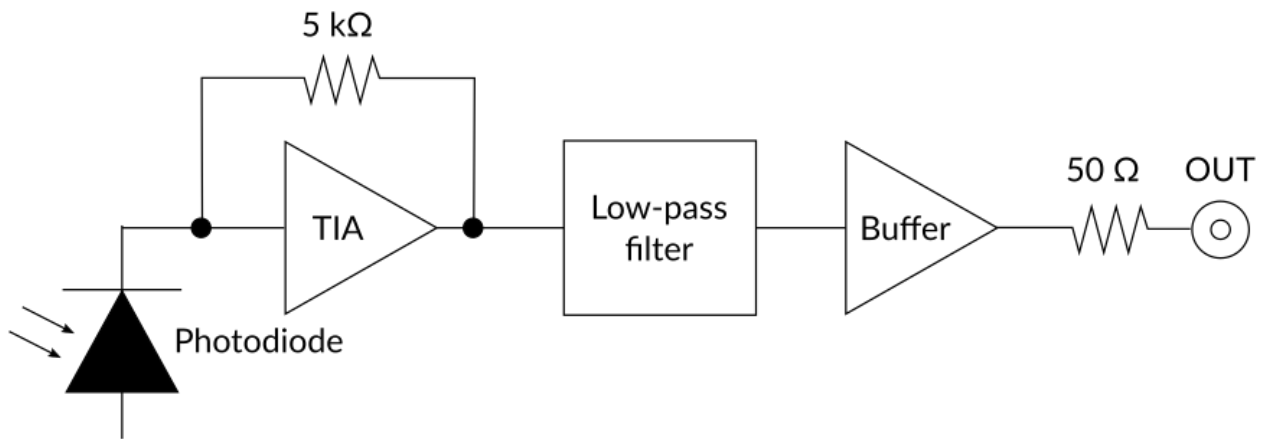


Koheron PDX10S-SI is a Si free-space photodetector with 5 kV/A transimpedance gain and 50 MHz bandwidth. With a noise-equivalent power spectral density of 4 pW/ $\sqrt{\text{Hz}}$ at 800 nm and up to 8 V DC output voltage, the PDX10S-SI is the perfect candidate for applications requiring high dynamic range.

Specifications

	PDX10S-1M-DC-SI	PDX10S-5-DC-SI
Detector		
Detector type	Si PIN photodiode	Si PIN photodiode
Photodiode active diameter	800 μm	800 μm
Wavelength range	320 nm to 1000 nm	320 nm to 1000 nm
Optical input power	0 μW to 15 μW	0 mW to 3 mW
Photodiode peak responsivity 800 nm	0.55 A/W	0.55 A/W
Transimpedance amplifier		
Small signal bandwidth	0 Hz to 1 MHz at 3 dB	0 Hz to 50 MHz at 3 dB
Coupling	DC	DC
Transimpedance gain	1 MV/A	5 kV/A
Noise Equivalent Power	250 fW/ $\sqrt{\text{Hz}}$ at 10 kHz	4 pW/ $\sqrt{\text{Hz}}$ at 1 MHz
Output impedance	50 Ω	50 Ω
Output voltage range	0 V to 8 V	0 V to 8 V
Output	SMA female connector	SMA female connector
Power supplies		
Positive supply voltage	10.5 V to 13 V	10.5 V to 13 V
Negative supply voltage	-9 V to -4 V	-9 V to -4 V
Quiescent current per rail	40 mA	40 mA
Maximum current positive supply	130 mA	130 mA
Other		
Outside dimensions	49 mm x 40 mm x 18 mm	49 mm x 40 mm x 18 mm
Operating temperature	0 $^{\circ}\text{C}$ to 50 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$ to 50 $^{\circ}\text{C}$
Weight	26 g	26 g

Functional diagram

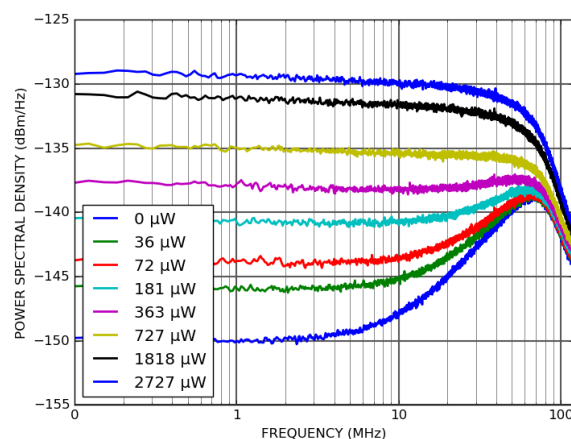


PDX10S-SI functional diagram

Characterization

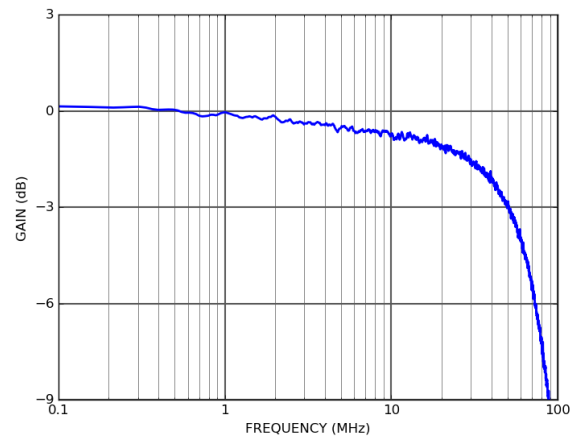
Output power spectral density

The power spectral density of the PDX10S-5-DC-SI output was measured for different incident optical powers. Optical source is a 810 nm LED driven by a [Koheron DRV110-A-375 laser driver](#). Power spectrum is measured using the [Koheron ALPHA250](#) FFT analyzer.

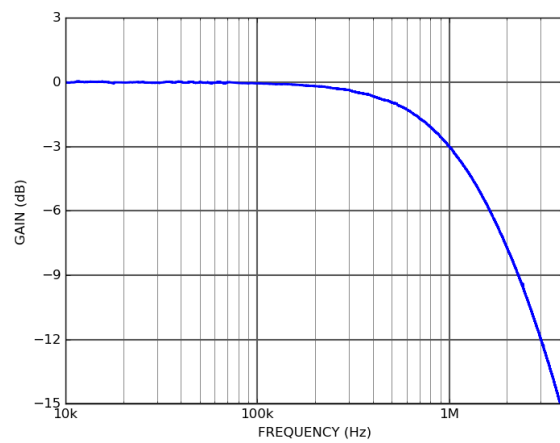


PDX10S-5-DC-SI power spectral density vs optical power

Small signal frequency response



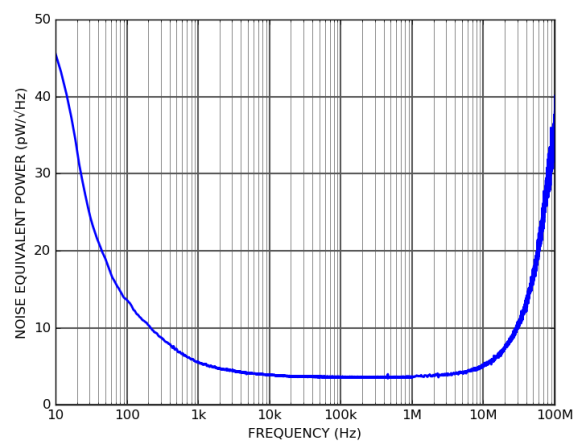
PDX10S-5-DC-SI (5 kV/A) small signal frequency response



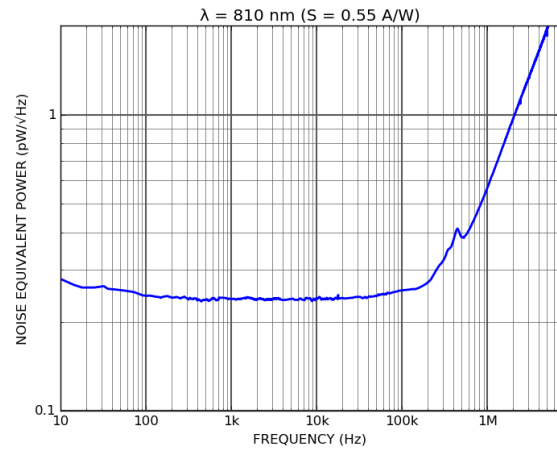
PDX10S-1M-DC-SI (1 MV/A) small signal frequency response

Noise equivalent power

The figure below shows the noise-equivalent power spectral density at a wavelength of 810 nm.



PDX10S-5-DC-SI (5 kV/A) noise equivalent power



PDX10S-1M-DC-SI (1 MV/A) noise equivalent power

Ordering codes

PRODUCT NUMBER	ATTRIBUTE
PDX10S-5-DC-SI	Transimpedance gain 5 kV/A
PDX10S-1M-DC-SI	Transimpedance gain 1 MV/A