PD510A Adjustable Gain Silicon Photodetector

Overview

The PD510A is a low-noise, adjustable-gain silicon photodetector with an integrated amplifier, designed for free-space optical systems. The device includes a photodiode, a transimpedance amplifier, a driver stage amplifier, and an RF connector. It features an SMA connector at the output to minimize size and maximize frequency response, and offers eight selectable settings for bandwidth and gain.

Features

- Low noise, adjustable gain
- Wavelength range: 320–1100 nm
- SMA output connector

Applications

- Optical instruments and meters
- Scientific research and experiments

Specifications

	Typical value
Materials	Si
Wavelength Range	320-1100nm
Photosensitive Area Size	3.6x3.6mm
Sensitivity	0.6A/W @940nm
Maximum Output Amplitude [a]	10V
Operating Voltage	±12V
Operating Current	100mA
Output Impedance	50Ω
Output Coupling Method	DC
Output Connector	SMA female
Operating Temperature	-20~65℃
Storage Temperature	-40~85℃

0db gear		10db gear	
Gain [a]	0.9x10^{3}V/W	Gain [a]	2.90x10^{3}V/W
Bandwidth [b]	DC-12MHz	Bandwidth [b]	DC-1.6MHz
Noise voltage [b]	2mV	Noise voltage [b]	2mV
Equivalent noise power	70.1pW/ √ Hz	Equivalent noise power	28.1pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	25ns	Rise time	200ns

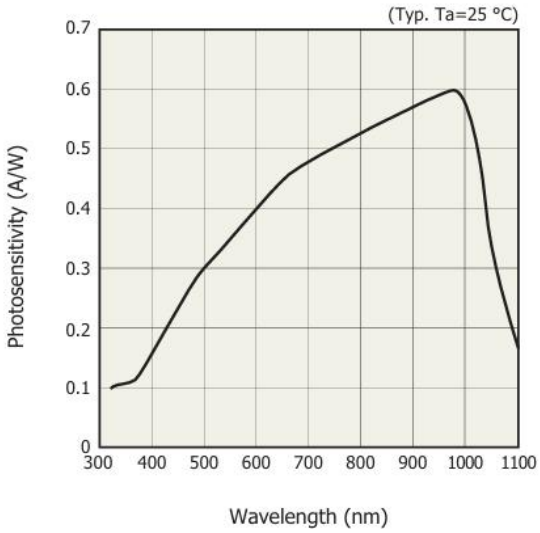
20db gear		30db gear	
Gain [a]	0.9x10^{4}V/W	Gain [a]	2.9x10^{4}V/W
Bandwidth [b]	DC-1MHz	Bandwidth [b]	DC-260kHz
Noise voltage [b]	3mv	Noise voltage [b]	3mv
Equivalent noise power	9.1pW/ √ Hz	Equivalent noise power	6.3pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	350ns	Rise time	1.5us
40db gear		**50db gear**	
Gain [a]	0.9x10^{5}V/W	Gain [a]	2.9x10^{5}V/W
Bandwidth [b]	DC-90kHz	Bandwidth [b]	DC-28kHz
Noise voltage [b]	4mV	Noise voltage [b]	4mV
Equivalent noise power	4.1pW/ √ Hz	Equivalent noise power	2.8pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	4us	Rise time	10us
60db gear		**70dbgear**	
Gain [a]	0.9x10^{6}V/W	Gain [a]	2.9x10^{6}V/W
Bandwidth [b]	DC-9kHz	Bandwidth [b]	DC-3kHz
Noise voltage [b]	5mV	Noise voltage [b]	5mV
Equivalent noise power	2.2pW/ √ Hz	Equivalent noise power	1.9pW/ √ Hz
Output bias voltage [a]	5mV	Output bias voltage [a]	5mV
Rise time	40us	Rise time	120us

Notes:

a For high-impedance loads

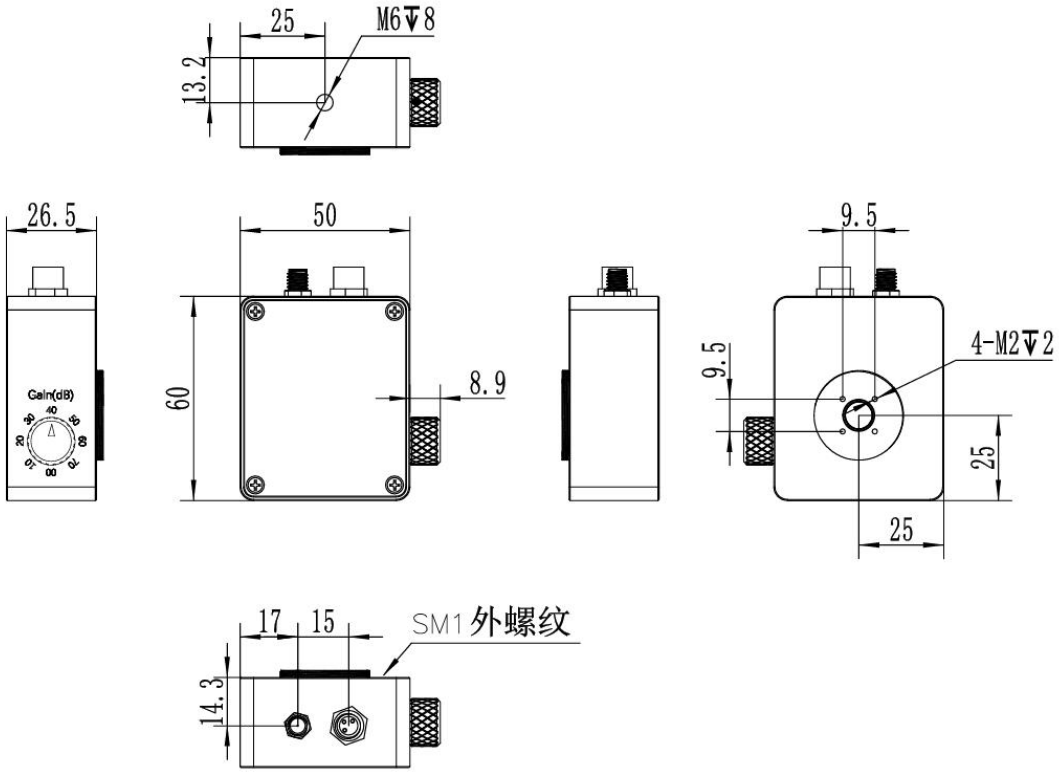
b For 50Ω loads

Response Curve

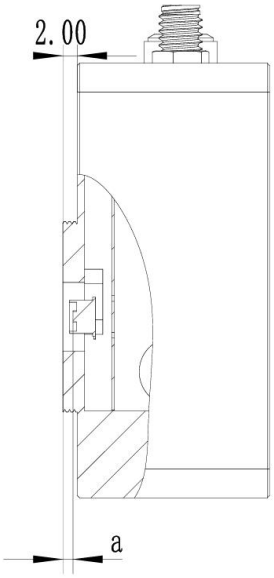


Note: The response curve shows typical values and is for reference only.

Machine Dimensions



Schematic Diagram of Light-Sensitive Distance Measurement



SM1 External Thread Design

Distance	A Series SM1
a=	1.7mm

Packing List

No	Item Name	Quantity	Unit	Remarks
1	Photodetector	1	each	
2	SMA-to-BNC RF Cable	1	piece	
3	Linear Power Supply	1	each	PN12-M8