

PD510U Adjustable Gain Silicon Photodetector

Overview

The PD510U is a low-noise, adjustable-gain silicon photodetector with an integrated amplifier, designed for use in free-space optical systems. The device includes a photodiode, a transimpedance amplifier, a driver stage amplifier, and an RF connector. An SMA connector is used at the output to minimize size and maximize frequency response. The detector offers eight selectable settings for bandwidth and gain.

Features

- Low noise, adjustable gain
- Wavelength range: 190–1100 nm
- SMA output connector

Applications

- Optical instruments and meters
- Scientific research and experimentation



Specifications

	Typical value
Materials	Si
Wavelength Range	190-1100nm
Photosensitive Area Size	2.4x2.4mm
Sensitivity	0.5A/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°C
Storage Temperature	-40~85°C

0db gear		10db gear	
Gain ^a	0.9x10 ³ V/W	Gain ^a	2.90x10 ³ V/W
Bandwidth ^b	DC-11MHz	Bandwidth ^b	DC-1.3MHz
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	32ns	Rise time	270ns

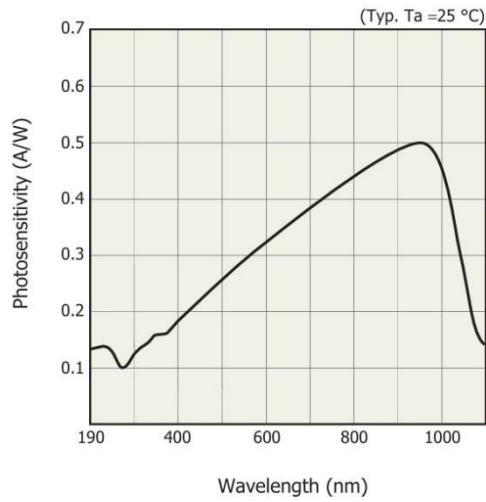
20db gear		30db gear	
Gain ^a	0.9x10 ⁴ V/W	Gain ^a	2.9x10 ⁴ V/W
Bandwidth ^b	DC-1.4MHz	Bandwidth ^b	DC-430kHz
Noise voltage ^b	2mv	Noise voltage ^b	2mv
Equivalent noise power	9.1pW/√ Hz	Equivalent noise power	6.3pW/√ Hz
Output bias voltage ^a	5mV	Output bias voltage ^a	5mV
Rise time	250ns	Rise time	800ns
40db gear		50db gear	
Gain ^a	0.9x10 ⁵ V/W	Gain ^a	2.9x10 ⁵ V/W
Bandwidth ^b	DC-110kHz	Bandwidth ^b	DC-40kHz
Noise voltage ^b	2mV	Noise voltage ^b	3mV
Equivalent noise power	4.1pW/√ Hz	Equivalent noise power	2.8pW/√ Hz
Output bias voltage ^a	5mV	Output bias voltage ^a	5mV
Rise time	3.2us	Rise time	8.7us
60db gear		70db gear	
Gain ^a	0.9x10 ⁶ V/W	Gain ^a	2.9x10 ⁶ V/W
Bandwidth ^b	DC-11kHz	Bandwidth ^b	DC-4kHz
Noise voltage ^b	4mV	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	32us	Rise time	87us

Notes:

a For high-impedance loads

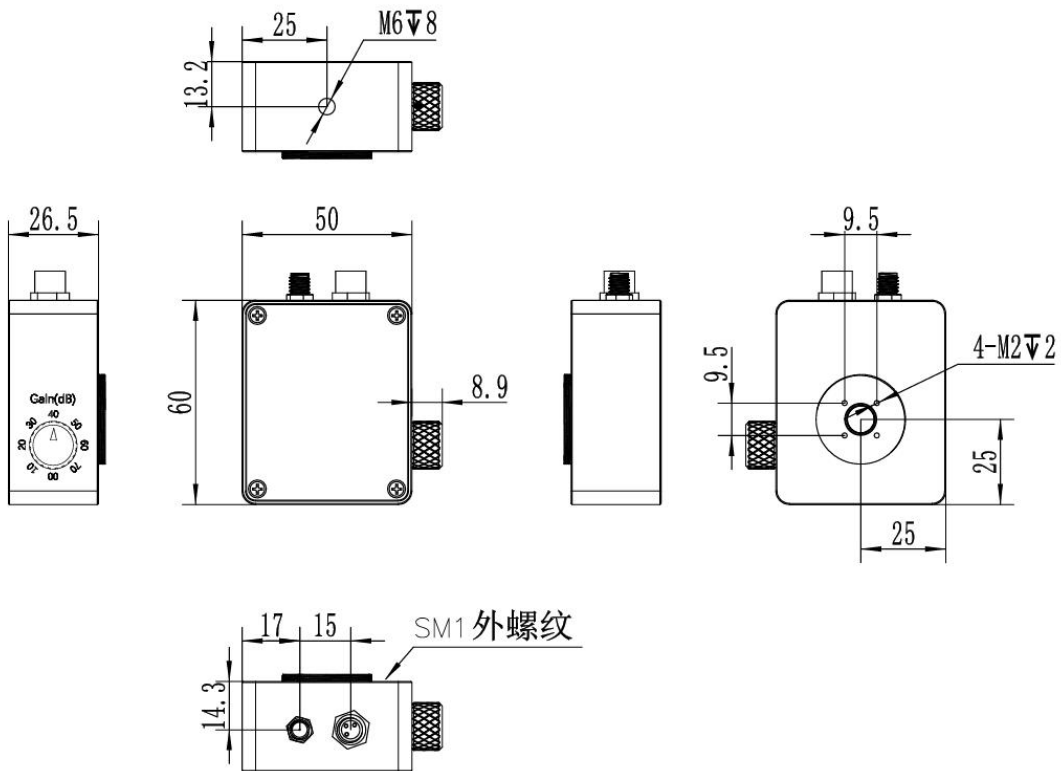
b For 50Ω loads

Response Curve

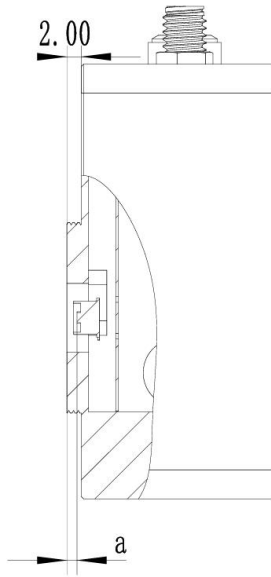


Note: The response curve shows typical values and is for reference only.

Machine Dimensions



Schematic Diagram of Light-Sensitive Distance Measurement



SM1 外螺纹结构

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