

Polarization Diverse Balanced Photodetector



OCT and sensor systems require high performance balanced photodetectors to increase system signal to noise ratio. Polarization sensitive OCT and similar applications require separate analysis of the two polarization components of a signal. The PBPD-001 is specially designed for use in such systems. The device is fully enclosed in a compact, sturdy aluminum box with two optical input ports, a balanced RF output port and two monitor ports for each polarization component, and a power supply port. With a bandwidth up to 200 MHz, a transimpedance gain larger than 30K and a saturation power larger than 130 μ W, the PBPD-001 is ideal for integration into laboratory or commercial OCT, fiber sensor, and high performance optical measurement systems with polarization dependent detection requirements.

Preliminary Specifications:

Operating Wavelength	1310 \pm 50nm standard (1550 \pm 50nm optional)
Polarization Crosstalk	< 25 dB (splitting element)
PDL (before polarization splitting) ¹	< 0.25 dB
Return Loss	> 50 dB
Input Power Damage Threshold	20 mW
Transimpedance Gain	3 \times 10 ⁴ V/A
Signal Conversion Gain	> 30 V/mW (interference signal)
RF Bandwidth	DC to 210 MHz
RF Output Impedance	50 Ω
RF Output Voltage Range	\pm 1.75 V @ 50 Ω load \pm 3.5 V @ high impedance load
RF Output DC Offset	< \pm 5 mV
CW Balanced Saturation Power (at input)	>150 μ W
NEP	< 11 pW / $\sqrt{\text{Hz}}$
Overall Output Voltage Noise	< 5 mV RMS
Overall Common Mode Rejection Ratio	> 25 dB
Monitor Bandwidth	DC to 1MHz
Monitor Output Impedance	200 Ω
Monitor Conversion Gain	2 V/mW
Max. Monitor Voltage ²	4 V
Power Supply	\pm 12 V DC / 200 mA
Signal Output Connector	SMA
Input Optical Fiber	SMF - 28 standard (PMF optional)
Input Pigtail Length	> 0.75m
Operating Temperature	10 to 50 $^{\circ}$ C
Storage Temperature	40 to 85 $^{\circ}$ C
Dimensions	100mm x 80mm x 27mm

Notes: Specs in table apply for the standard configuration at 23 \pm 5 $^{\circ}$ C.

1. At center wavelength.
2. Linear range.

Applications:

- Polarization sensitive OCT
- Fiber optic distributed sensing
- Polarization resolved sensing
- Instrumentation
- R&D

Unique Features:

- Low Noise
- Excellent CMRR
- High conversion gain
- Wide bandwidth
- Compact

Ordering Information:

PBPD — 001

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