

Optical Coherence Tomography Products

Balanced Photodetector



OCT and sensor systems require high performance balanced photodetectors to increase system signal to noise ratio. The BPD-002 is specially designed for use in research and development, with ease of use and high performance as the primary design goals. The device is fully enclosed in a compact, sturdy aluminum box with two optical input ports, a balanced RF output port, two 1-MHz monitor ports, and a power supply port. With a bandwidth up to 200 MHz, a trans-impedance gain larger than 30K and a saturation power larger than 130 μ W, the BPD-002 is ideal for integration into laboratory or commercial OCT, fiber sensor, and high performance optical measurement systems.

Specifications:

Photodetector Type	InGaAs
Wavelength Range	1060nm, 1310nm, or 1550nm \pm 50nm
PD Responsivity	0.7 mA / mW @ 1310 nm
Transimpedance Gain (Total, including TIA and OP-AMP)	3×10^4 V / A
RF Bandwidth (3dB)	DC – 200, 100, 50, 10, or 5 MHz
CW Balanced Saturation Power	> 130 μ W @ 1310 nm
PD Input Power Linear Range at Monitor Channels	0 to 1 mW @ 1310 nm
NEP (DC – 100MHz)	< 10 pW / $\sqrt{\text{Hz}}$
Common Mode Rejection Ratio	> 25 dB
RF Output Impedance	50 Ω
Electrical Connector	SMA
RF Output Voltage Range (at 50 Ω)	\pm 1.8 V
DC Offset RF Output	< \pm 3 mV
Monitor Output Impedance	200 Ω
Monitor Gain	10 V / mW (high impedance)
Monitor Bandwidth (3dB)	> 1000 Hz
Monitor Voltage	4 V max.
PD Damage Threshold Power	20 mW
Power Supply	\pm 12 V
Operating Temperature	10 to 50 $^{\circ}$ C
Storage Temperature	-40 to 85 $^{\circ}$ C
Dimensions	3.82" (L) \times 2.40" (W) \times 0.75" (H)

Features:

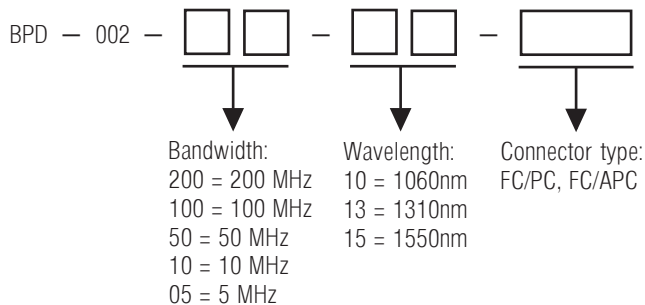
- Ultra low noise
- Excellent CMRR
- High conversion gain
- Wide bandwidth
- Compact

Applications:

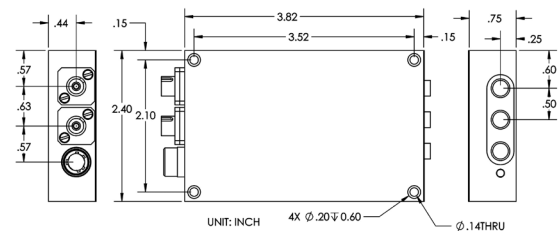
- Optical Coherence Tomography
- Fiber sensing interrogator
- Instrumentation
- R&D

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Ordering Information:



Dimensions (in inches):



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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