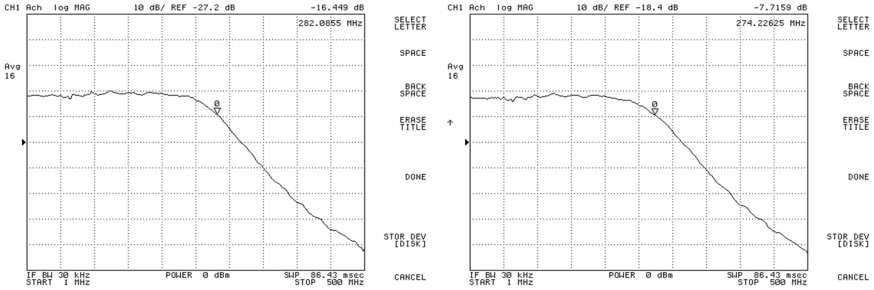
BPD - 003

OEM Balanced Photodetector

The BPD-003 is a high performance balanced photodetectors to boost system signal to noise ratio.

The BPD-003 is specially designed for OEM applications in such fields, engineered for low cost and small size as well as high performance. The device consists of an optical head and a post-amplification board with an SMA or SMB RF output. The optical head has two input fibers aligned with a pair of balanced photodetectors, followed by an integrated ultra-low noise transimpedance amplifier (TIA) placed immediately after the photodetectors to amplify received signals with low noise and enhanced CMRR. The post-amplification circuit further conditions and amplifies the signal to a range of ±3.5 V maximum. With a bandwidth of up to 200 MHz and a high conversion gain, the BPD-003 is ideal for integration into OCT, fiber sensors, and high-performance optical measurement systems.



Typical Amplitude vs. Frequency of the RF output: Left = Optical Input #1, Right = Optical Input #2

Small, low noise, DC coupled balanced detector for OEM applications.

KEY FEATURES

- Ultra low noise
- Excellent CMRR
- High conversion gain
- Wide bandwidth ~ 230 MHz
- Compact design

APPLICATIONS

- Fiber sensing interrogator
- Optical imaging, including optical coherence tomography (OCT)
- Instrumentation
- Research & Development

SPECIFICATIONS

Parameter	Specification
Optical	
Operating Wavelength	1060, 1310, or 1550 ± 50 nm
Photodetector Type	InGaAs
PD Resonsitivity[1]	> 0.8 mA/ mW at 1550 nm > 0.7 mA/ mW at 1310 nm > 0.5 mA/ mW at 1060 nm
Polarization Dependent Loss (PDL)	< 0.2 dB
Return Loss (RL)	> 45 dB
Maximum Input Power	10 mW
Pigtail Length	100 cm ± 10 cm
Fiber Type	SMF-28 for 1310 or 1550 nm Hi1060 for 1060 nm
RF Output	
RF Output Bandwidth (3dB)[2,3]	DC to 230 MHz
Transimpedance Gain (at 50 Ω)[3]	50 x 10^3 V/A (TIA + post amplifier)
Conversion Gain (at 50 Ω)[4]	> 40 x 10^3 mV/mW at 1550 nm > 35 x 10^3 mV/mW at 1310 nm > 25 x 10^3 mV/mW at 1060 nm
CW Balanced Saturation Power[5]	36 µW at 1550 nm 42 µW at 1310 nm 58 µW at 1060 nm
Common Mode Rejection Ration (CMMR)	> 35 dB (DC to 40 MHz) > 15 dB (40 to 230 MHz)
NEP (DC - 100 MHz)	< 6 pW / $\sqrt{Hz}$
RF Output Impedance	50 Ω
RF Output Voltage	±1.75 V at 50 Ω load ±3.5 V at high impedance load
RF Output Connector	SMB
Power Supply	±5 V/ 200 mA
General	
Operating Temperature	10 to 50 °C
Storage Temperature	-40 to 85 °C
Dimensions (L x W x H)	1.95 x 0.85 x 0.65 in

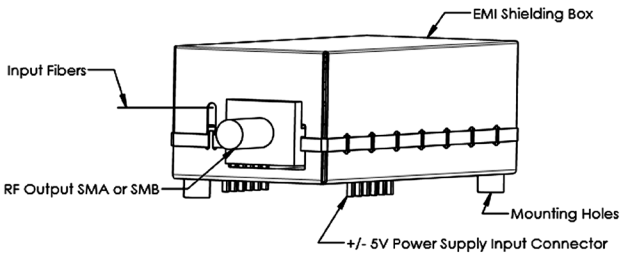
NOTES

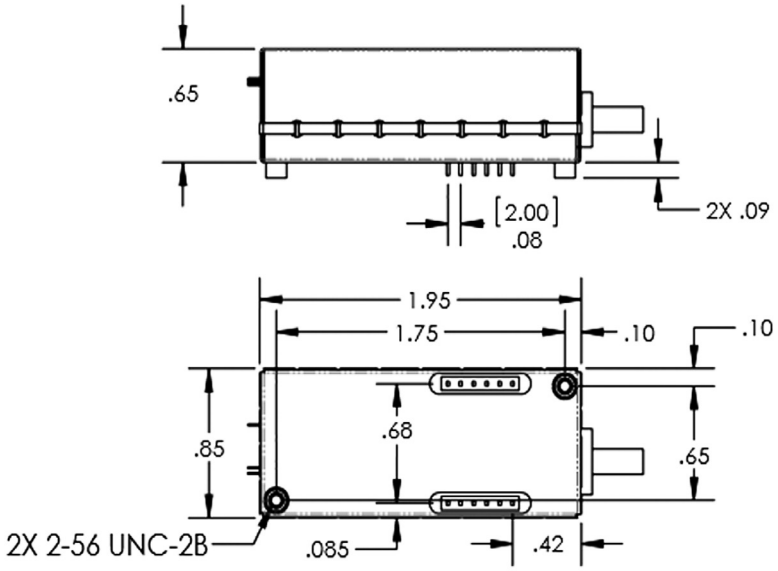
Values are referenced without connectors.

1. Includes the coupling loss of fiber to photodiode.
2. Tolerance =20%.
3. Other bandwidths may be available.
4. Other gains are available.
5. For other transimpedance gains and wavelengths, CW Saturation Power is specified by (3.5V/Transimpedance gain) x Responsivity

LUNA

Dimensions (in inches)





ORDERING

Catalog #	Description
BPD - 003 - 230 - 15 - FC/APC	OEM balanced photodetector with RF output, 230 MHz bandwidth (typical), FC/APC connectors, 1550nm.
BPD - 003 - 230 - 13 - FC/APC	OEM balanced photodetector with RF output, 230 MHz bandwidth (typical), FC/APC connectors, 1310nm.
BPD - 003 - 230 - 10 - FC/APC	OEM balanced photodetector with RF output, 230 MHz bandwidth (typical), FC/APC connectors, 1060nm.

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