

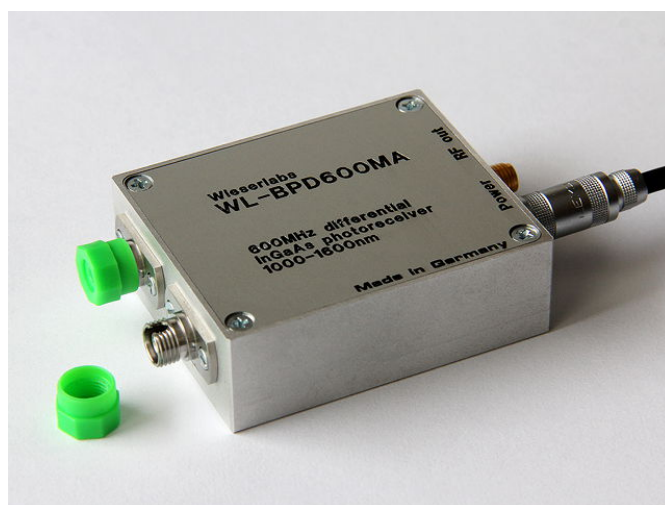
220 MHz Dual-Balanced InGaAs Low Noise Photodetector

Features

- High transimpedance gain: 3500 V/W (1550 nm)
- Low noise: below -130 dBm/Hz
- NEP: 20 pW/ $\sqrt{\text{Hz}}$ typ.
- 220 MHz bandwidth
- AC coupled; low cutoff below 300 kHz
- Wavelength range: 1000 nm to 1700 nm
- Fiber Coupled: FC receptacles
- Output: 50 Ω SMA plug
- Wide range single supply: 11 to 15 V

Typical Application

- Interferometry
- Swept-Source OCT imaging
- Can be used single-ended as well



(Photo shows mechanically equivalent product.)

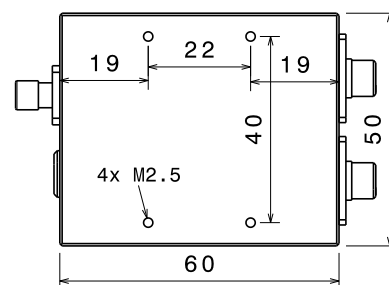
General Description

The BPD220MA is an AC-coupled high-speed dual-balanced InGaAs photoreceiver. It features a high transimpedance gain, very low noise and a -3dB bandwidth of 220 MHz.

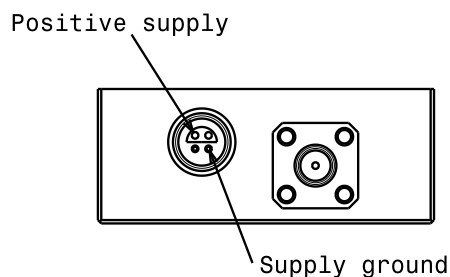
The BPD220MA comes in a rugged aluminum case with two FC fiber receptacles and a 50 Ω SMA output. It operates from a single 11–15 V DC supply. OEM versions without a case are available upon request.

Mechanical Properties

- Fiber coupling: FC receptacles for FC/PC and FC/APC connectors
- RF output: SMA (female)
- Supply voltage input: Push-pull LEMO plug (included with diode)
- Small form factor: 50×60×20 mm
- Mounting: 4x M2.5 threaded holes on bottom (screw length 4 mm)



Electrical Connectors



Supply connector (front view). The case is electrically connected to ground.

There are two types of supply cable, one has 2 wires and one has 5 wires. The corresponding color scheme of these cables is:

Cable type	Positive supply	Supply ground
2-wire	white	brown, shield
5-wire	yellow	grey, shield

Wieserlabs UG (haftungsbeschränkt)

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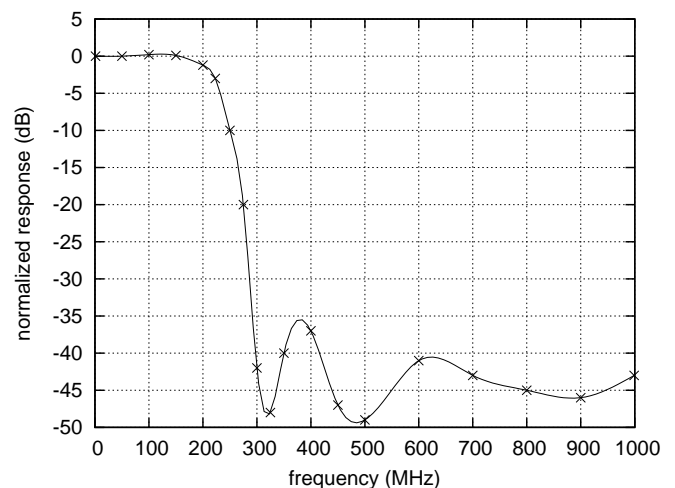
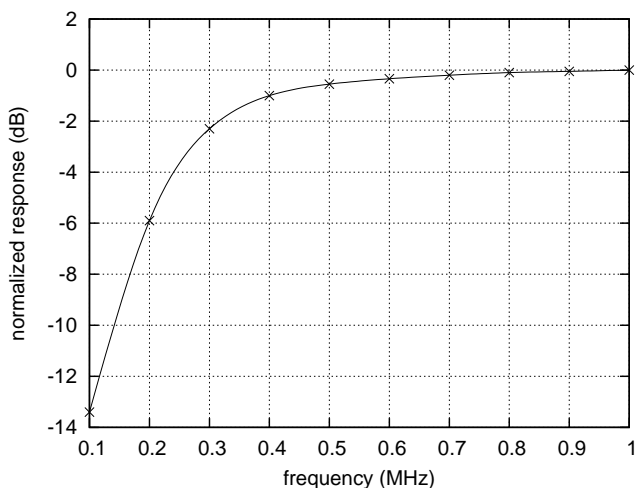
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Specifications

Parameter	Conditions	Min	Typ	Max	Units
DC Characteristics					
Supply Voltage (V_S)		11		15	V
Supply Current			110		mA
AC Characteristics					
3dB Bandwidth		205	220	235	MHz
AC Low Frequency Cutoff			260	300	kHz
Output IP3			28		dBm
2nd Harmonic	$P_{out} = 0$ dBm		-40		dBc
	$P_{out} = -10$ dBm		-53		dBc
3rd Harmonic	$P_{out} = 0$ dBm		-45		dBc
	$P_{out} = -10$ dBm		-47		dBc
Noise Spectral Density	1 MHz – 200 MHz		-130	-125	dBm/Hz
	> 300 MHz			-150	dBm/Hz
Noise Equivalent Power (NEP)	1 MHz – 200 MHz, 1550 nm		20	35	pW/ $\sqrt{\text{Hz}}$
Output Impedance			50		Ω
Optical Characteristics					
Input Wavelength Range		1000		1700	nm
Transimpedance Gain	wavelength 1550 nm		3500		V/ W_{optic}
	wavelength 1310 nm		3300		V/ W_{optic}
Common Mode Rejection Ratio		25	30		dB
Maximum Input Power	(damage threshold)	10			mW

Typical Performance Characteristics

Frequency response: RF output power versus frequency



Test conditions: Light input $100 \mu\text{W}$ at 1310 nm, modulated via EOM.