WL-BPD270MA5

(Rev. 2c, 03/2022)

270 MHz Dual-Balanced InGaAs Low Noise Photodetector

Features

- High transimpedance gain: 3 500 V/W
- Low noise: below -130 dBm/Hz
- NEP: 20 $\mathrm{pW}/\sqrt{\mathrm{Hz}}$ typ.
- 265 MHz bandwidth
- AC coupled; low cutoff below 5 MHz (30 kHz to 5 MHz on request)
- Wavelength range: 1000 nm to 1700 nm
- Fiber Coupled: FC receptables
- Output: 50 Ω SMA plug
- Wide range single supply: 11 to 15 V

(Photo shows mechanically equivalent product.)

Typical Application

- Interferometry
- Balanced (differential) detection
- Can be used single-ended as well

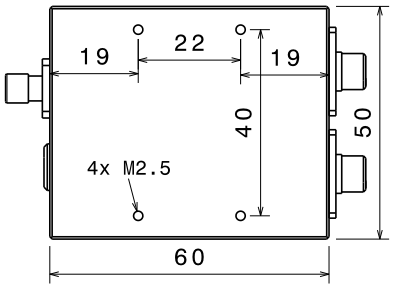
General Description

The WL-BPD270MA5 is an AC-coupled high-speed dual-balanced (differential) InGaAs photoreceiver. It features a high transimpedance gain, very low noise and a -3 dB bandwidth of >250 MHz. The low frequency AC cutoff is set to >5 MHz to help suppress low frequency noise like acoustic vibrations.

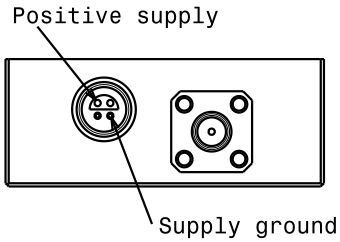
The WL-BPD270MA5 comes in a rugged aluminum case with two FC fiber receptables and a 50 Ω SMA output. It operates from a single 11–15 V DC supply. OEM versions are available upon request.

Mechanical Properties

- Fiber coupling: FC receptables 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 (weight: 105 g without cable)
- 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 (new cable) and one has 5 wires (old). The corresponding color scheme of these cables is:

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

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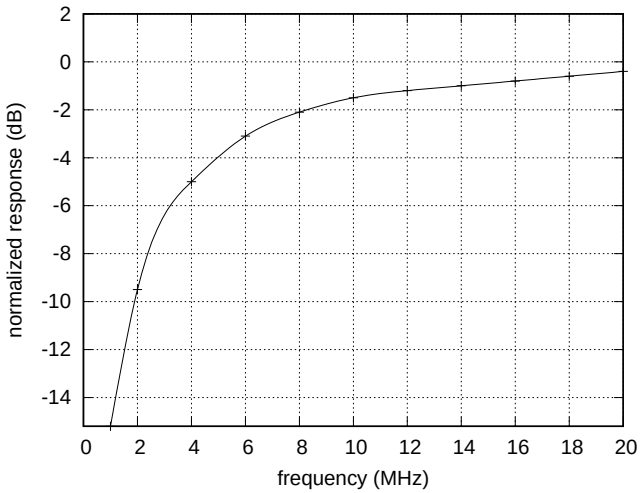
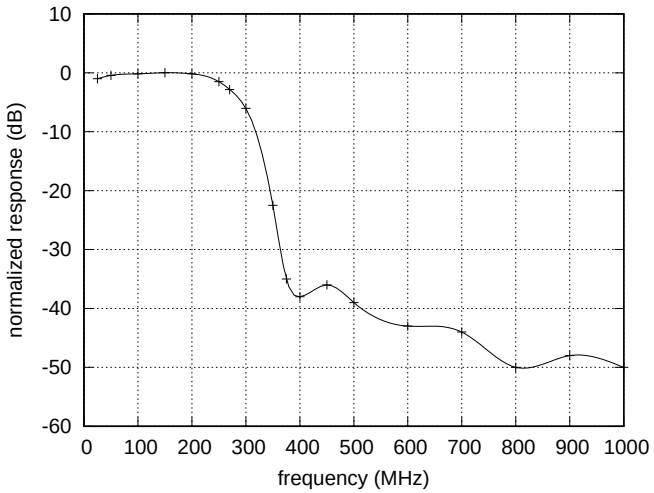
Specifications

Parameter	Conditions	Min	Typ	Max	Units
DC Characteristics					
Supply Voltage ($+V_S$)		11	12	15	V
Supply Current			110		mA
AC Characteristics					
3dB Bandwidth		250	265	285	MHz
AC Low Frequency Cutoff			5	6	MHz
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 – 350 MHz		-130	-125	dBm/Hz
	$>$ 350 MHz			-150	dBm/Hz
Noise Equivalent Power (NEP)	1 MHz – 265 MHz, 1550 nm		20	35	$\mathrm{pW}/\sqrt{\mathrm{Hz}}$
Output Impedance			50		Ω
Optical Characteristics					
Input Wavelength Range		1000		1700	nm
Transimpedance Gain	wavelength 1550 nm		3 500		$\mathrm{V/W}_{optic}$
	wavelength 1310 nm		3 300		$\mathrm{V/W}_{optic}$
Common Mode Rejection Ratio		25	30		dB
Maximum Input Power	(damage threshold)	10			mW
Environmental Characteristics					
Operating Temperature Range[1]	non-condensing	-20		+80	°C
Storage Temperature Range	non-condensing	-20		+120	°C

Typical Performance Characteristics

Frequency response: RF output power versus frequency





Test conditions: Light input 100 μW at 1550 nm, modulated via EOM.

[1] Test show operation up to 120°C ambient temperature for multiple days without failure, contact us for more information.