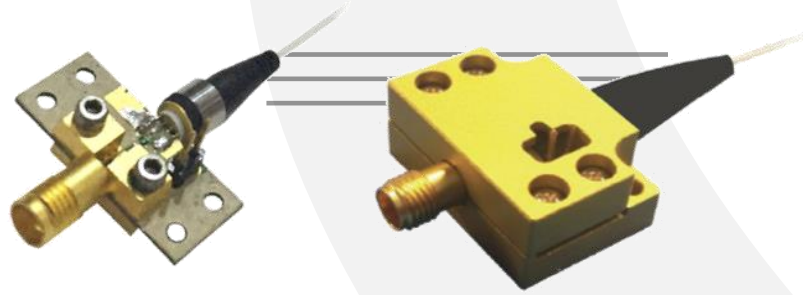




# PD-40



## DEVICE

# 40 GHz Linear InGaAs PIN Photodetector

## OVERVIEW

The Optilab PD-40 is a highly linear, 40 GHz bandwidth InGaAs PIN photodetector that is ideal for use in O/E front-ends requiring wide band frequency response. The coplanar waveguide photodiode design optimizes speed and sensitivity for the 1260 nm through 1610 nm wavelength range, and assures a 40 GHz frequency response necessary for digital and analog applications. The front-illuminated mesa-structured PIN design allows a high input power level of up to 10 mW. The PD-40 is available in a standard 2-pin package with K-connector output for ease of assembly, and can be ordered with or without the external protective housing. Contact Optilab for more information.

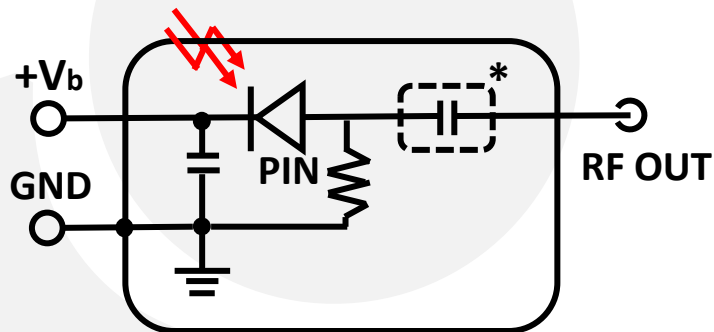
## FEATURES

- Bandwidth 60 KHz to 40 GHz, AC coupled
- DC to 40 GHz, DC coupled
- Highly linear to 10 mW+ input power
- Operating Temperature from -10 °C to +50 °C
- High current handling up to 35 mA
- Flat frequency response, ± 1 dB
- Useful spectral range 850 nm - 1650 nm

## USE IN

- Analog RF over Fiber
- Optically Amplified Systems
- RZ and NRZ up to 40 Gb/s
- Coherent lightwave systems
- Front-End O/E converter for test instrument
- LIDAR Measurements

## FUNCTIONAL DIAGRAM



\*Optional DC Block for AC Coupled Version





# PD-40

## SPECIFICATIONS

Optimized Operating Wavelength	1260 nm to 1610 nm
Useful Operating Wavelength	850 nm to 1650 nm
Optical Input Level	10 mW max.
S21 3 dB Bandwidth	31 GHz min., 33 GHz typ.
S22 Characteristics	< -10 dB @ 30 GHz
Responsivity	0.72 A/W @ 1550 nm typ., 0.35 A/W @ 850 nm typ.
Dark Current @ 25°C	10 nA typ., 100 nA max.
Optical Return Loss	-30.00 dB typ.
Optical PDL @ 1550 nm	0.05 dB max.
Optical Fiber	SMF-28
Bias Voltage	4 V typ.
Impedance	50 Ω
Coupling	DC Coupled (default), AC available

## GENERAL

Ripple over any 1 GHz	± 1.0 dB max.
Group Delay	± 7.0 ps
2 <sup>nd</sup> Harmonics Distortion	-70.0 dBc max.
3 <sup>rd</sup> Harmonics Distortion	-75.0 dBc max.

## ANALOG APPLICATIONS

## LINK PERFORMANCE W/ LT-20

SFDR	113 dB Hz <sup>2/3</sup>
Link Loss	-25 dB @ 10 dBm Optical Input

## MECHANICAL

Operating Temperature	-10 °C to +60 °C
Storage Temperature	-55 °C to +75 °C
Operating Humidity	85%
Photodiode Bias Voltage	5 V, ± 1 V DC
Package Type	2-pin module with K Female RF connector
Dimensions	30 mm x 20 mm x 14 mm
Fiber Connector	FC/APC
Optical Fiber	SMF-28 with 900 mm tube

## ABSOLUTE MAXIMUM RATINGS

PIN Bias Voltage	+2.0 to +7 V
Forward Current	35 mA
Optical Input Power	10 mW
Lead Soldering Temp (10s)	250 °C





# PD-40

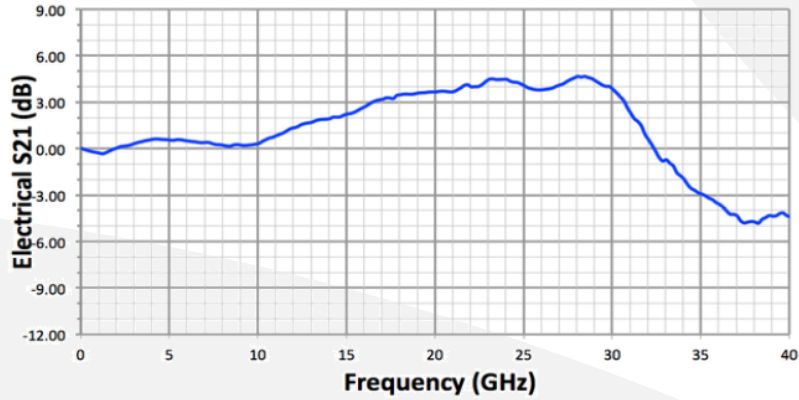
## PD-40-X-YY

OPTIONS

**X:** A, No Housing, default  
 B, Legacy Housing  
 C, External Housing

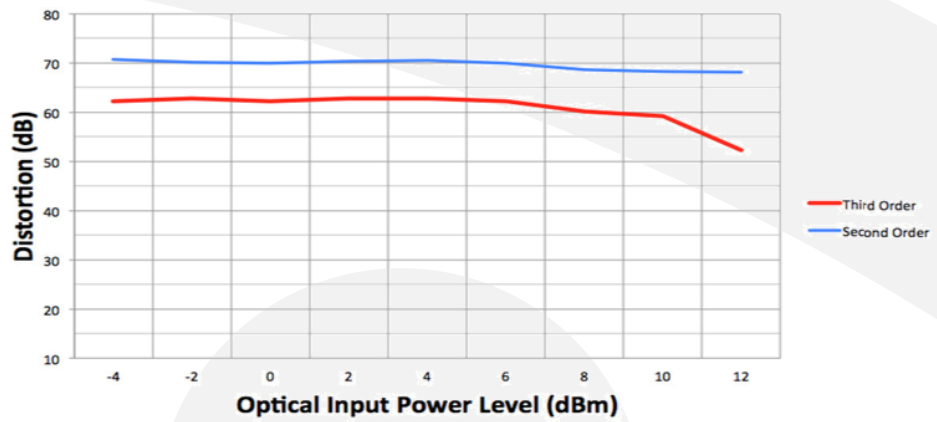
**YY:** DC, DC Coupled  
 AC, AC Coupled

S21 O/E RESPONSE

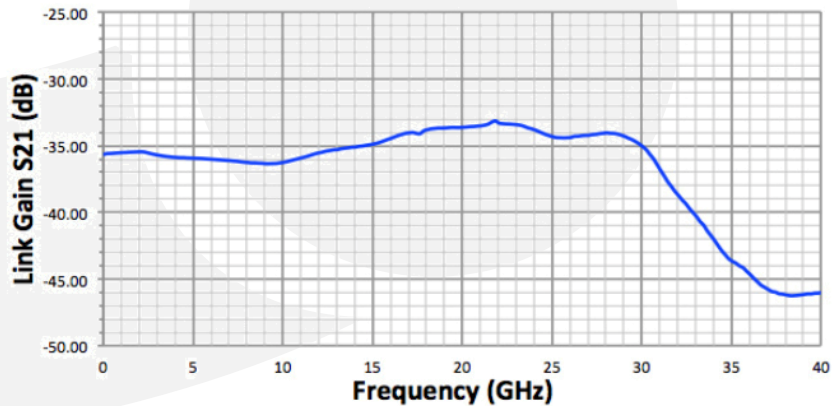


CSO, CTB LINEARITY MEASUREMENT

Second and Third Order Distortion vs. Optical Input



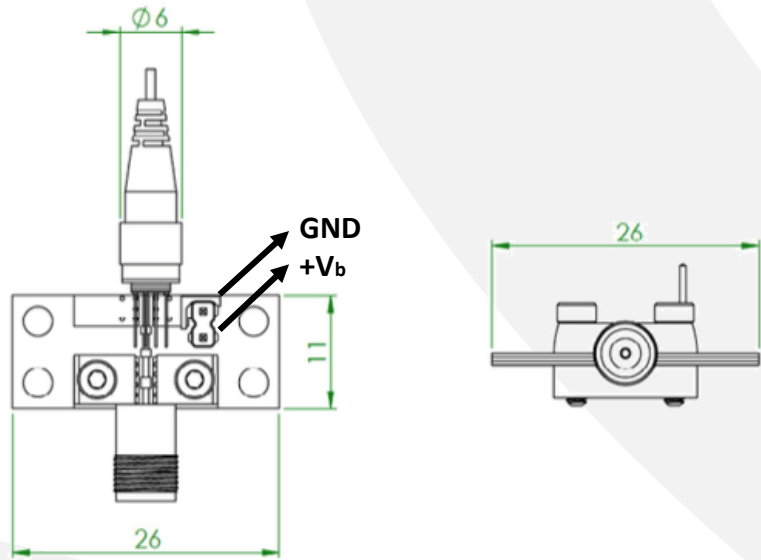
LINK GAIN WITH IM-1550-40-PM



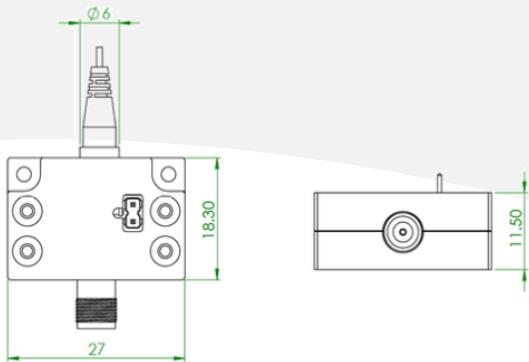


# PD-40

PD-40-A Mechanical Drawing



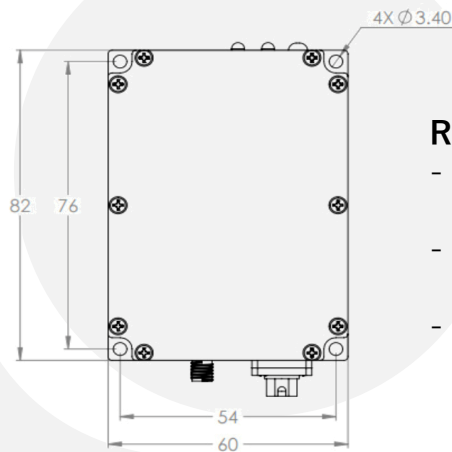
PD-40-C Mechanical Drawing



- 1 All measurements are in Metric
  - 2 External housing is for Mechanical Protection Only
- Legacy housing information available upon request

Unit: mm

PD-40-M: Module



Unit: mm

### Ready to use module

- Power and Remote Monitoring via USB Port
- Status Monitoring: RS-232 (Standard)
- No TIA for Intrinsic Phase Linearity

