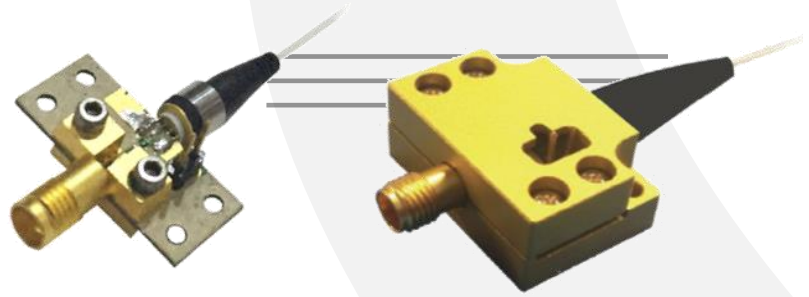


# PD-30



## DEVICE

# 30 GHz Linear InGaAs PIN Photodetector

## OVERVIEW

The Optilab PD-30 is a highly linear, 30 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 30 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 20 mW. The PD-30 is available in a standard 2-pin package with SMA RF connector output for ease of assembly, and can be ordered with or without the external protective housing. Contact Optilab for more information.

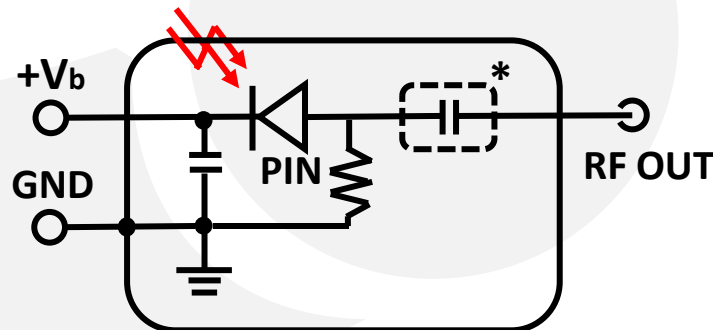
## FEATURES

- Bandwidth 60 KHz to 30 GHz, AC coupled
- DC to 30 GHz, DC coupled
- Highly linear to 30 mW+ input power
- Operating Temperature from -10 °C to +60 °C (TQ Version: -45 °C to +75 °C)
- High current handling up to 35 mA
- Flat frequency response, ± 1 dB
- Useful spectral range 850 nm – 1650 nm

## USE IN

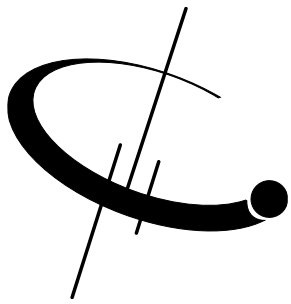
- 30 GHz Analog RF over Fiber
- Optically amplified photonics link
- RZ and NRZ up to 20 Gb/s
- Coherent lightwave systems
- Front-End O/E converter for test instrument

## FUNCTION DIAGRAM



\*Optional DC Block for AC Coupled Version





# PD-30

## SPECIFICATIONS

Optimized Operating Wavelength	1260 nm to 1610 nm
Useful Operating Wavelength	850 nm to 1650 nm
Optical Input Level	10 mW average, 20 mW peak
S21 3 dB Bandwidth	28 GHz min., 30 GHz typ.
S22 Characteristics	< -10 dB @ 20 GHz
Low Frequency Cut Off	60 KHz
Responsivity	0.8 A/W @ 1550 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, AC-Coupled is 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

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

## LINK PERFORMANCE W/ LT-20

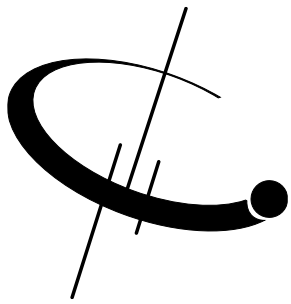
Operating Temperature	Standard: -10 °C to +60 °C TQ Version: -45 °C to +75 °C
Storage Temperature	-55 °C to +75 °C
Operating Humidity	85%
Photodiode Bias Voltage	5 V, ± 1 V DC

## MECHANICAL

Package Type	2-pin module with SMA Female RF connector; K connector available upon request
Dimensions	30 mm x 20 mm x 14 mm
Fiber Connector	FC/APC
Optical Fiber	SMF-28 with 900 mm tube
PIN Bias Voltage	+2.0 to +7 V
Forward Current	35 mA
Optical Input Power	30 mW
Lead Soldering Temp (10s)	250 °C

## ABSOLUTE MAXIMUM RATINGS





# PD-30

PD-30-X-Y-ZZ (Temperature Qualified Version available upon request)

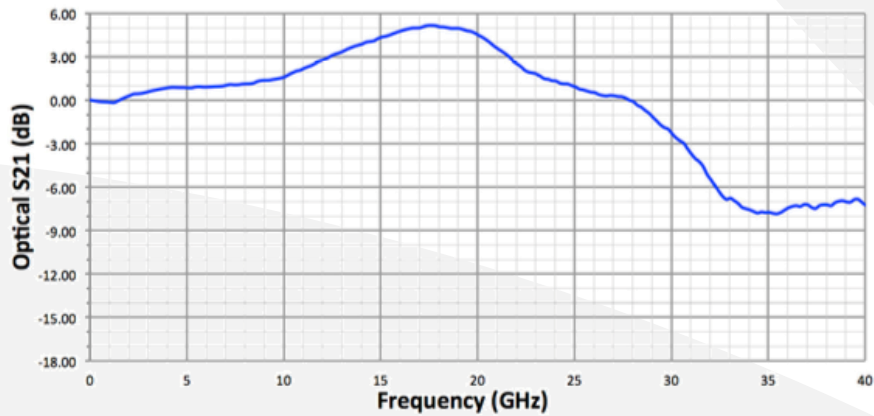
### OPTIONS

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

**Y:** S. SMA Connector  
K. K Connector

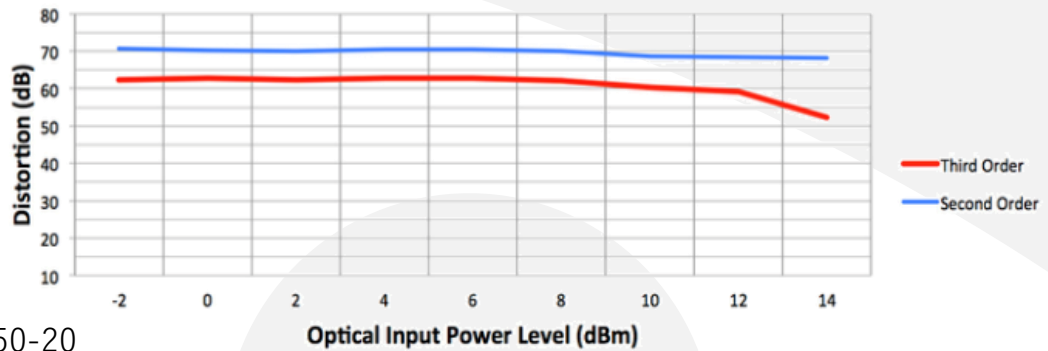
**ZZ:** DC, DC-Coupling  
AC. AC Coupling

### S21 O/E RESPONSE

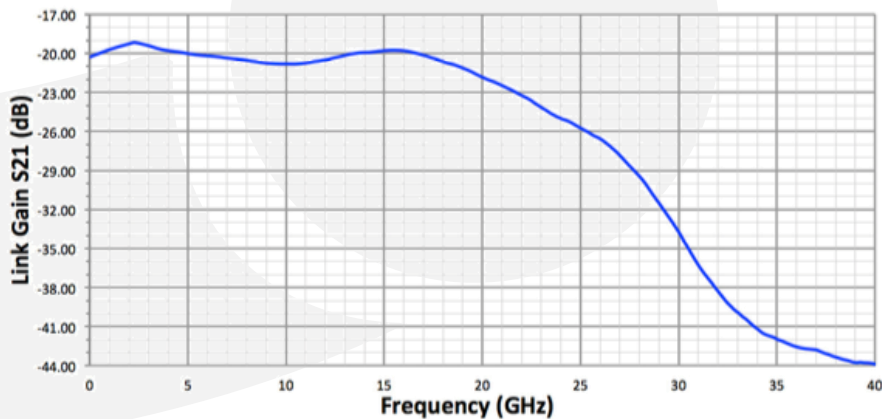


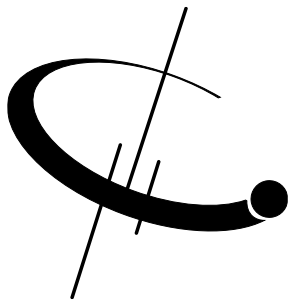
### CSO, CTB LINEARITY MEASUREMENT

Second and Third Order Distortion vs. Optical Input



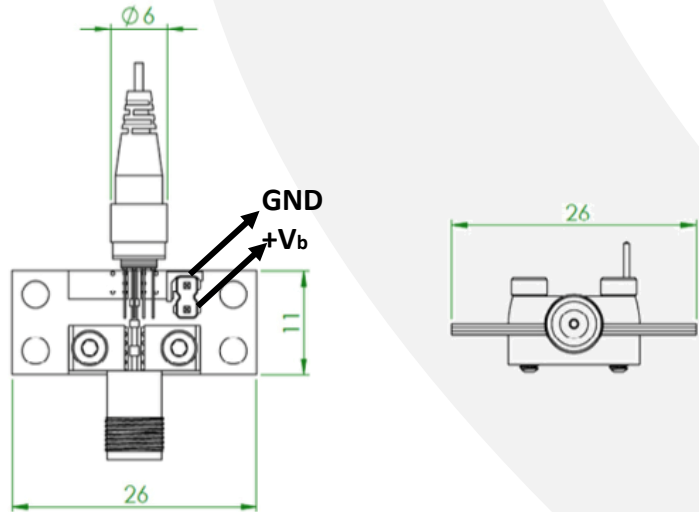
### LINK GAIN WITH IM-1550-20



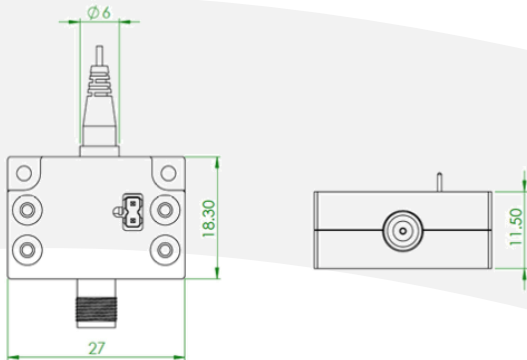


# PD-30

PD-30-A Mechanical Drawing



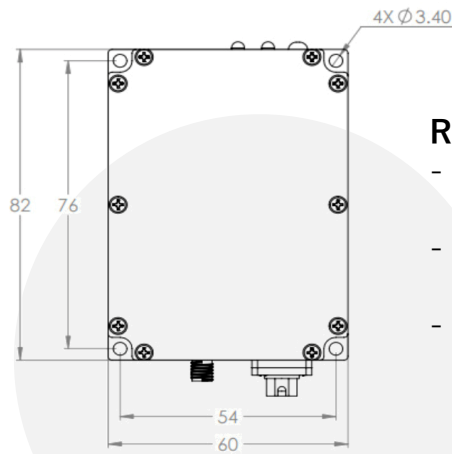
PD-30-C Mechanical Drawing



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

Unit: mm

PD-30-M: Module



### Ready to use module

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

Unit: mm

### ORDERING OPTIONS

## PD-30-X-YY

**X** : K - K RF connector, A - SMA RF connector

**YY** : AC - AC coupled, DC - DC coupled

