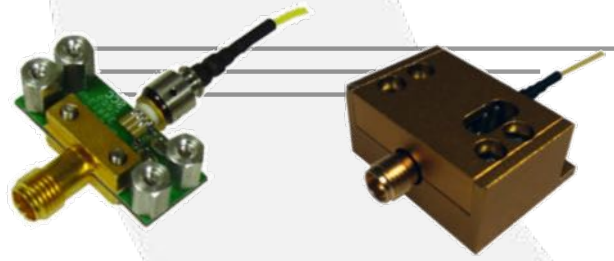




# PD-20-TQ



## DEVICE

## 20 GHz Linear InGaAs PIN, Wide Temp. Qualified

## OVERVIEW

The Optilab PD-20-TQ is a highly linear, 20 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 1600 nm wavelength range, and assures a 20 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 40 mW. The PD-20-TQ is available in a standard 2-pin package with K output connector for ease of assembly, and can be ordered with or without the external protective housing. Contact Optilab for more information.

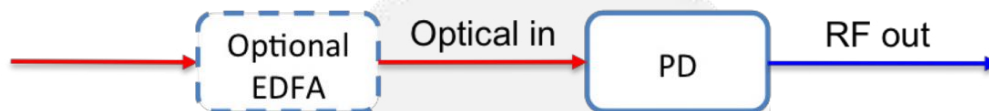
## FEATURES

- Operating Temp. from -40°C to +75°C
- Useful Spectral Range 850 nm – 1650 nm
- Highly Linear to 40 mW+ input power
- High Current Handling up to 35 mA
- Hermetically Sealed
- 1 year warranty standard
- Flat frequency response, +/- 1 dB
- Wide bandwidth 60 KHz to 20 GHz

## USE IN

- Optically Amplified Systems
- RZ and NRZ up to 40 Gb/s
- Coherent Lightwave Systems
- Front-End O/E Converter for Test Instruments
- Analog RF over Fiber
- LIDAR Measurements

## FUNCTIONAL DIAGRAM



## ORDERING OPTIONS

**PD-20-TQ-x**  
 Housing Type; A, No Housing, default; B External Housing; R, ROSA package





# PD-20-TQ

## SPECIFICATIONS

Optimized Operating Wavelength	1260 nm to 1600 nm
Useful Operating Wavelength	850 nm to 1650 nm
Optical Input Level	40 mW max.
S21 3 dB Bandwidth	17 GHz min., 19 GHz typ.
S22 Characteristics	< -10 dB @ 20 GHz typ.
Responsivity	0.85 A/W @ 1550 nm typ., 0.90 A/W at 1310 nm typ.
Dark Current @ 25°C, 5 V	10 nA typ., 100 nA max.
Optical Return Loss	-30 dB typ.
Optical PDL @ 1550 nm	0.05 dB max.
Optical Fiber	SMF-28
Bias Voltage	5 V typ.
Impedance	50 Ω
Coupling	AC-Coupled

## GENERAL

## ANALOG APPLICATIONS

Useful Bandwidth	60 KHz to 20 GHz
Ripple over any 1 GHz	± 1.0 dB max.
Group Delay	± 7.0 ps
2 <sup>nd</sup> Harmonics Distortion	-70 dBc max.
3 <sup>rd</sup> Harmonics Distortion	-75 dBc max.

## DIGITAL APPLICATIONS

Sensitivity @ 10 Gb/s	-19 dBm
Receiving Bandwidth	Up to 20 Gb/s
Data Format	RZ, NRZ

## MECHANICAL

Operating Temperature	-40°C to +75°C
Storage Temperature	-55°C to +125°C
Operating Humidity	85%
Photodiode Bias Voltage	5 V, ± 1 V DC
Package Type	2-pin module with K type 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

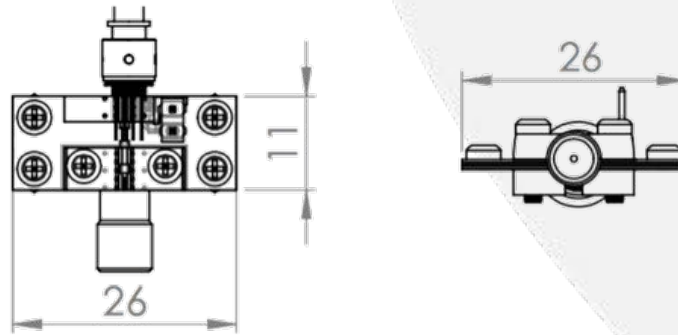
PIN Bias Voltage	+2 to +7 V
Forward Current	35 mA
Optical Input Power Damage Threshold	50 mW
Lead Soldering Temp (10 s)	250°C



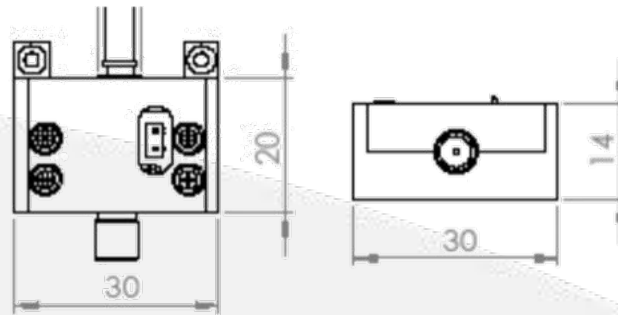


# PD-20-TQ

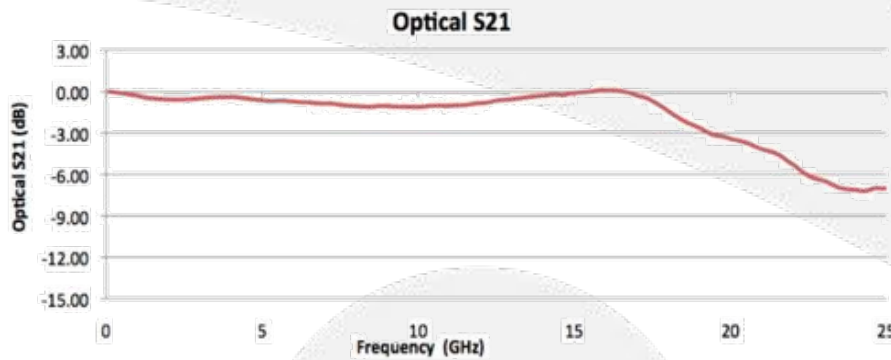
PD-20 MECHANICAL DRAWING



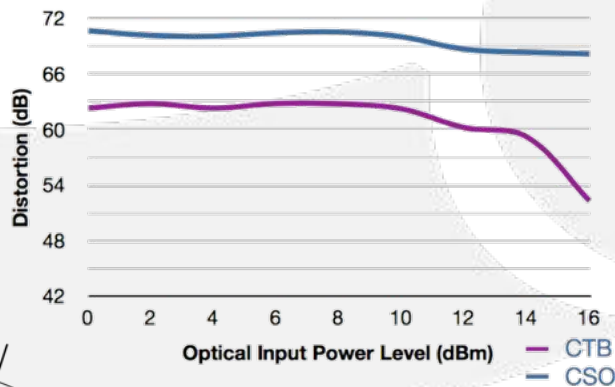
PD-20 MECHANICAL DRAWING W/ EXTERNAL HOUSING



S21 O/E RESPONSE



CSO, CTB LINEARITY MEASUREMENT



LINK LOSS

