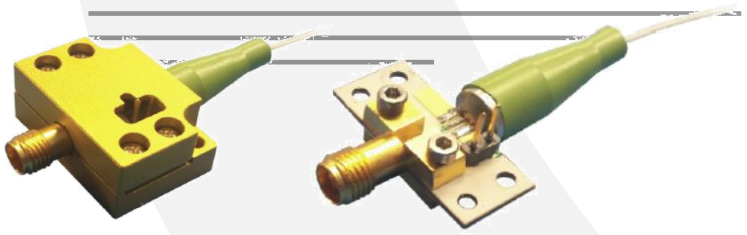
# PD-40-MM



DEVICE

## 40 GHz Linear InGaAs PIN Photodetector, Multimode Fiber Type

OVERVIEW

The Optilab PD-40-MM 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-MM features 50/125 $\mu$m fiber type, 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

- Wide bandwidth 60 KHz to 40 GHz
- 50/125 um Multimode fiber type
- Highly Linear to 10 mW+ input power
- Operating Temp. 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
- 1 year warranty standard

USE IN

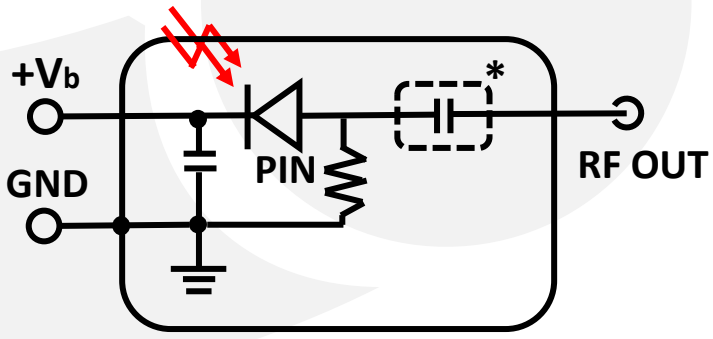
- Analog RF over Fiber
- Optically Amplified Systems
- RZ and NRZ up to 40 Gb/s
- LIDAR Measurements
- Coherent Lightwave Systems
- Front-End O/E Converter for Test Instruments

ORDERING OPTIONS

**PD-40-MM-x-yy**

| | Housing Type | | Coupling |
|---|---|---|---|
| **x** | A: No housing (default);<br>C: External Housing | yy | DC : DC Coupled<br>AC : AC Coupled |

FUNCTIONAL DIAGRAM




*Optional DC Block for AC Coupled Version

# PD-40-MM

## SPECIFICATIONS

### GENERAL

| | |
|---|---|
| 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 | 0.55 A/W @ 1550 nm min., 0.35 A/W @ 850 nm typ. |
| Dark Current @ 23°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 | 50/125 um multimode |
| Bias Voltage | 5 V typ. |
| Impedance | 50 Ω |
| Coupling | AC-Coupled (DC Coupled Optional) |

### ANALOG

| | |
|---|---|
| Useful Bandwidth | 60 KHz to 40 GHz (AC Coupled) |
| Ripple over any 1 GHz | ± 1.0 dB max. |
| Group Delay | ± 7.0 ps |
| 2nd Harmonics Distortion | -70.0 dBc max. |
| 3rd Harmonics Distortion | -75.0 dBc max. |

### DIGITAL

| | |
|---|---|
| Sensitivity @ 10 Gb/s | -19.0 dBm |
| Receiving Bandwidth | Up to 40 Gb/s |
| Data Format | RZ, NRZ |

### LINK PERFORMANCE W/ LT-20

| | |
|---|---|
| SFDR | 113 dB $Hz^{2/3}$ |
| Link Loss | -25 dB @ 10 dBm Optical Input |

### MECHANICAL

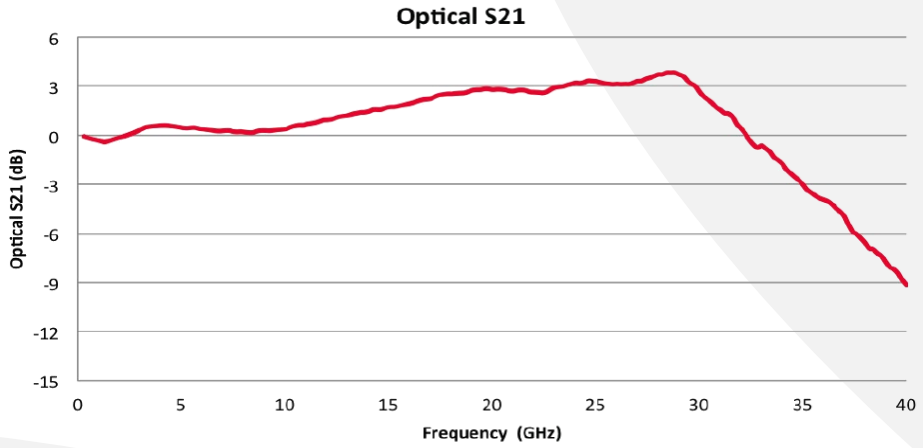
| | |
|---|---|
| Operating Temperature | -10 °C to +50 °C |
| Storage Temperature | -40 °C to +75 °C |
| Operating Humidity | 85% |
| Photodiode Bias Voltage | 5 V, ± 1 V DC |
| Package Type | 2-pin module with k-type Female RF connector |
| Dimensions | 30 mm x 20 mm x 14 mm |
| Fiber Connector | FC/APC |
| Optical Fiber | 50/125 um MMF with 900 mm Tube |

### ABSOLUTE MAXIMUM RATINGS

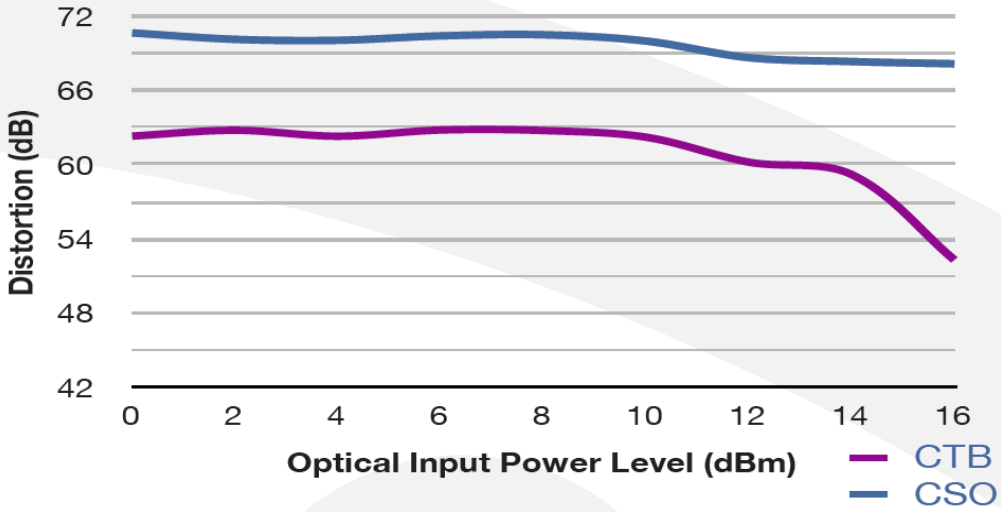
| | |
|---|---|
| PIN Bias Voltage | +2.0 to +7 V |
| Forward Current | 35 mA |
| Optical Input Power | 10 mW |
| Lead Soldering Temp. (10 s) | 250 °C |

# PD-40-MM

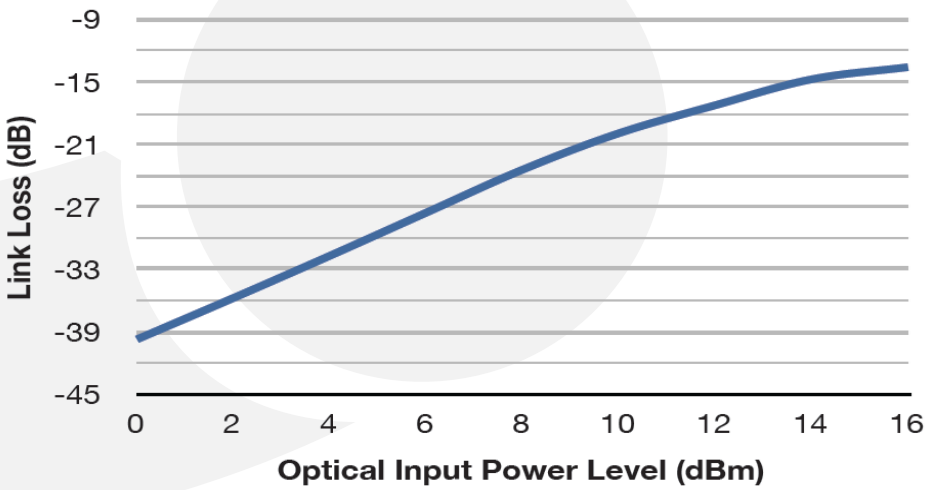
S21 O/E RESPONSE




CSO, CTB LINEARITY MEASUREMENT

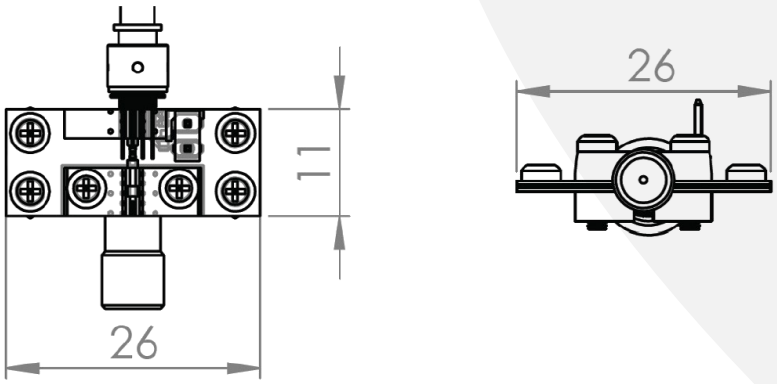



LINK LOSS

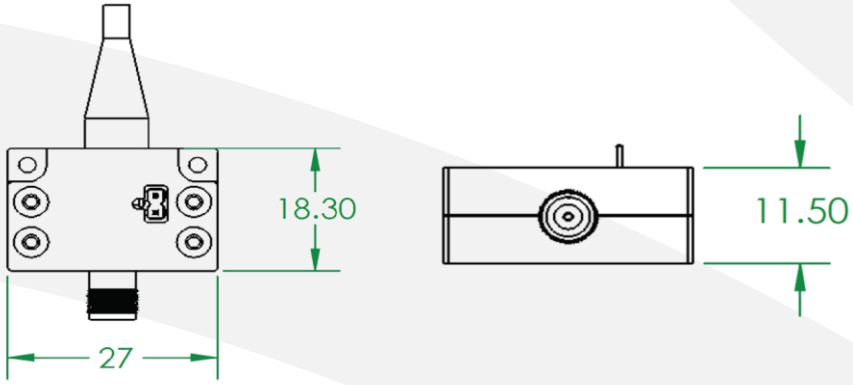


# PD-40-MM

PD-40-MM-A
MECHANICAL DRAWING




PD-40-MM-C MECHANICAL
DRAWING W/ EXTERNAL HOUSING




PD-40-MM-M MODULE HOUSING

In addition to the standard PCB and external housing options, Optilab offers a turn-key modular solution with a USB 2.0 interface, which can be operated with any standard PC platform device or with the provided AC/DC adapter. Contact Optilab for more information.

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