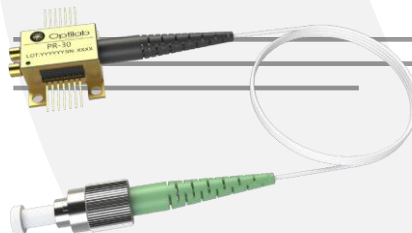


PR-30-A-HS



DEVICE

30 GHz Linear Photoreceiver, Hermetically Sealed

The Optilab PR-30-A-HS is a linear photo receiver designed for analog applications. This compact photo receiver contains a surface coupled coplanar waveguide PIN photodiode and a linear transimpedance amplifier within a hermetically sealed 14-pin butterfly package. With an integrated variable gain amplifier (VGA), PR-30-A-HS offers two gain control modes: Manual Gain Control (MGC) mode or Automatic Gain Control (AGC) mode. In MGC mode, PR-30-A-HS provides a linear conversion gain up to 3000 V/W. At a reduced gain setting, the bandwidth of PR-30-A-HS can be increased up to 35 GHz. In AGC mode, the gain is automatically adjusted to deliver a constant differential output voltage up to 1800 mV. The high conversion gain and low input referred noise makes this linear receiver well suitable for high-speed analog applications, as well as digital applications requiring linear response, e.g., QAM-16.

OVERVIEW

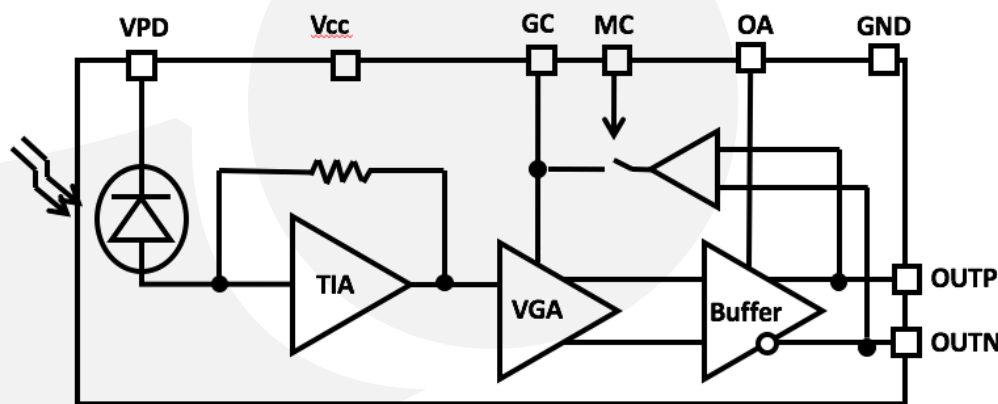
FEATURES

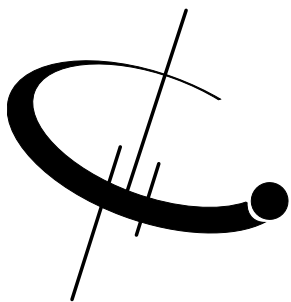
- Adjustable 3 dB bandwidth up to 35 GHz
- High Conversion Gain up to 3000 V/W
- Hermetically Sealed version available
- Linear TIA with Integrated VGA
- 14-pin mini-DIL package
- MGC and AGC Mode

USE IN

- Low Noise Analog Heterodyne Detection
- Transponder and Line Card Designs
- Linear Receiver up to 30 GHz
- PAM-4
- 30 GHz Analog RFoF Link

FUNCTIONAL DIAGRAM





PR-30-A-HS

SPECIFICATIONS

| | |
|--------------------------------|------------------------------------|
| Optimized Operating Wavelength | 1300 nm to 1650 nm |
| Optical Input Level | +4 dBm max. |
| S21 dB Bandwidth | 29 GHz typ. @ max. gain |
| Dark Current @ 30 °C, 3.3 V | 5 nA typ. |
| Differential Conversion Gain | 1500 V/W min., 3000 V/W typ. |
| Optical Return Loss | 30 dB typ. |
| Optical PDL @ 1550 nm | 0.30 dB max |
| PD Reverse Bias Voltage | 3.3 V ± 0.2 V, +4.5 V max. |
| TIA Supply Voltage | 3.3 V ± 0.2 V |
| Output Return Loss | < -10 dB up to 30 GHz |
| Differential Output Voltage | Up to 1800 mWpp |
| Impedance | 50 Ω |
| Output Coupling | DC (external AC coupling required) |
| Noise Equivalent Input Power | 40 pW /Hz max. |

GENERAL

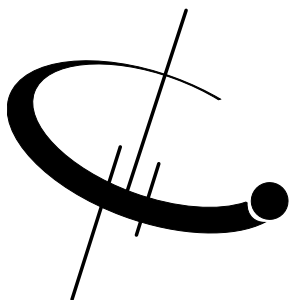
| | |
|----------------------------------|--------------------------|
| Operating Temperature (standard) | 0°C to +75°C |
| Operating Temperature (HS) | -30°C to +75°C |
| Storage Temperature | -50°C to +85°C |
| Operating Humidity | 85% |
| Supply Current | 90 mA typ. |
| Power Consumption | 300 mW typ. |
| Housing Dimensions | 18 mm x 12 mm x 8.5 mm |
| Fiber Connector | FC/APC standard or other |
| Optical Fiber | SMF-28 |
| Package Type | 14-pin butterfly min-DIL |
| RF Connector | Dual GPPD |

MECHANICAL

ABSOLUTE MAXIMUM RATINGS

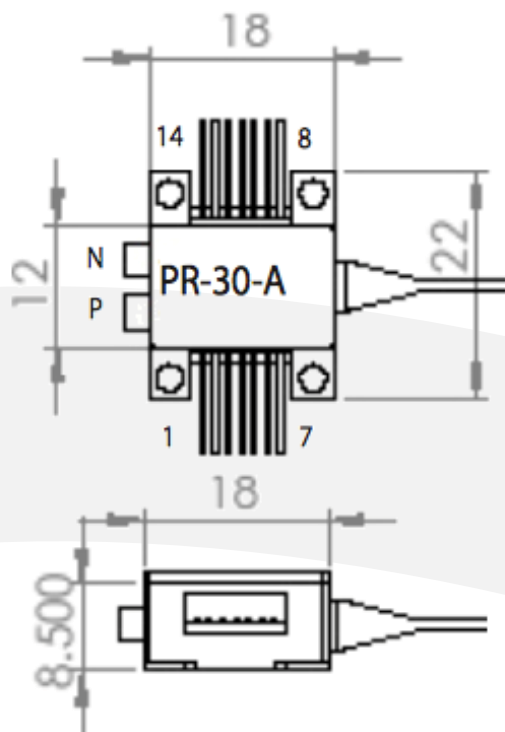
| | |
|----------------------------|----------------|
| PD Reverse Bias Voltage | 4.5 V |
| Input Optical Power | 6 mW |
| ESD, Input and Output Pins | 1000 V min. |
| ESD, All Other Pins | 2000 V min. |
| Latch Up | JESD78 Class 2 |
| Humidity | 95% |





PR-30-A-HS

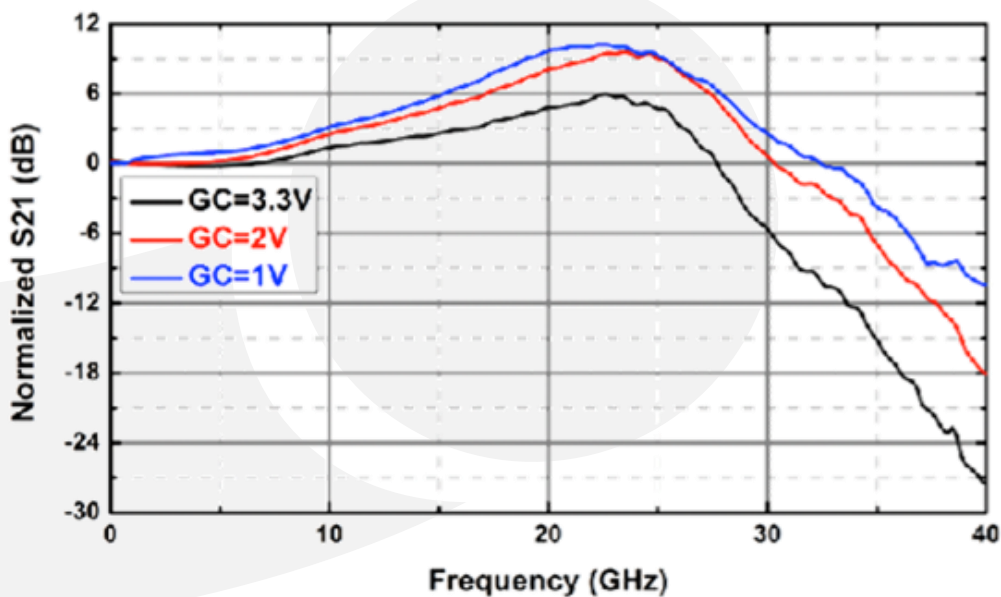
MECHANICAL DRAWING

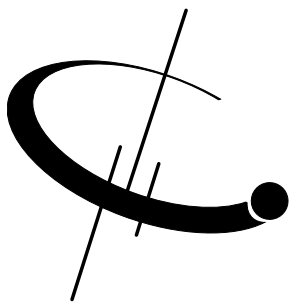


14-PIN BUTTERFLY PACKAGE

| Pin Configuration | | |
|-------------------|------|---|
| Pin 1 | BWH | Bandwidth Coarse Adjust: GND, Floating, or Vcc |
| Pin 2 & 12 | Vcco | Vcc for output: +3.3 V |
| Pin 3 | GC | Gain Control in MGC mode Range: GND to Vcc Floating in AGC mode |
| Pin 4 | OA | Output Amplitude Adjust in AGC mode. Range: GND to Vcc |
| Pin 5 & 8 | Vcci | Vcc for input: +3.3V |
| Pin 6 | MC | Mode Control: GND = MGC mode, Floating = AGC mode |
| Pin 7 | VPDS | PD Cathode Connection + 4.5V abs. max |
| Pin 9, 11 & 13 | GND | Ground connection |
| Pin 10 | N.A. | Reserved Pin, Float |
| Pin 14 | BWL | Bandwidth Fine Adjust: GND, Floating, or Vcc |

S21 FREQUENCY RESPONSE





PR-30-A-HS

EVALUATION BOARD (PR-30-EVAL)

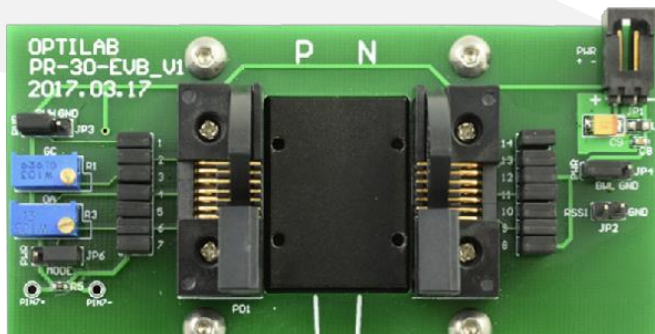
Evaluation board for the PR is designed for ease of testing. It provides convenient access to all 14 pins and the data output ports. Utilizing a zero-insertion force configuration, the PR can be mounted without the need for soldering. Different settings can be easily configured with the provided jumpers. The evaluation board can be powered up with a single +3.3V power with the provided power cable.

BANDWIDTH SETTING TABLE

| Setting # | BWH | BWL |
|-----------|-----|-----|
| 1 | GND | GND |
| 2 | GND | FLT |
| 3 | GND | Vcc |
| 4 | FLT | GND |
| 5 | FLT | FLT |
| 6 | FLT | Vcc |
| 7 | Vcc | GND |
| 8 | Vcc | FLT |
| 9 | Vcc | Vcc |

OPERATION MODE SETTING

| Operation Mode | Mode Setting (Pin 6) | Amplitude/ Gain Adjustment |
|------------------------|----------------------|--|
| Manual Gain Control | GND | GC (Pin 3) Range: 0 - 3.3 V |
| Automatic Gain Control | Floating | OA (Pin 4) Range: 0 - 3.3 V GC: Floating |



INTEGRATED MODULE (PR-40G-M)

For ease of installation, a fully integrated module PR-40G-M is available for ordering. Here are the features of PR-40G-M:

- Power and Control via USB
- Integrated Input Power Monitoring
- MGC/AGC Selection
- Adjustable Bandwidth

