



PR-30-A



DEVICE

30 GHz Linear Photoreceiver, Hermetically Sealed

OVERVIEW

The Optilab PR-30-A 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 offers two gain control modes: Manual Gain Control (MGC) mode or Automatic Gain Control (AGC) mode. In MGC mode, PR-30-A provides a linear conversion gain up to 2000 V/W. At a reduced gain setting, the bandwidth of PR-30-A 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.

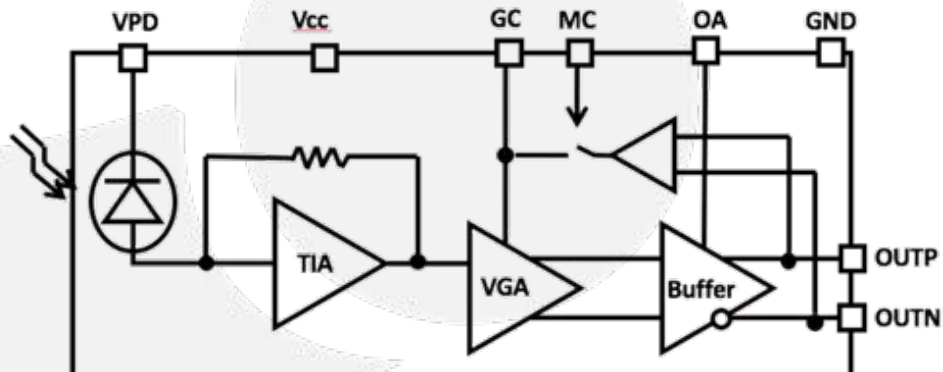
FEATURES

- Adjustable 3 dB bandwidth up to 35 GHz
- High Conversion Gain up to 2000 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

SPECIFICATIONS

Optimized Operating Wavelength	1250 nm to 1650 nm
Optical Input Level	+4 dBm max.
S21 dB Bandwidth	29 GHz typ. @ max. gain
Dark Current @ 25 °C, 3.3 V	5 nA typ.
Differential Conversion Gain	1500 V/W min., 2000 V/W typ.
Optical Return Loss	30 dB typ.
Optical PDL @ 1550 nm	0.25 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 25 GHz
Differential Output Voltage	Up to 1800 mVpp
Impedance	50 Ω
Output Coupling	DC (external AC coupling required)
Noise Equivalent Input Power	40 pW /Hz max.

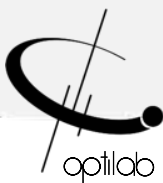
GENERAL

MECHANICAL

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

ABSOLUTE MAXIMUM RATINGS

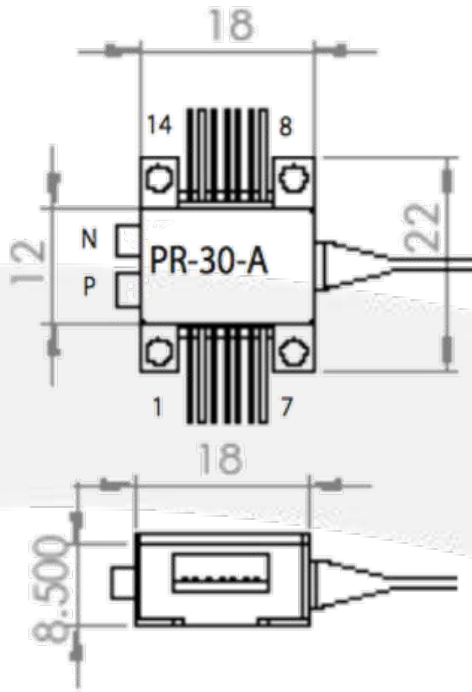
PD Reverse Bias Voltage	4.5 V
Input Optical Power	6 mW
ESD, Input and Output Pins	1000 V min.
ESD, All Other Pins	2000 V min.
Latch Up	JESD78 Class 2
Humidity	95%





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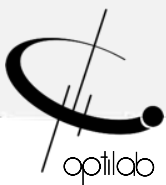
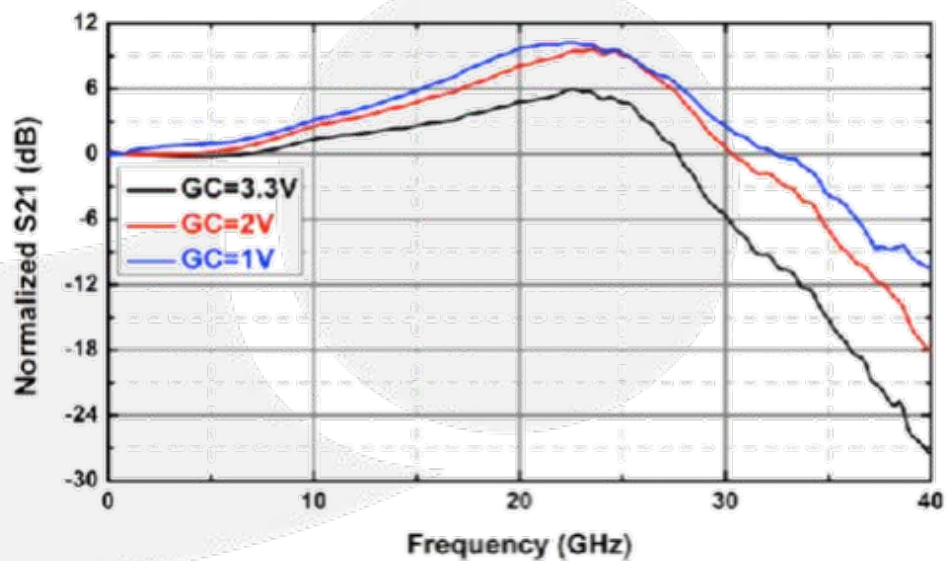
MECHANICAL DRAWING



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

EVALUATION BOARD (PR-30-EVAL)

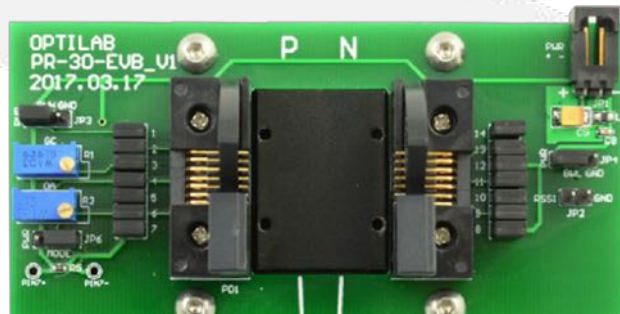
Evaluation board for the PR is designed for ease of testing. It provides convenient access to all 14 pins and the data output ports. Utilizing a zero-insertion force configuration, the PR can be mounted without the need for soldering. Different settings can be easily configured with the provided jumpers.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

