

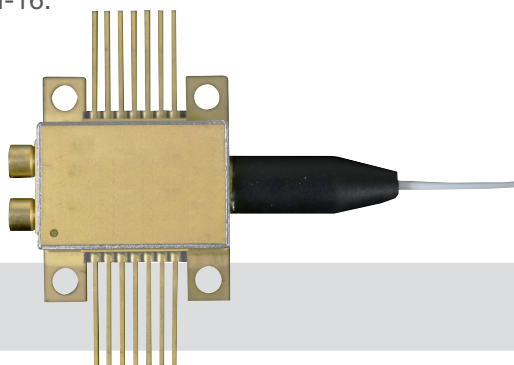
F-PD-30-A-H-FCA

30 GHz Linear Photoreceiver, Hermetically Sealed



The F-PD-30-A-H-FCA 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), F-PD-30-A-H-FCA offers two gain control modes: Manual Gain Control (MGC) mode or Automatic Gain Control (AGC) mode. In MGC mode, F-PD-30-A-H-FCA provides a linear conversion gain up to 3000 V/W. At a reduced gain setting, the bandwidth of F-PD-30-A-H-FCA 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.



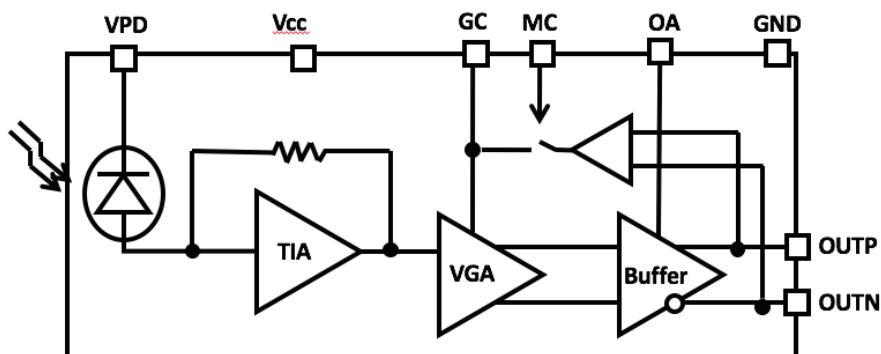
Features

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



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 oC, 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 \pm 0.2 V, +4.5 V max.
TIA Supply Voltage	3.3 V \pm 0.2 V
Output Return Loss	< -10 dB up to 30 GHz
Differential Output Voltage	Up to 1800 mVpp
Impedance	50 Ω
Output Coupling	DC (external AC coupling required)
Noise Equivalent Power (NEP)	17 pW/ $\sqrt{\text{Hz}}$ @ 1 GHz

General

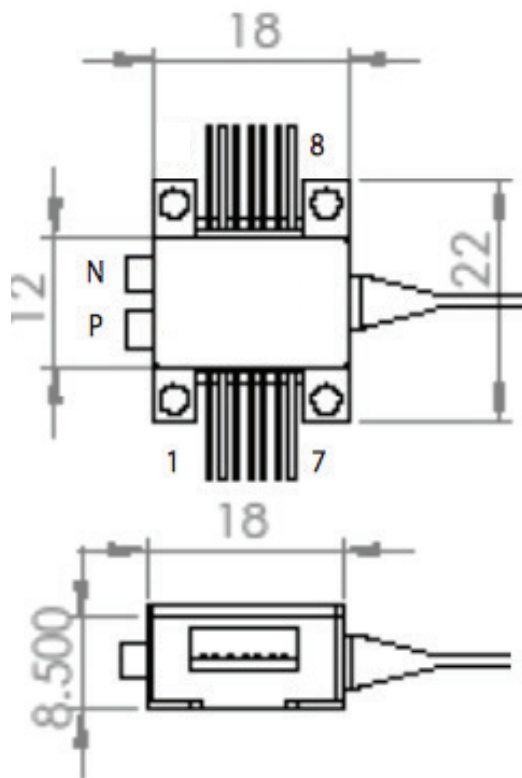
Mechanical

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
Optical Fiber	SMF-28
Package Type	14-pin butterfly min-DIL
RF Connector	Dual GPPO

Absolute Maximum Ratings

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

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	PWL	Bandwidth Fine Adjust: GND, Floating, or Vcc

S21 Frequency Response

