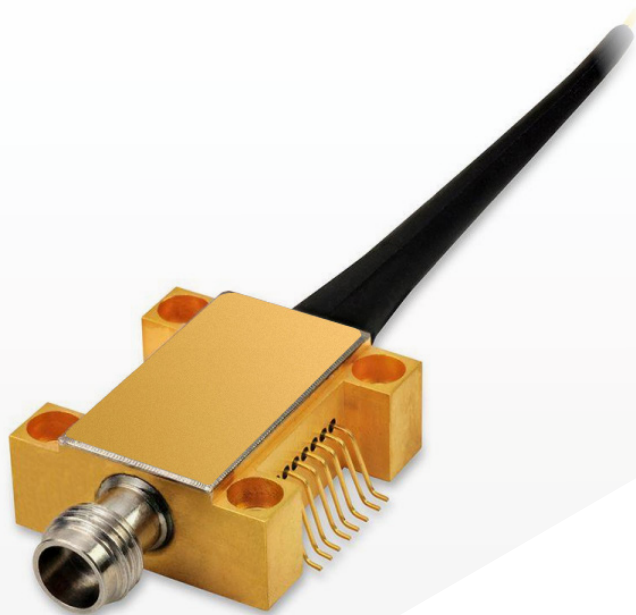


**II-VI**

XPRV2324A

# 18 GHz High-Gain Dual-Window Photoreceiver

## PRODUCT OVERVIEW

The hermetic photoreceiver module XPRV2324A is a single-ended front-end with a bandwidth of 18 GHz supporting both optical windows, O-band and C-band. The module contains a waveguide-integrated PIN-photodiode (PD) and a limiting transimpedance amplifier (TIA). An integrated feedback loop optimizes the performance in the frequency and/or time domain with respect to different optical input power. Incorporated blocking capacitors enable AC output coupling.

# 18 GHz High-Gain Dual-Window Photoreceiver

## Product Features

- PIN/TIA photoreceiver module
- 18 GHz typical bandwidth
- High gain, low noise
- SMD package with V-connector
- AC-coupled output
- 1310 nm and 1550 nm window

## Applications

- 25 Gbps communication systems
- Transponder and line card designs
- Laboratory test equipment

## Product Selection

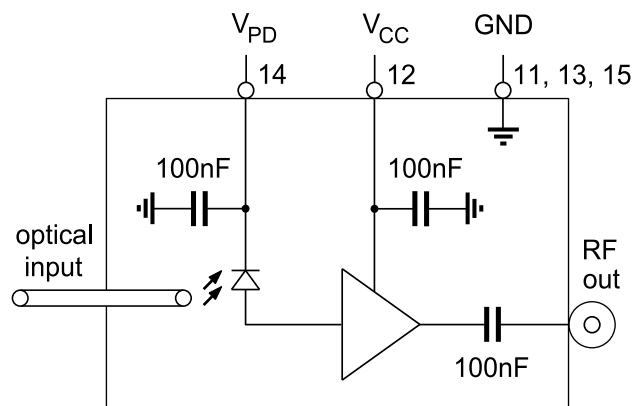
**XPRV2324A-VF-zz**

<b>A</b>		= AC coupled
<b>VF</b>		= V-connector, female
<b>zz</b>	FP	= FC/PC connector (standard)
	FA	= FC/APC connector
		Alternative options upon request

## Pin Descriptions

# Pin	Symbol	Description
1...10, 16	N/C	Not connected
11, 13, 15	GND	Ground
12	V <sub>CC</sub>	Amplifier supply
14	V <sub>PD</sub>	Photodiode supply
17	out	Inverting RF output, V-connector

## Block Diagram



# 18 GHz High-Gain Dual-Window Photoreceiver

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the datasheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Max.	Unit
Photodiode Reverse Voltage	$V_{PD}$	$V_{CC} = \text{min to max}$	2	4	V
Amplifier Supply Voltage	$V_{CC}$	$V_{PD} = 2 \text{ V to max}$	0	4	V
Maximum Average Optical Input Power	$P_{opt}$	NRZ		6	dBm
Electrostatic Discharge	$V_{ESD}$	$C = 100 \text{ pF}, R = 1.5 \text{ k}\Omega \text{ HBM}$	-250	250	V
Fiber Bend Radius			16		mm

## Environmental Specifications

Parameter	Symbol	Condition	Min.	Max.	Unit
Operating Case Temperature	$T_{case}$		0	75	°C
Relative Humidity	RH	Non-condensing	5	85	%
Storage Temperature	$T_{sto}$		-40	85	°C

## Operating Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Amplifier Supply Voltage	$V_{CC}$		3.1	3.3	3.5	V
Operating Wavelength Range	$\lambda$		1300		1330	nm
			1480		1620	nm
Average Optical Input Power Range	$P_{opt}$		-10		3	dBm
Photodiode Reverse Voltage	$V_{PD}$		3.1	3.3	3.5	V

### Ordering Information:



800 Village Walk #316  
Guilford, CT 06437  
Ph: 203-401-8093

Email orders to: [sales@xsoptix.com](mailto:sales@xsoptix.com)  
Fax orders to: 800-878-7282

# 18 GHz High-Gain Dual-Window Photoreceiver

## Electro-Optical Specifications <sup>1</sup>

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode DC Responsivity	R	1310 nm	0.3	0.45		A/W
		1550 nm	0.5	0.65	0.75	A/W
Polarization-Dependent Loss	PDL	1310 nm		0.4	0.7	dB
		1550 nm		0.3	0.9	dB
Optical Return Loss	ORL		27			dB
3 dB Cut-off Frequency <sup>2</sup>	$f_{3dB}$			18		GHz
Lower Frequency Cut-off	$f_{3dB,L}$				100	kHz
Output Reflection Coefficient	$S_{22}$	0.5-15 GHz		-15	-10	dB
		15-30 GHz		-6	-2	
Conversion Gain	CG	$P_{opt} = -10$ dBm		900		V/W
Output Voltage Swing	$V_{out,pp}$	Peak-to-peak; $P_{opt} = 0$ dBm		150		mV
RMS Input Referred Noise Current	$i_{noise}$			2		$\mu$ A
Overload <sup>3</sup>	$P_{overl}$			7		dBm
Photodiode Dark Current	$I_{dark}$	$T_{case} = 25$ °C		8	200	nA
Power Consumption	$P_{con}$	$V_{CC} = max$			100	mW

Notes:

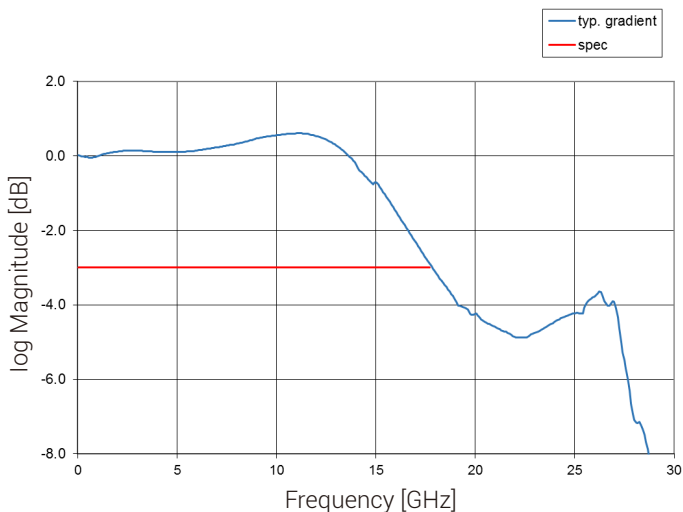
1.  $\lambda = 1550$  nm,  $V_{bias} = 3.3$  V,  $T = 25$  °C.

2. Measured using Agilent 860330A 50 GHz Lightwave component analyzer.

3. Evaluated from NRZ eye diagram and BER measurement at 20 Gbps (BER  $10^{-12}$ , PRBS  $2^{31}-1$ , back to back)

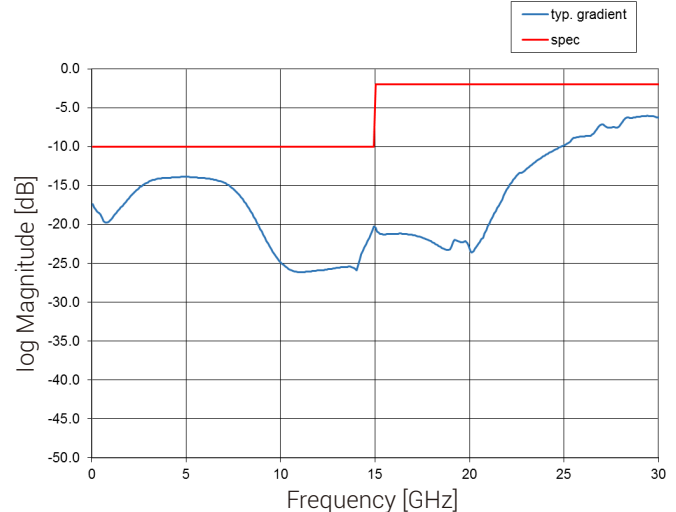
## Typical Performance Behavior

O/E Bandwidth Log Magnitude Plot



Frequency response  $S_{21}$  measured with a Lightwave component Analyzer

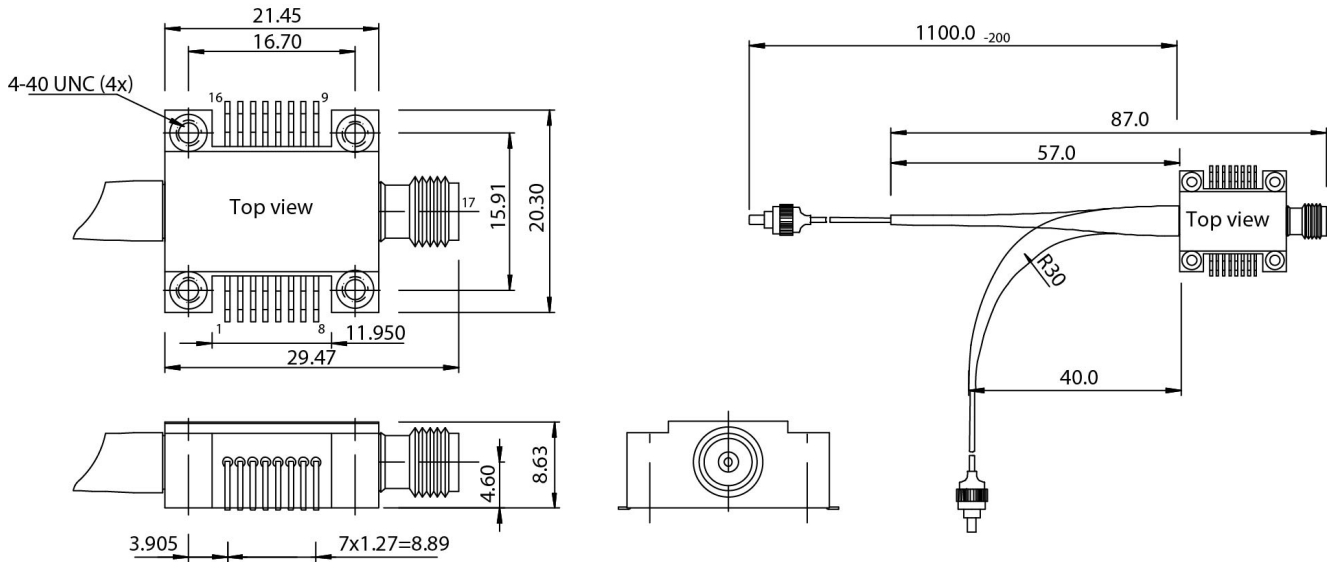
$S_{22}$  Log Magnitude Plot



Reverse reflection coefficient  $S_{22}$  measured with a Lightwave component Analyzer

# 18 GHz High-Gain Dual-Window Photoreceiver

## Mechanical Specifications

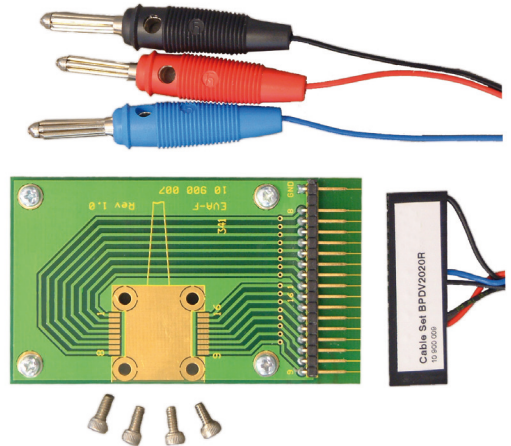


All dimensions in mm

Parameter	Description
Signal fiber	SMF 28, 900 $\mu$ m loose buffer, yellow

## Accessories

The evaluation kit EVA-XPRV serves as an easy-to-use utility to characterize the photoreceiver XPRV2022A under laboratory conditions. The kit consists of a PCB (printed circuit board), a DC cable set, and 4 socket-head screws 4-40 UNC.



## Ordering Information

EVA – XPRV

## Notes

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