

Product Specification

18GHz High Gain Dual Wavelength Photoreceiver

XPRV2324A

PRODUCT FEATURES

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

APPLICATIONS

- 25Gb/s communication systems
- Transponder and line card designs
- Laboratory test equipment



Product label might differ from actual product

The hermetic photoreceiver module XPRV2324A is a single-ended front-end with a bandwidth of 18 GHz supporting both optical windows, O- 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.

PRODUCT SELECTION

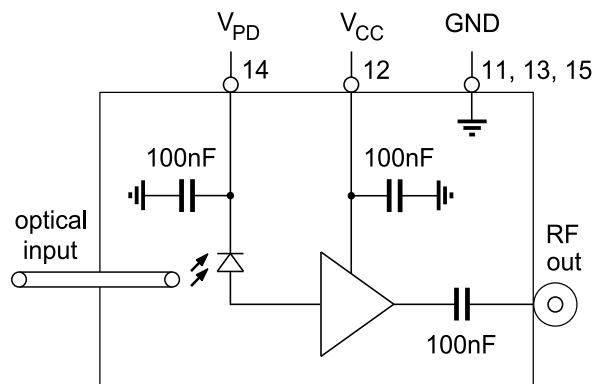
XPRV2324A-VF-zz

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

I. Pin Descriptions

# Pin	Symbol	Description
1...10, 16	N/C	not connected
11,13,15	GND	ground
12	V _{CC}	amplifier supply
14	V _{PD}	photodiode supply
17	out	inverting RF output, V [®] connector

II. Block Diagram



III. 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 data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode Reverse Voltage	V _{PD}	V _{CC} = Min to Max	2		4	V
Amplifier Supply Voltage	V _{CC}	V _{PD} = 2V to Max	0		4	V
Maximum Average Optical Input Power	P _{opt}	NRZ			6	dBm
Electro Static Discharge	V _{ESD}	C = 100pF, R = 1.5kΩ HBM	-250		250	V
Fiber Bend Radius			16			mm

IV. Environmental Specifications

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

V. Operating Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Amplifier Supply Voltage	V_{CC}		3.1	3.3	3.5	V
Operating Wavelength Range	λ		1300		1330	nm
			1525		1575	nm
Average Optical Input Power Range	P_{opt}		-10		3	dBm
Photodiode Reverse Voltage	V_{PD}		3.1	3.3	3.5	V

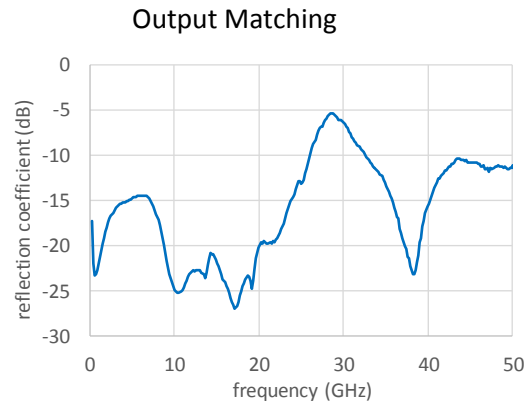
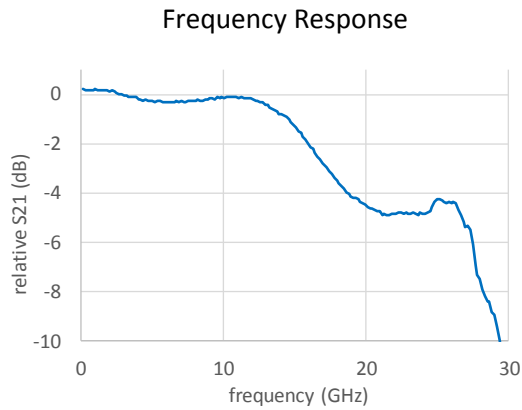
VI. Electro-Optical Specifications¹

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Conversion Gain	CG	$P_{opt} = -10\text{dBm}$		900		V/W
Photodiode DC Responsivity	R	1310nm	0.3	0.45		A/W
		1550nm	0.5	0.65	0.75	A/W
Polarization Dependent Loss	PDL	1310nm		0.4	0.7	dB
		1550nm		0.3	0.9	dB
Optical Return Loss	ORL		27			dB
3dB Cut-off Frequency	f_{3dB}	²⁾		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	
Output Voltage Swing	$V_{out,pp}$	Peak-to-peak; $P_{opt} = 0\text{dBm}$		150		mV
RMS Input Referred Noise Current	I_{noise}			2		μA
Overload	P_{overl}	³⁾		7		dBm
Photodiode Dark Current	I_{dark}	$T_{Case} = 25\text{ }^\circ\text{C}$		8	200	nA
Power Consumption	P_{con}	$V_{CC} = \text{max}$			100	mW

Notes:

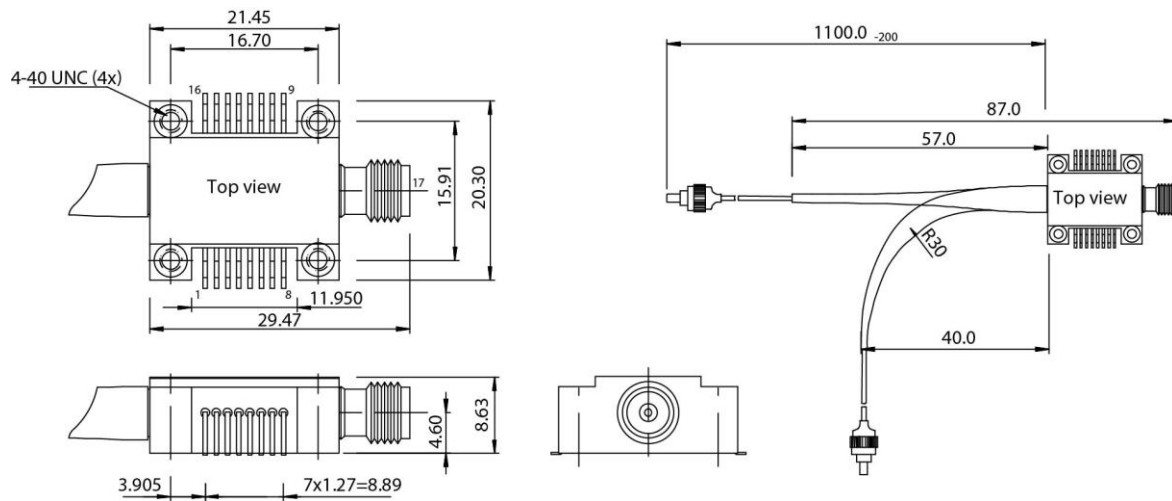
- $\lambda = 1550\text{ nm}$, $V_{bias} = 3.3\text{ V}$, $T = 25\text{ }^\circ\text{C}$
- Measured using Agilent 860330A 50 GHz Lightwave component analyzer
- Evaluated from NRZ eye diagram and BER measurement at 20 Gb/s (BER 10^{-12} , PRBS $2^{31}-1$, back to back)

VII. Typical Performance Behavior



VIII. Mechanical Specifications

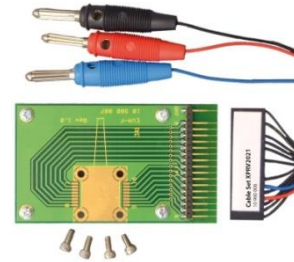
All Dimensions in mm



Parameter	Description
Signal fiber	SMF 28, 900 loose buffer, yellow

I. 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

- Any trademarks used in this document are properties of their respective owners.
- II-VI Incorporated reserves the right to make changes without notice.

II. Revision History

Revision	Date	Description
A03	2021-03-20	Transition to II-VI template.
A04	2021-06-16	Addition of O-band
A05	2021-09-02	Editorial changes