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Product Specification

43 Gb/s High Gain Photoreceiver

XPRV2022A

PRODUCT FEATURES

- PIN / TIA photoreceiver module
- 33 GHz bandwidth
- 500 V/W conversion gain
- SMD package with V[®] connector
- AC coupled output

APPLICATIONS

- 43 Gb/s communication systems (OC-768)
- Transponder and line card designs
- Laboratory test equipment



The photoreceiver module XPRV2022(A) is a single ended front-end with a high gain of typically 500 V/W and a bandwidth of 33 GHz. The photoreceiver module XPRV2022(A) contains a waveguide-integrated PIN-photodiode (PD) and a transimpedance amplifier (TIA) with limiting output buffer. An integrated feedback loop optimizes the performance in the frequency and/or time domain with respect to different optical input power. Due to the limiting output buffer the output voltage swing is limited to approx. 400 mV. Incorporated blocking capacitors enable AC output coupling.

ORDERING INFORMATION

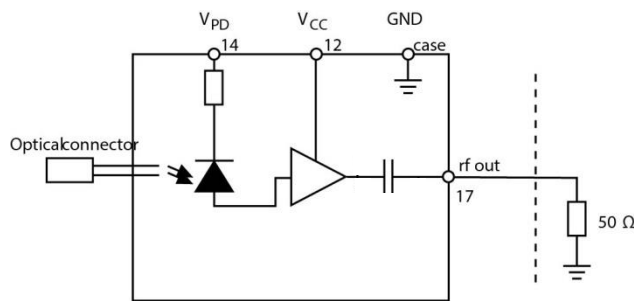
XPRV2022A-VV-zz

A:		= AC coupled
Vy:	VF	= female V Connector [®] (standard)
	VM	= male V Connector [®]
zz:	FP	= FC/PC (standard)
		other connectors available upon request

I. Pin Description

# Pin	Symbol	Description
1,3,16	N/C	not connected, 100 nF to GND, max +5 V
2,4,5,6,11,13,15	GND	ground
7,8,9,10	RFU	reserved for future use - please do not connect
12	V_{CC}	amplifier supply
14	V_{PD}	photodiode supply
17	out	inverting RF output, V [®] connector

II. Block Diagram



III. Absolute Maximum Ratings

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} = 2 V to Max	0		4	V
Maximum Average Optical Input Power	P_{opt}	NRZ			6	dBm
Electro Static Discharge	V_{ESD}	C = 100 pF, R = 1.5 kΩ HBM	-250		250	V
Fiber Bend Radius			16			mm



Notice

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

IV. Environmental Conditions

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

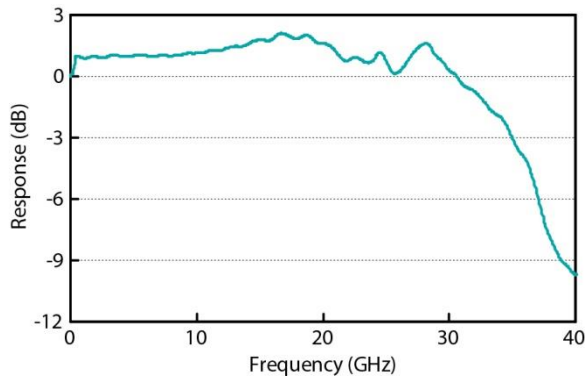
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Amplifier Supply Voltage	V_{CC}		3.1	3.3	3.5	V
Operating Wavelength Range	λ		1480		1620	nm
Average Optical Input Power Range	P_{opt}		-10		3	dBm
Photodiode Reverse Voltage	V_{PD}		3.1	3.3	3.5	V

VI. Electro-Optical Specifications¹

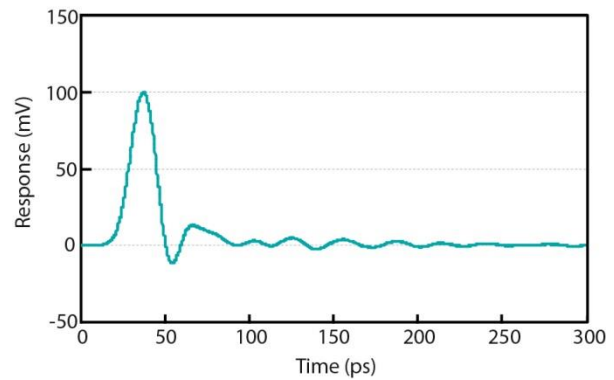
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Conversion Gain	CG	²⁾	300	500		V/W
Photodiode DC Responsivity	R	optimum polarization	0.5		0.75	A/W
Polarization Dependent Loss	PDL			0.3	0.9	dB
Optical Return Loss	ORL		27			dB
3dB Cut-off Frequency	f_{3dB}	²⁾	30	30		GHz
Lower Frequency cut off	f_{3dB_L}				100	kHz
Output Reflection Coefficient	S_{22}	0.5 - 15 GHz		-15	-10	dB
		15 - 30 GHz		-6	-2	
Output Voltage Swing	V_{out}	$P_{opt} \geq 0$ dBm		400	600	mV
Equivalent Input Noise Density	i_{noise}				40	pA/ \sqrt{Hz}
Overload	P_{overl}	³⁾	3			dBm
Photodiode Dark Current	I_{dark}	$T_{Case} = 25$ °C		8	200	nA
Power Consumption	P_{con}	$V_{CC} = \max$			0.4	W
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 40 Gb/s (BER 10^{-12} , PRBS $2^{31}-1$, back to back)						

VII. Typical Performance Curves

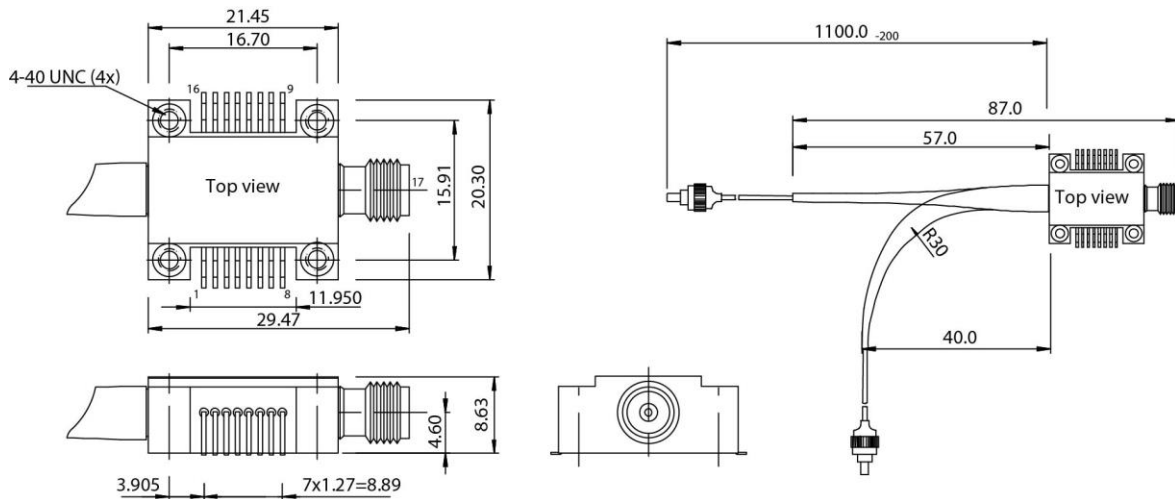
Frequency Response



Pulse Response



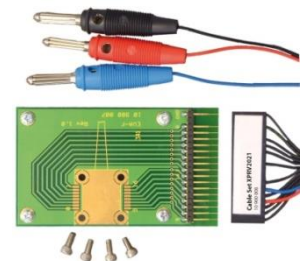
VIII. Mechanical Specifications



All dimensions in mm.

IX. Accessories

The Finisar Evaluation Kit EVA-XPRV serves as an easy-to-use utility to characterize the Finisar 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

X. Revision History

Revision	Date	Description
A1	04/09/2014	Document created.
A2	05/18/2017	Updated version with new Finisar Logo Modified block diagram and removed DC coupled version (EOL'd)

Notes

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- Finisar Corporation reserves the right to make changes without notice.

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