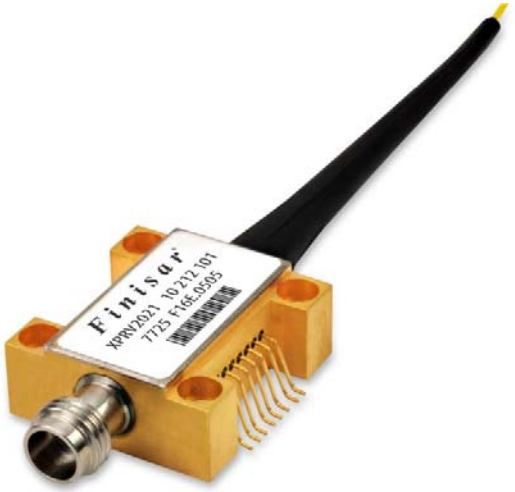
Finisar

Product Specification

43 Gb/s High Bandwidth Photoreceiver

XPRV2021(A)

PRODUCT FEATURES



- PIN / TIA photoreceiver module
- 40 GHz bandwidth
- 150 V/W conversion gain
- SMD package with V® connector
- AC coupled output, DC coupled output available upon request

APPLICATIONS

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

The photoreceiver module XPRV2021(A) is a single-ended front-end with a high bandwidth of 40 GHz and a gain of typically 150 V/W. The receiver is therefore well suited for OC-768/STM-256 system operation up to 43 Gb/s. The photoreceiver contains a waveguide-integrated PIN-photodiode and a transimpedance amplifier with limiting output buffer. An integrated feedback loop optimizes the performance in the frequency and time domain with respect to different optical input power. Due to the limiting output buffer the output voltage swing is limited to approx. 500 mV. Incorporated blocking capacitors enable AC output coupling. DC coupled versions are available upon request.

ORDERING INFORMATION

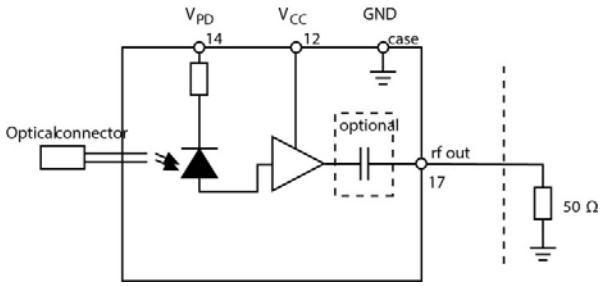
XPRV2021(A)-Vv-zz

A:		= AC coupled
blank		= DC-coupled version; available upon request
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
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 Bias 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 Bias Voltage	V_{CC}		3.1	3.3	3.5	V
Operating Wavelength Range	λ		1480	1550	1620	nm
Average Optical Input Power Range	P_{opt}		-10		3	dBm
Photodiode Bias Voltage	V_{PD}		3.1	3.3	3.5	V

VI. Electro-Optical Specifications[1]

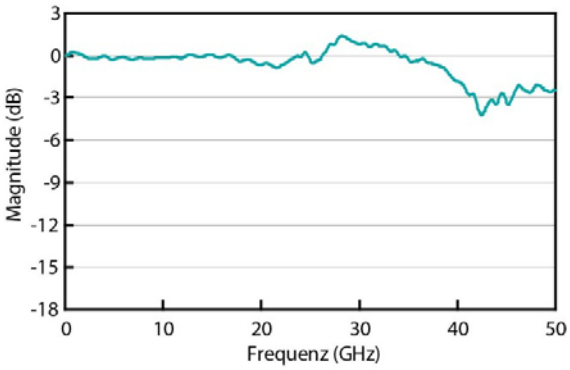
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Conversion Gain	CG	[2]	100	150		V/W
Photodiode DC Responsivity	R	optimum polarization	0.5		0.75	A/W
Polarization Dependent Loss	PDL			0.4	0.9	dB
Optical Return Loss	ORL		27			dB
3dB Cut-off Frequency	f_{3dB}	[2]	33	40		GHz
Lower Frequency cut off	f_{3dB_L}				100	kHz
Output Reflection Coefficient	S_{22}	0.5 - 15 GHz		-15	-8	dB
		15 - 30 GHz		-6	-2	
Output Voltage Swing	V_{out}	P_{opt} ≥ 0 dBm		500	600	mV
Equivalent Input Noise Density	i_{noise}				40	pA/√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			0.3	W

Notes:

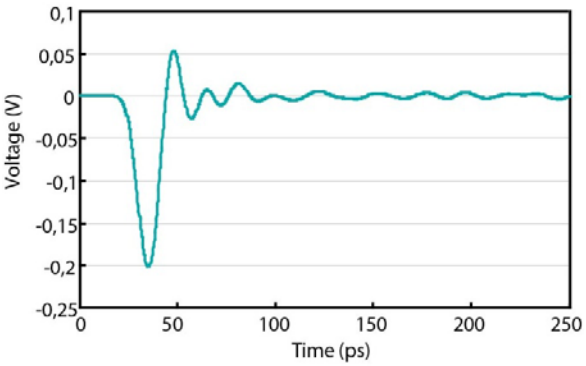
1. λ = 1550 nm, V_{bias} = 3.3 V, T = 25 °C
2. Measured using Agilent 860330A 50 GHz Lightwave component analyzer
3. Evaluated from NRZ eye diagram and BER measurement at 40 Gb/s (BER 10^{-12}, PRBS 2^{31}-1, back to back)

VII. Typical Performance Curves

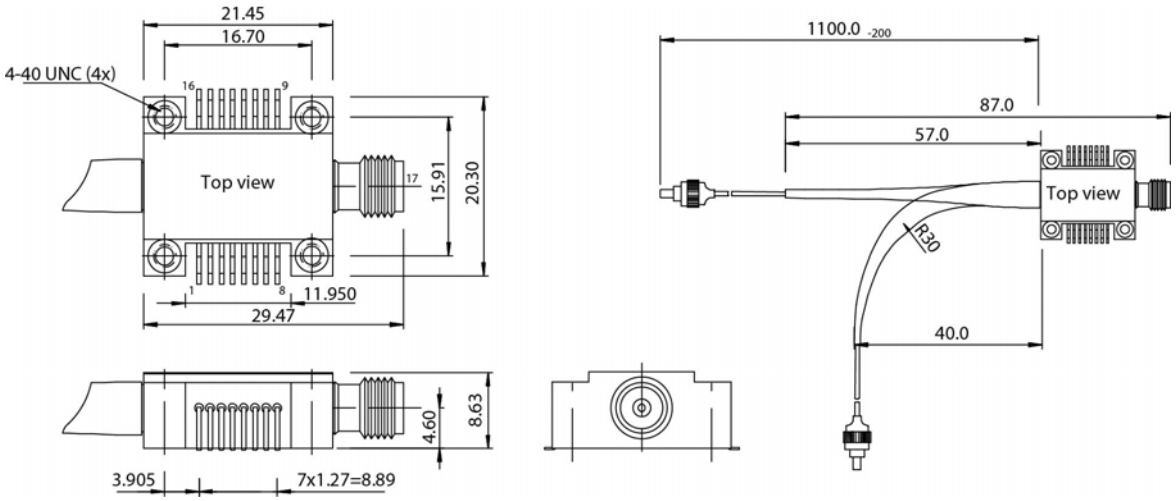
Frequency Response



Pulse Response



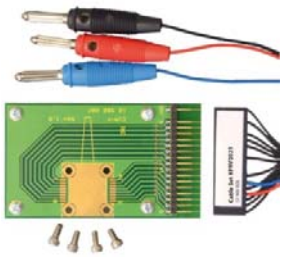
VIII. Mechanical Specifications



All dimensions in mm.

IX. Accessories

The Finisar Evaluation Kit EVA-XPRV serves as an easy-to-use utility to characterize the Finisar photoreceiver XPRV2021(A) under laboratory conditions. The kit consists of a PCB (printed circuit board), a DC cable set and 4 socket head screws 4-40 UNC.



X. Revision History

Revision	Date	Description
A1	04/09/2014	• Document created.

Notes

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

For More Information

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