

## Product Specification

### 50 GHz dual-window Photodetector

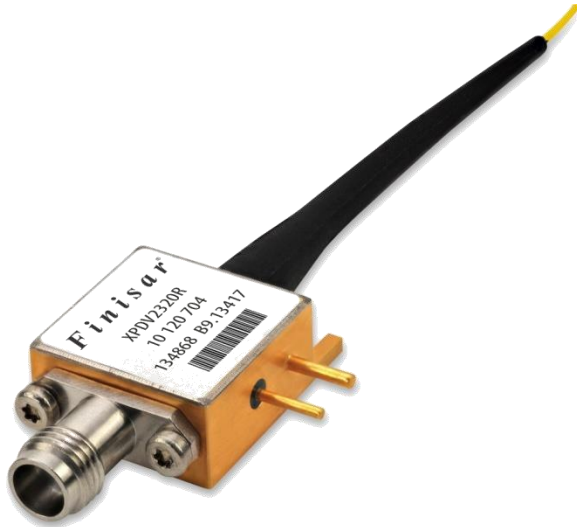
#### XPDV2320R

#### PRODUCT FEATURES

- 50 GHz electrical 3 dB bandwidth
- Excellent flat response within 3 dB bandwidth
- Support of 1310 and 1550nm
- Well matched 50  $\Omega$  output
- Unique on-chip integrated bias network

#### APPLICATIONS

- Communication system at 40 Gb/s
- High-speed lightwave characterization
- Microwave photonics up to 60 GHz



The XPDV23x0R platform exhibits an optimized frequency response in both, power and phase. It is ideally suited for OC-768/STM-256 long haul systems. The on-chip integrated bias network with optimized design ensures an undisturbed frequency response to the 3dB cut-off frequency and saves costs for internal bias-tees. The module is especially designed for both optical windows at 1310nm and 1550nm. Further advantage of the waveguide structure is the unbeatable RF high-power behavior. The photodetector shows a linear response up to an optical input power of 10dBm, resulting in a high output voltage swing avoiding the need for electrical amplification

#### ORDERING INFORMATION

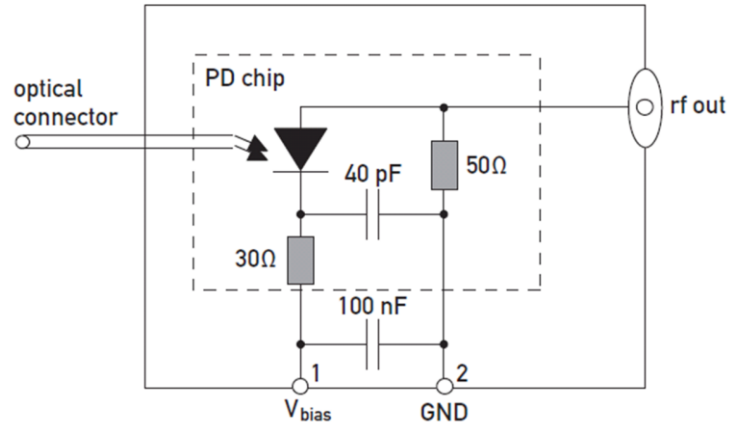
**XPDV2320R-Vx-yy**

Vx:	F	= V connector® female (standard)
	M	= V connector® male
yy:	FP	= FC/PC (standard)
		other connectors available upon request

## I. Pin Description

# Pin	Symbol	Description
1	$V_{bias}$	PD bias supply, typical 2.8 V
2	GND	case ground

## II. Block Diagram



## III. Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode Bias Voltage	$V_{PD}$		0		3.5	V
Average Optical Input Power	$P_{opt}$	CW or NRZ			13	dBm
Max. Output peak voltage	$V_{peak}$				1.5	V
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
Relative Humidity	RH	non condensing	5		85	%
Storage Temperature	T <sub>sto</sub>		-40		85	°C

**V. Operating Conditions**

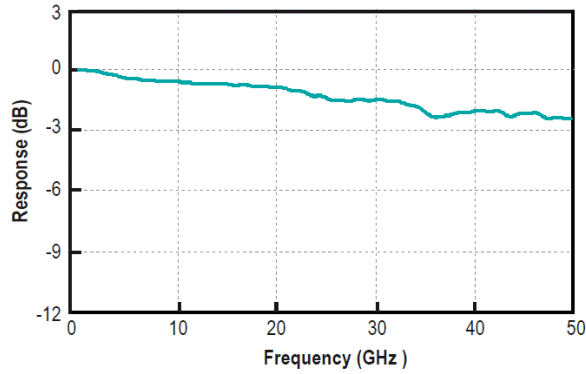
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Case Temperature	T <sub>Case</sub>		0		75	°C
Operating Wavelength Range	$\lambda$		1300 1530		1330 1620	nm
Avg. Optical Input Power Range	P <sub>OPT</sub>				10	dBm
Photodiode Bias Voltage	V <sub>PD</sub>		2.0	2.8	3.3	V

**VI. Electro-Optical Specifications**

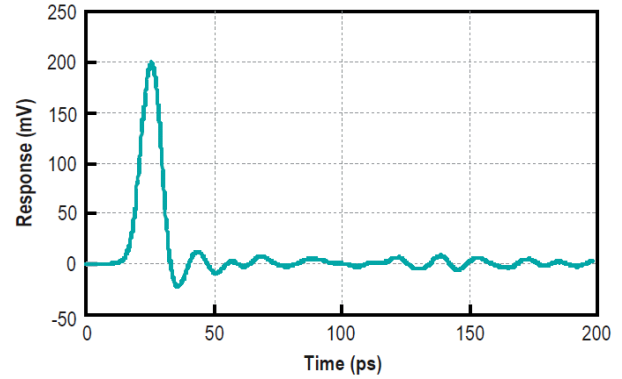
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode DC Responsivity	R	1310nm		0.45		A/W
		1550nm		0.65		
Polarization Dependent Loss	PDL	1310nm		0.4	0.7	dB
		1550nm		0.3	0.5	
Optical Return Loss <sup>1</sup>	ORL	1310nm	24			dB
		1550nm	27			
3dB Cut-off Frequency <sup>2</sup>	f <sub>3dB</sub>		45	50		GHz
Output Reflection Coefficient	S <sub>22</sub>	0.05 ... 50GHz		-10	-8	dB
Photodiode Dark Current	I <sub>dark</sub>			5	200	nA
Pulse Width				9	10	ps
Notes:						
1. $\lambda$ = 1550 nm or 1310nm, T <sub>case</sub> = 25 °C						
2. measured using Agilent 86030A 50 GHz Lightwave component analyzer						

## VII. Typical Performance Curves

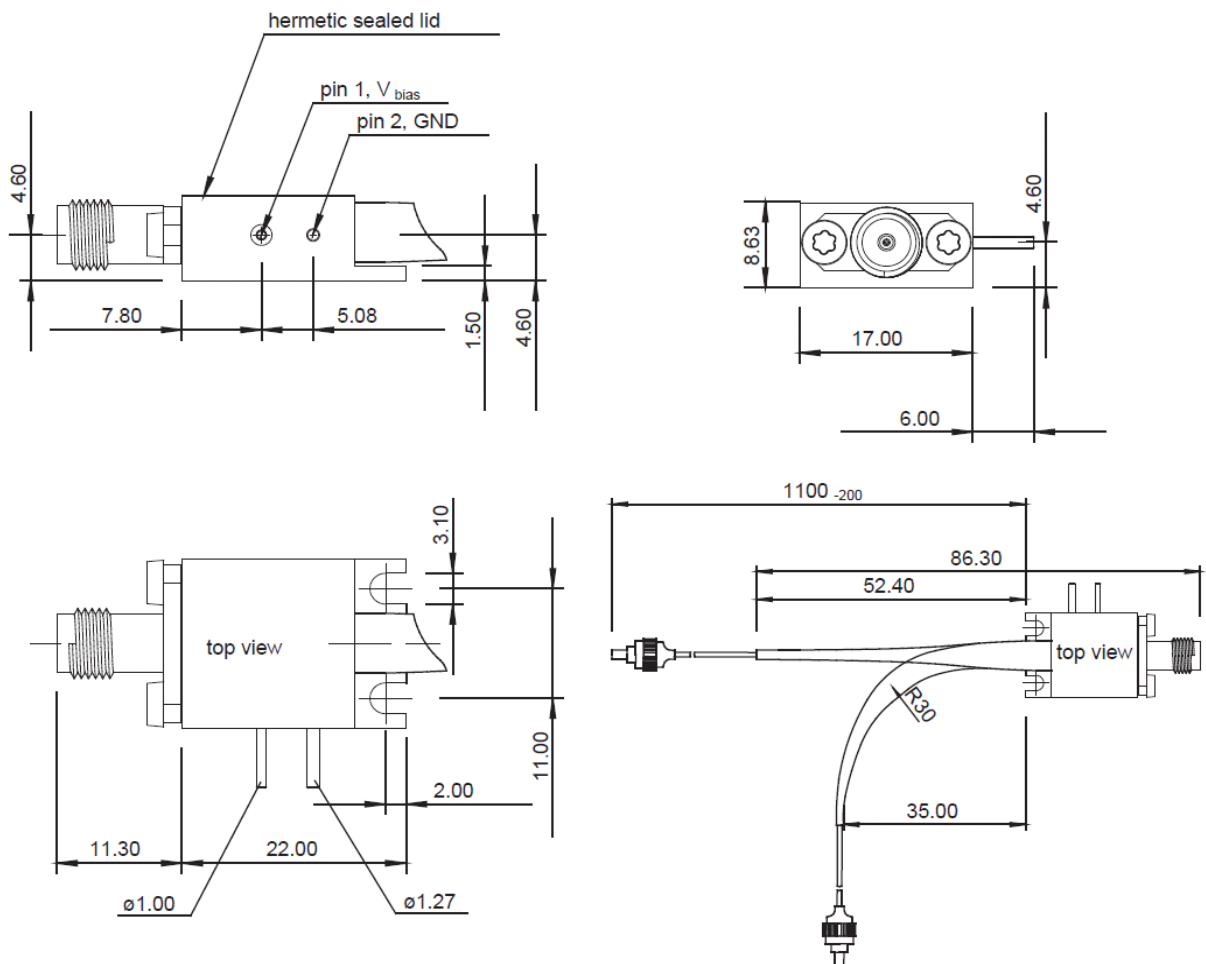
Frequency Response



Pulse Response



## VIII. Mechanical Specifications



## IX. Accessories

We recommend usage of our individually accessible photodetector power supply (PPS), in particular for optimized performance at high optical input levels. As portable device it provides stable biasing voltage supply and a front display for review on photocurrent.

## ORDERING INFORMATION

### PPS-03-X

- X: Power supply for XPDV21xxR series  
Consists of 1x PPS and 1x cable X-type,  
all PPS versions include two 1.5 V  
batteries and a BNC-to-female connector  
plug cable



## X. Revision History

Revision	Date	Description
A1	07/24/2014	<ul style="list-style-type: none"><li>Document created</li></ul>
A2	12/15/2014	<ul style="list-style-type: none"><li>Block diagram revised</li></ul>

## Notes

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