FINISAR

Product Specification

50 GHz Photodetector

XPDV21x0(RA)

PRODUCT FEATURES

- 50 GHz electrical 3 dB bandwidth
- Excellent flat response within 3 dB bandwidth
- Impressive pulse behavior
- Well matched 50 Ω 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 XPDV21x0(RA) 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 an optimized RF design in particular, ensures an undisturbed frequency response from DC to the 3 dB cut-off frequency and saves costs for internal bias-tees. The module is especially designed for optimal RF performance; therefore the pulse response reveals virtually no ringing. A further advantage of the waveguide structure is the unbeatable high-power behavior. The photodetector shows a linear response up to an optical input power of 10 dBm, resulting in a high output voltage swing avoiding the need for electrical amplification.

ORDERING INFORMATION

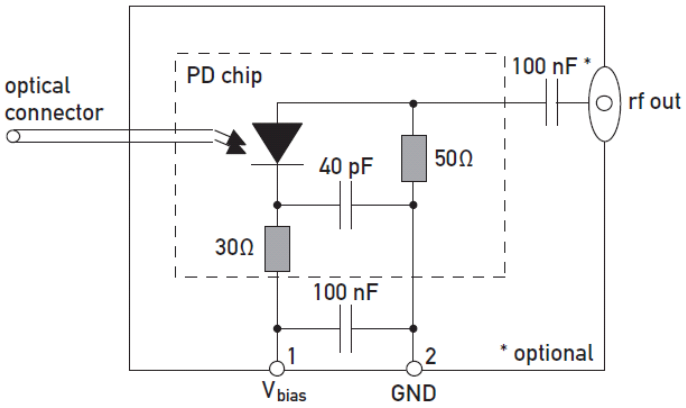
XPDV21x0vv-Vy-zz

x:	2	= standard PDL
	5	= low PDL
vv:	blank	= no internal 50 Ω termination
	R	= internal 50 Ω termination, DC-coupled
	RA	= internal 50 Ω termination, AC-coupled
Vy:	F	= V connector® female (standard)
	M	= V connector® male
zz:	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}	V_{cc}= min to max	2		4	V
Maximum Average Optical Input Power	P_{opt}	Continuous wave (CW)			16	dBm
		Non-return-to-zero (NRZ)				
Maximum Peak Optical Input Power	P_{peak}	Pulsed			19	dBm
		Return-to-zero (RZ)				
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
Operating Wavelength Range	λ		1480		1620	nm
Average Optical Input Power Range	P_{OPT}				10	dBm
Photodiode Bias Voltage	V_{PD}		2.8	3.3	3.8	V

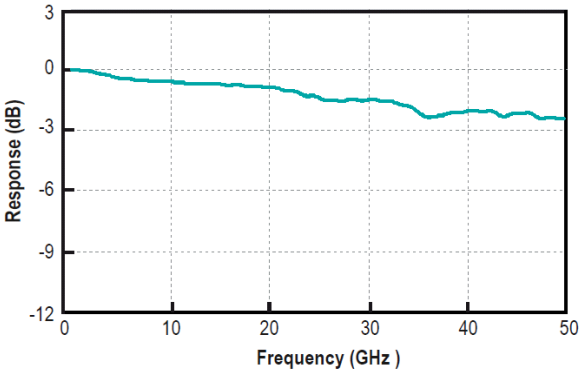
VI. Electro-Optical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode DC Responsivity	R	optimum polarization	0.5	0.65		A/W
Polarization Dependent Loss	PDL	XPDV2120R(A)		0.3	0.5	dB
		XPDV2150R(A)		0.1	0.2	
Optical Return Loss	ORL		27			dB
3dB Cut-off Frequency[2]	f_{3dB}	XPDV21xxR	45	50		GHz
		XPDV21xxRA	33	40		
Output Reflection Coefficient[3]	S_{22}	XPDV21xxR		-10	-8	dB
		XPDV21xxRA		-8		
Output Peak Voltage[4]	V_{peak}	50 Ω load, P_{peak}= 13dBm		325		mV
Photodiode Dark Current	I_{dark}			5	200	nA
Pulse Width		XPDV21xxR		9	10	ps
		XPDV21xxRA			11	

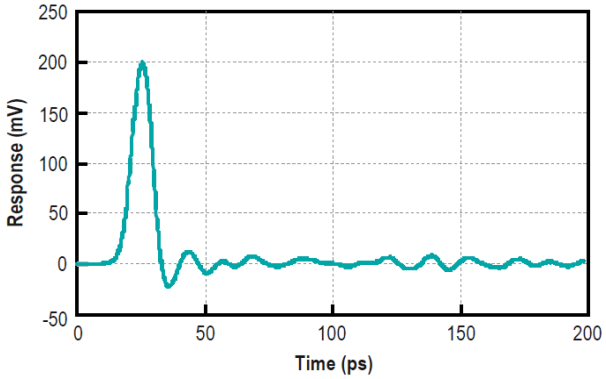
Notes:
1. λ = 1550 nm, V_{PD}= 2.8 V, T_{case}= 25 °C, P_{OPT} = 3 dBm
2. measured using Agilent 86030A 50 GHz Lightwave component analyzer
3. 0.05 … 50 GHz
4. informative only

VII. Typical Performance Curves

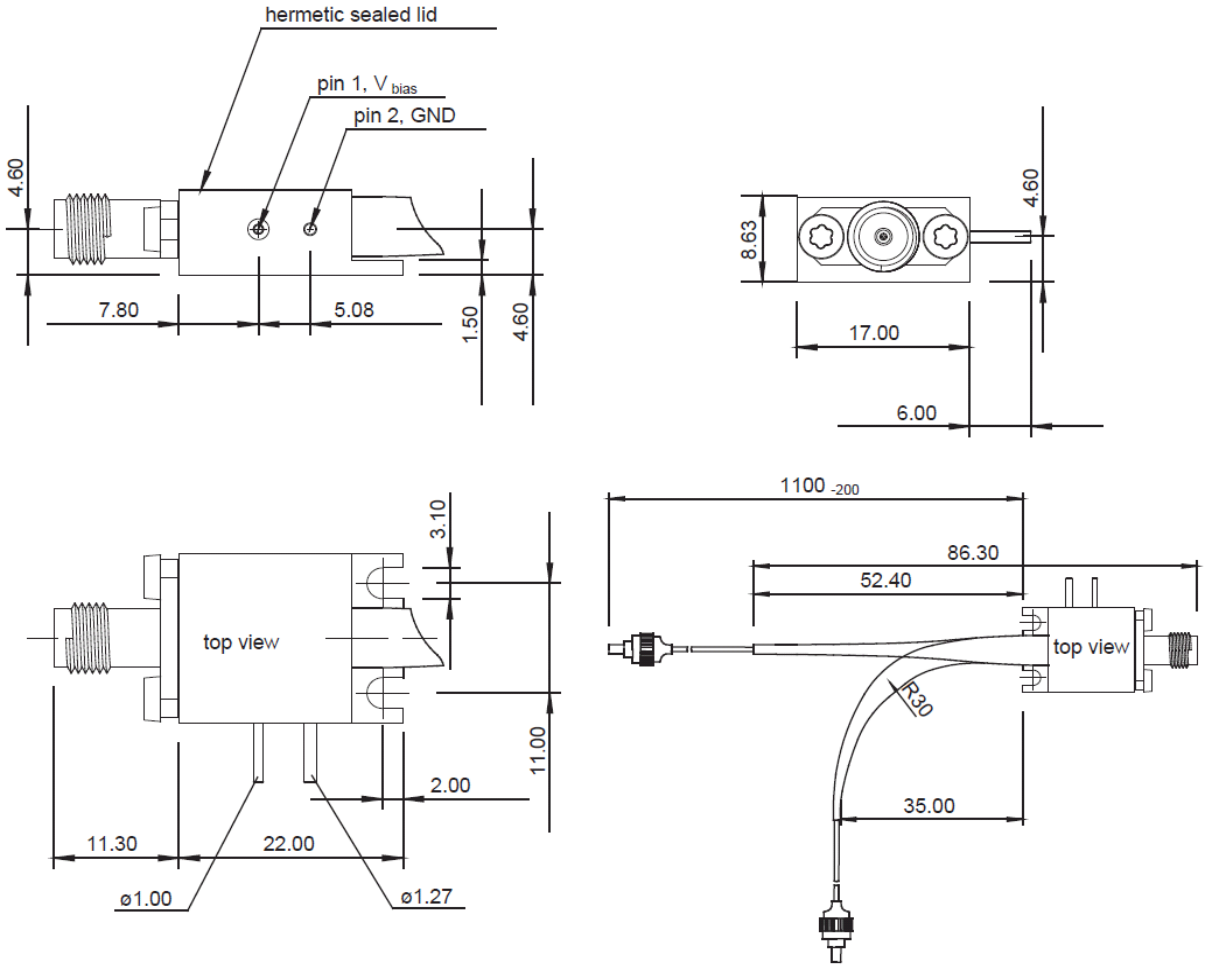
Frequency Response



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	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

Finisar Corporation
1389 Moffett Park Drive
Sunnyvale, CA 94089-1133
Tel. 1-408-548-1000
Fax 1-408-541-6138
sales@finisar.com
www.finisar.com

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