Finisar®

100 GHz PHOTODETECTOR

XPDV412xR

PRODUCT BRIEF

KEY FEATURES

- 100 GHz bandwidth
- Flat response of up to 100 GHz
- Excellent pulse behavior
- Well matched 50 Ω output

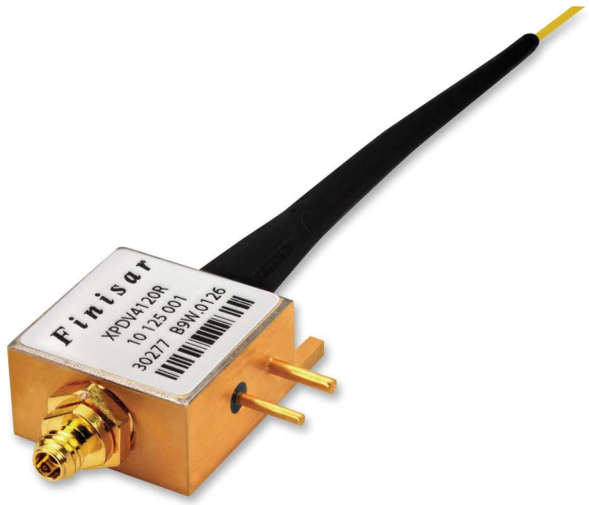
APPLICATIONS

- DWDM
- High-Speed Lightwave characterization
- 100 Gb/s communication systems
- Microwave Photonics

OVERVIEW

The XPDV4121R comprises a high-speed 100 GHz waveguide-integrated photodiode, showing an extremely flat frequency response, both in power and in phase. The on-chip integrated bias network with optimized RF design in particular, ensures undisturbed frequency response from DC to the 3dB cut-off frequency and saves costs for internal bias-tees. The module is especially designed for an optimal RF performance revealing virtually no ringing for pulse response.

The photodetector shows a linear response up to an optical input power of 10 dBm. An output voltage swing of more than 0.5 Vpp can be achieved for short pulses without any degradation of the pulse response. All photodetector devices are characterized in the frequency domain by using a heterodyne technique. In the time domain, a femtosecond pulse source and a 65 GHz sampling oscilloscope are used to measure the pulse response.



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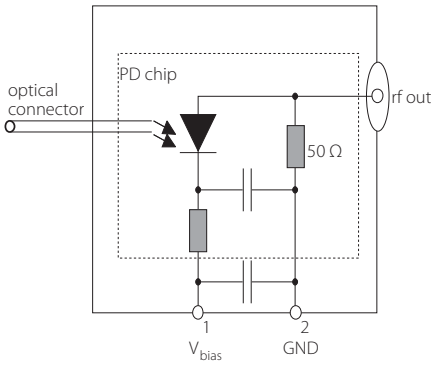
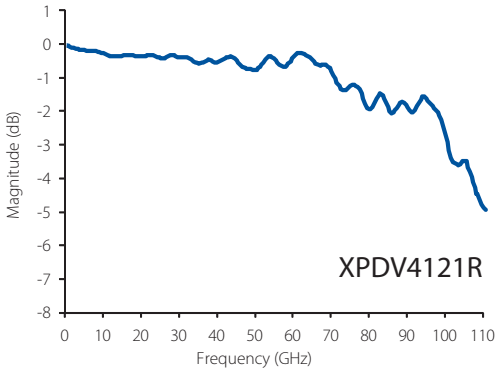
BLOCK DIAGRAM AND TYPICAL PERFORMANCE





OPERATING CONDITIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Case Temperature	T_{case}		0		+75	°C
Relative Humidity	RH	non condensing	5		85	%
Average Optical Input Power	P_{opt}		-20		10	dBm
Wavelength Range	λ		1480		1620	nm
Photodiode Reverse Voltage	V_{PD}		1.5	2.0	2.8	V

OPTICAL AND ELECTRICAL SPECIFICATIONS [1)]

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Photodiode DC Responsivity	R	optimum polarization		0.5		A/W
Polarization Dependent Loss	PDL			0.5	0.8	dB
Optical Return Loss	ORL		27			dB
3dB cut-off Frequency	f_{3db}	XPDV4121R [2)] XPDV4120R [2)]	100 90	110 100		GHz GHz
Output Reflection Coefficient	S_{22}	0.05 - 50 GHz 50 - 110 GHz		-10 -8	-8	dB dB
Photodiode Dark Current	I_{dark}	T_{case} = 25°C		5	200	nA
Pulse Width		[3)]		7.5	8	ps

Notes:

1) λ = 1550 nm, V_{bias} = 2.8 V, T = 25°C
2) Measured using a heterodyne measurement system
3) Measured using Tektronix oscilloscope with 70 GHz sampling head

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