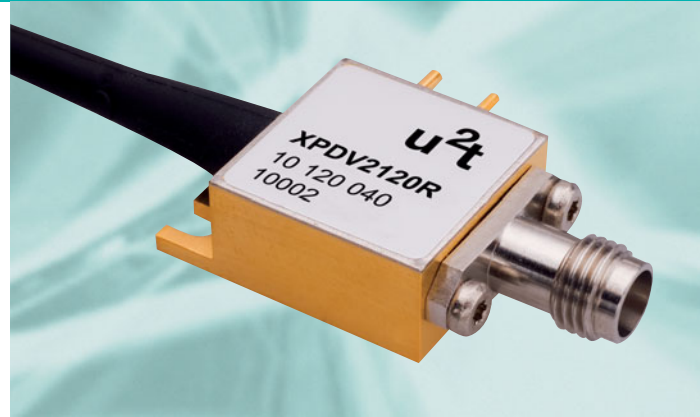


## 50 GHz Photodetector

Product Code: XPDV21xxR(A)



### Product Description

The Photodetector XPDV21xxR(A) platform is designed to exhibit an optimized frequency response in both, power and phase. It is ideally suited for OC-768/STM-256 long haul systems. The high power capability of up to 13 dBm allows for use of optical amplification at the detector input resulting in a high output voltage swing of up to 1 V avoiding the need for electrical amplification.

A waveguide integrated pin diode provides an excellent linearity, high responsivity and a superior flatness of the rf response. An integrated biasing and a hermetic package guarantees a very robust and highly reliable component.

### Features

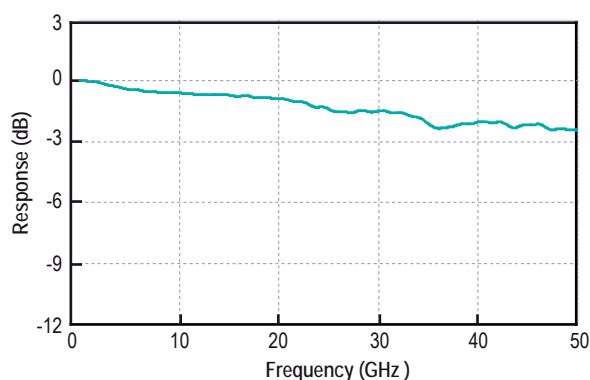
- Highest bandwidth with flat response
- Excellent pulse behavior
- Unsurpassed high-power handling capability
- High responsivity
- Unique on-chip integrated bias network
- Well matched to 50  $\Omega$
- Hermetically sealed package

### Applications

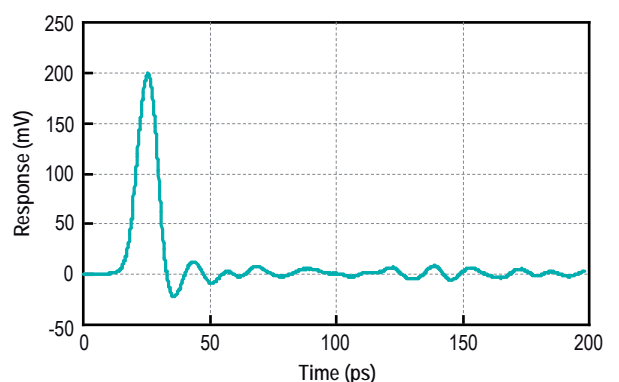
- Communication systems at 40 Gbit/s (OC-768) and beyond
- Microwave photonics up to 60 GHz
- High speed lightwave characterization

### Typical Performance

#### Frequency Response



#### Pulse Response



## Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Storage temperature	T <sub>stg</sub>	non condensing	-40		+85	°C
Photo diode reverse voltage	V <sub>PD</sub>				3.5	V
Maximum average optical input power	P <sub>opt</sub>	NRZ			16	dBm
Maximum output peak voltage	V <sub>Peak</sub>				1.5	V
Electro static discharge	V <sub>ESD</sub>	C= 100 pF, R= 1.5 kΩ HBM	-250		250	V
Fiber bend radius			16			mm

## Operation Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating case temperature range	T <sub>case</sub>		0		+75	°C
Relative humidity range	RH	non condensing	5		85	%
Operating wavelength range	λ		1480		1620	nm
Average optical input power range	P <sub>opt</sub>		-20		13	dBm
Photodiode reverse voltage	V <sub>PD</sub>		2.0	2.8	3.3	V

## Optical and Electrical Specifications 1)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode DC responsivity @ 1550 nm	R	optimum polarization	0.5	0.65		A/W
Polarization dependent loss XPDV2120R XPDV2150R	PDL			0.3 0.1	0.5 0.2	dB
Optical return loss	ORL		27			dB
3dB cut-off frequency XPDV21xxR XPDV21xxRA	f <sub>3dB</sub>	2)	45 33	50 40		GHz
Output reflection coefficient	S <sub>22</sub>	0.05 - 50 GHz female V-connector® male V-connector® AC-coupled		-10 -10 -8	-8 -8	dB
Photodiode dark current	I <sub>dark</sub>	T <sub>case</sub> = 25°C		5	200	nA
Pulse width XPDV21xxR XPDV21xxRA		3)		9	10 11	ps

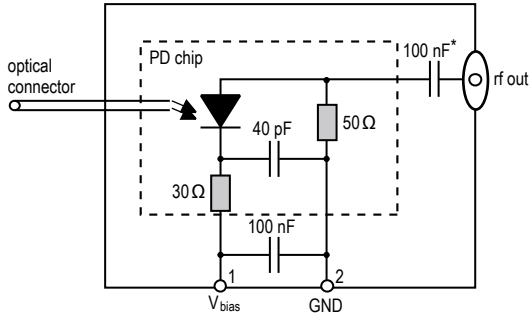
Notes: 1) λ = 1550 nm, V<sub>bias</sub> = 2.8 V, T = 25°C

2) Measured using Agilent 86030A 50 GHz Lightwave component analyzer

3) Measured using Tektronix oscilloscope with 50 GHz sampling head

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## Block Diagram

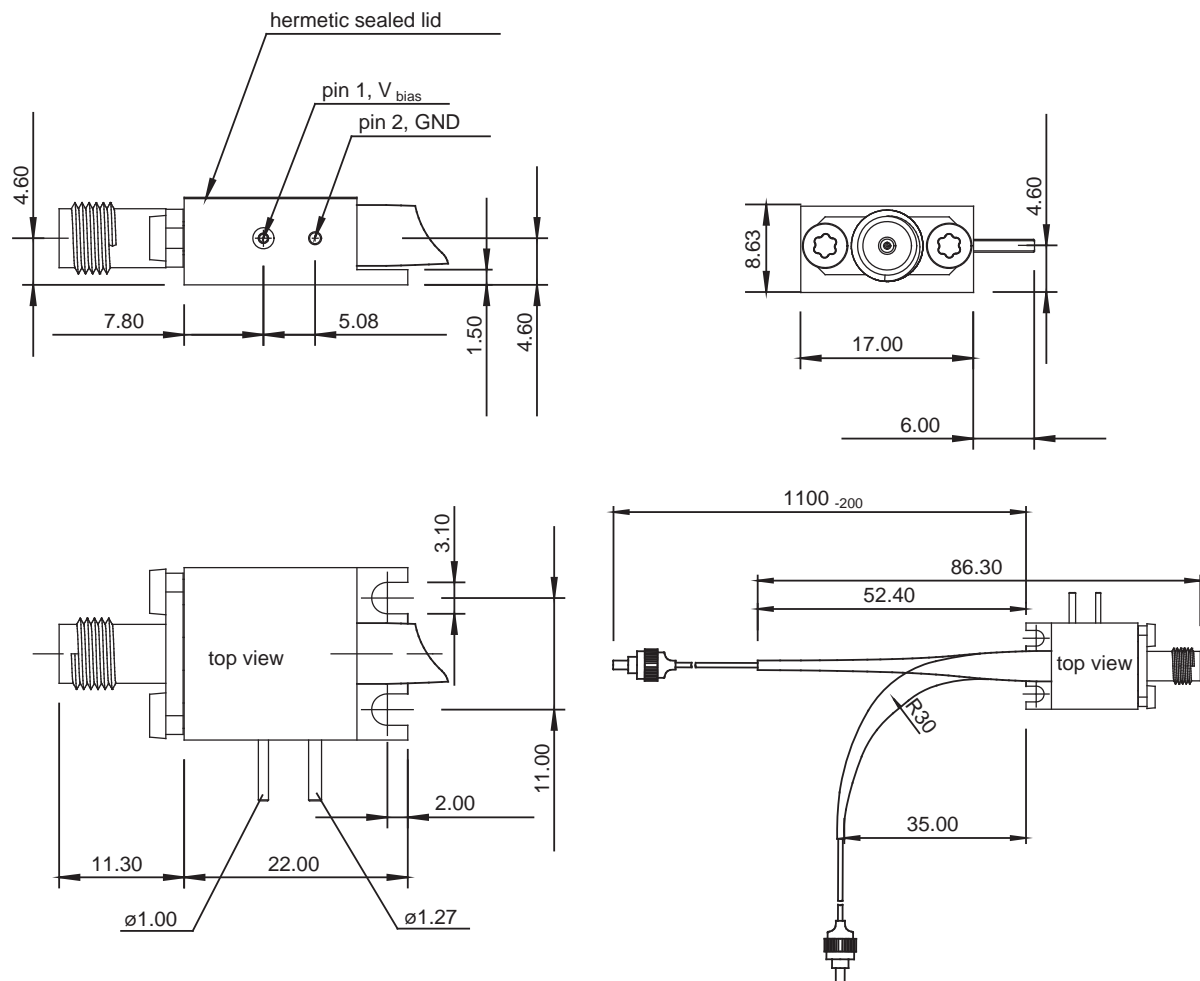


\* optional

## Pin Description

Pin#	Symbol	Description
1	$V_{bias}$	bias supply, typ. 2.8 V
2	GND	Case ground

## Mechanical Dimensions



All dimensions in mm.

## Accessories

### BPB-02

All photodetectors are delivered with an easy-to-use battery powered bias-supply - BPB-02. It comes free of charge with each XPDV photodetector. The maximum quantity per order is 5 pcs.

### PPS-03

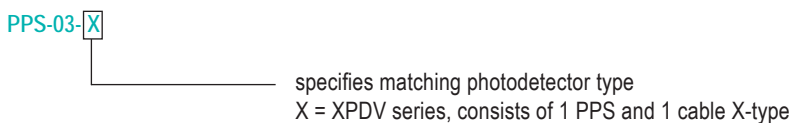
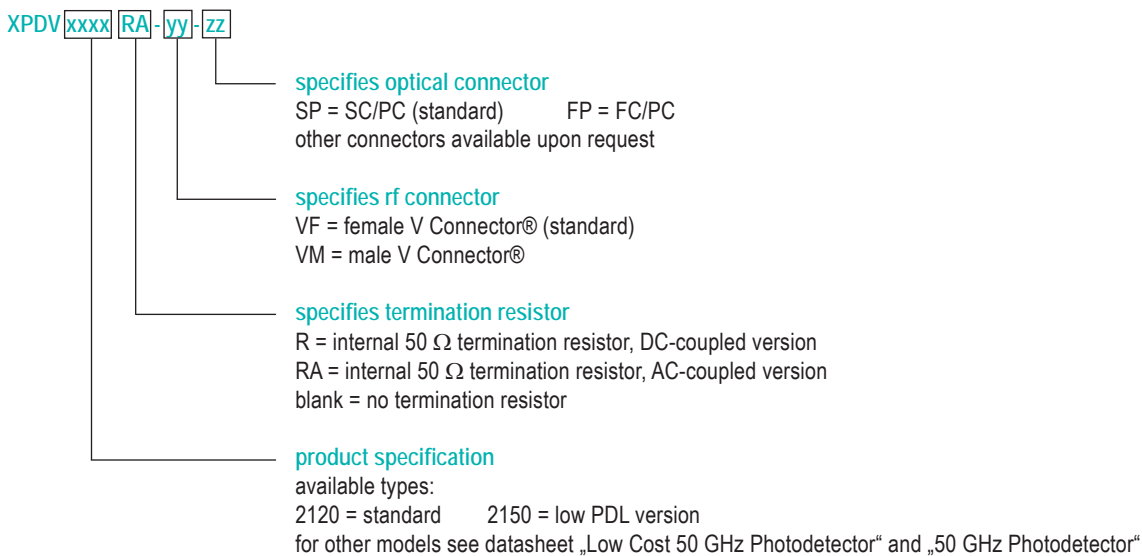
For optimum performance, in particular at high optical input levels, we recommend the use of our separately available photodetector power supply - PPS-03.

Further information can be found in the separate datasheet „Photodetector Power Supply“.



## Ordering Information

Please use the following table to select your required configuration of the photoreceiver.



All Photodetector Power Supply versions include two 1.5 V batteries and a BNC-to-female connector plug cable.

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