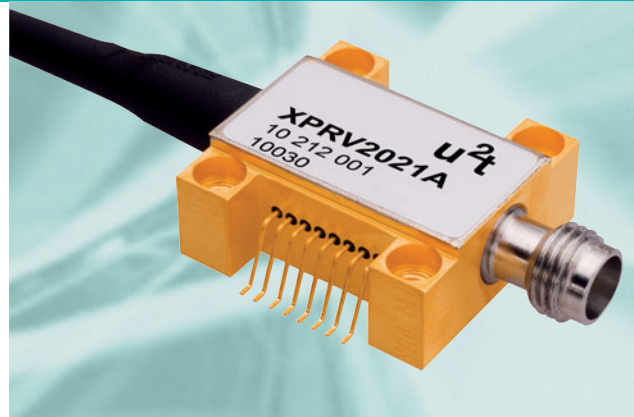


## 43 Gbit/s High Bandwidth Photoreceiver

Product Code: XPRV2021(A)



### Product Description

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 Gbit/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.

### Features

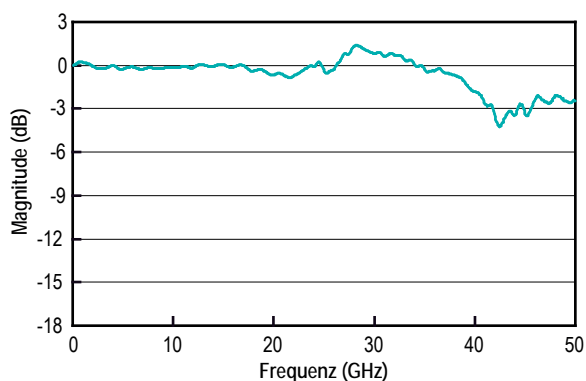
- PIN / TIA photoreceiver module
- 40 GHz bandwidth
- 150 V/W conversion gain
- SMD package with V<sup>®</sup> connector
- AC coupled output, DC coupled output available upon request

### Applications

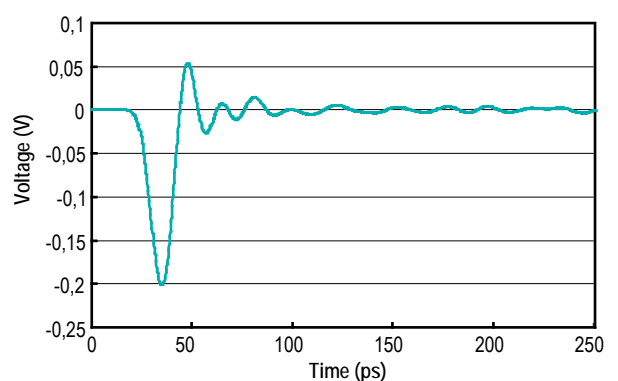
- 43 Gbit/s communication systems (OC-768)
- Transponder and line card designs
- Laboratory test equipment

### 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>	V <sub>CC</sub> = Min to Max	2		4	V
Amplifier supply voltage	V <sub>CC</sub>	V <sub>PD</sub> = 2 V to Max	0		4	V
Maximum average optical input power	P <sub>opt</sub>	NRZ			6	dBm
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>		-10		3	dBm
Photodiode reverse voltage	V <sub>PD</sub>		3.135	3.3	3.465	V
Amplifier supply voltage	V <sub>CC</sub>		3.135	3.3	3.465	V

## Optical and Electrical 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 <sub>3dB</sub>	2)	33	40		GHz
Lower frequency cut off	f <sub>3dB_L</sub>				100	kHz
Output reflection coefficient	S <sub>22</sub>	0.5-15GHz 15-30GHz		-15 -6	-8 -2	dB
Output voltage swing	V <sub>out</sub>	P <sub>opt</sub> ≥ 0 dBm		500	600	mV
Equivalent input noise density	i <sub>noise</sub>				40	pA/√Hz
Overload	P <sub>overl</sub>	3)	3			dBm
Photodiode dark current	I <sub>dark</sub>	T <sub>case</sub> = 25°C		8	200	nA
Power consumption	P <sub>con</sub>	V <sub>CC</sub> = max			0.3	W

Notes: 1) 1) λ = 1550 nm, V<sub>bias</sub> = 3.3 V, T = 25°C

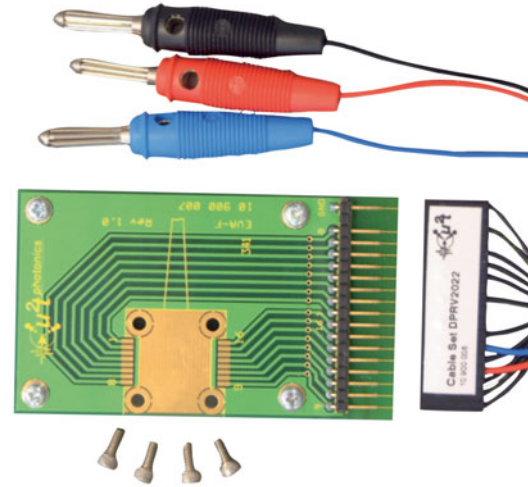
2) Measured using Agilent 860330A 50GHz Lightwave component analyzer

3) Evaluated from NRZ eye diagram and BER measurement at 40Gbit/s (BER 10<sup>-12</sup>, PRBS 2<sup>31</sup>-1, back to back)



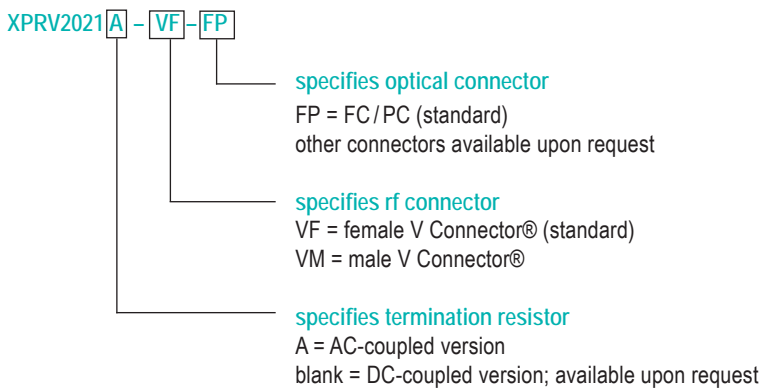
## Accessories

The u2t Evaluation Kit EVA-XPRV serves as an easy-to-use utility to characterize the u2t 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 (see picture).



## Ordering Information

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



For the Evaluation kit please use the following code.



V Connector® is a registered trademark of Anritsu Company.

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