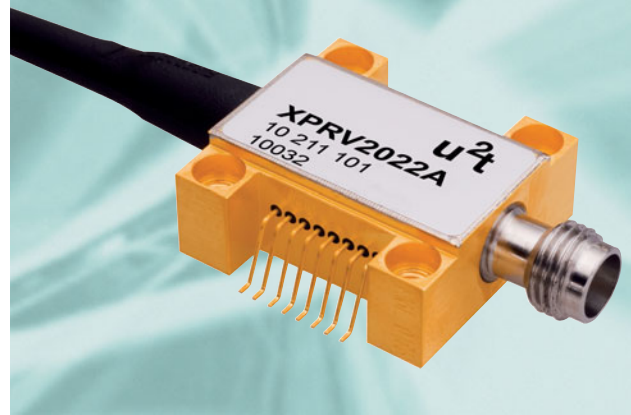


43 Gbit/s High Gain Photoreceiver

Product Code: XPRV2022(A)



Product Description

The photoreceiver module XPRV2022(A) is a single ended front-end with a high gain of typically 500 V/W and a bandwidth of 33 GHz. The photoreceiver module XPRV2022(A) contains a waveguide-integrated PIN-photodiode (PD) and a transimpedance amplifier (TIA) with limiting output buffer. An integrated feedback loop optimizes the performance in the frequency and/or time domain with respect to different optical input power. Due to the limiting output buffer the output voltage swing is limited to approx. 400 mV. Incorporated blocking capacitors enable AC output coupling. DC coupled versions are available upon request.

Features

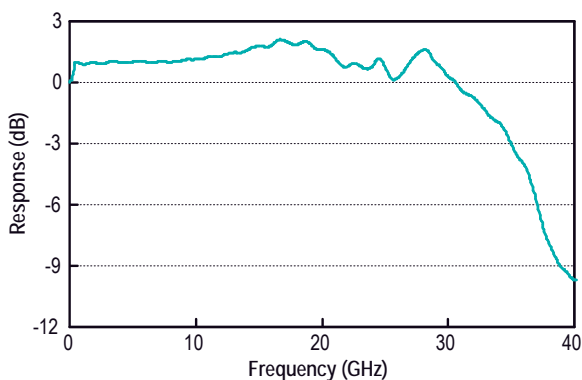
- PIN / TIA photoreceiver module
- 33 GHz bandwidth
- 500 V/W conversion gain
- SMD package with V[®] connector
- AC coupled output, DC coupled output available upon request

Applications

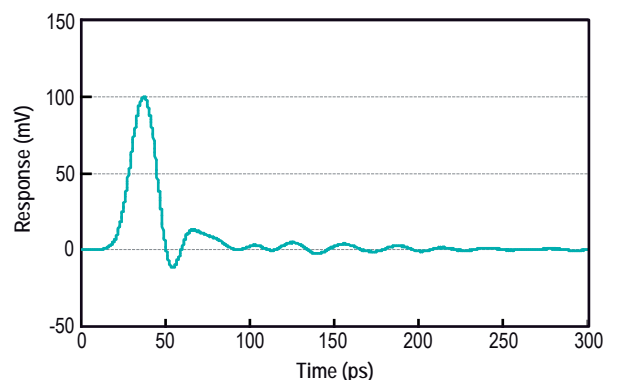
- 43 Gbit/s communication systems (OC-768)
- Transponder and line card designs
- Laboratory test equipment

Typical Performance

Frequency Response



Output Return Loss



Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Storage temperature	T_{stg}	non condensing	-40		+85	°C
Photo diode reverse voltage	V_{PD}	$V_{CC} = \text{Min to Max}$	2		4	V
Amplifier supply voltage	V_{CC}	$V_{PD} = 2 \text{ V to Max}$	0		4	V
Maximum average optical input power	P_{opt}	NRZ			6	dBm
Electro static discharge	V_{ESD}	$C = 100 \text{ pF}, R = 1.5 \text{ k}\Omega \text{ HBM}$	-250		250	V
Fiber bend radius			16			mm

Operation Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating case temperature range	T_{case}		0		+70	°C
Relative humidity range	RH	Non condensing	5		85	%
Operating wavelength range	λ		1480		1620	nm
Average optical input power range	P_{opt}		-10		3	dBm
Photodiode reverse voltage	V_{PD}		3.135	3.3	3.465	V
Amplifier supply voltage	V_{CC}		3.135	3.3	3.465	V

Optical and Electrical Specifications 1)

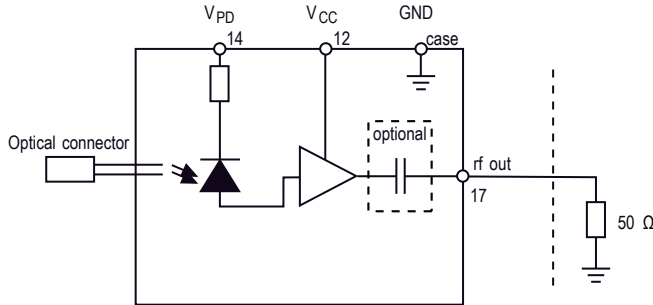
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Conversion gain	CG	2)	300	500		V/W
Photodiode DC responsivity	R	optimum polarization	0.5		0.75	A/W
Polarization dependent loss	PDL			0.3	0.9	dB
Optical return loss	ORL		27			dB
3dB cut-off frequency	f_{3dB}	2)	30	33		GHz
Lower frequency cut off	f_{3dB_L}				100	kHz
Output reflection coefficient	S_{22}	0.5 - 15 GHz 15 - 30 GHz		-15 -6	-10 -2	dB
Output voltage swing	V_{out}	$P_{opt} \geq 0 \text{ dBm}$		400	600	mV
Equivalent input noise density	i_{noise}				40	pA/ $\sqrt{\text{Hz}}$
Overload	P_{overl}	3)	3			dBm
Photodiode dark current	I_{dark}	$T_{case} = 25^\circ\text{C}$			200	nA
Power consumption	P_{con}	$V_{CC} = \text{max}$			0.4	W

Notes: 1) $\lambda = 1550 \text{ nm}, V_{bias} = 3.3 \text{ V}, T = 25^\circ\text{C}$

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

3) Evaluated from NRZ eye diagram and BER measurement at 40Gbit/s (BER 10^{-12} , PRBS $2^{31}-1$, back to back)

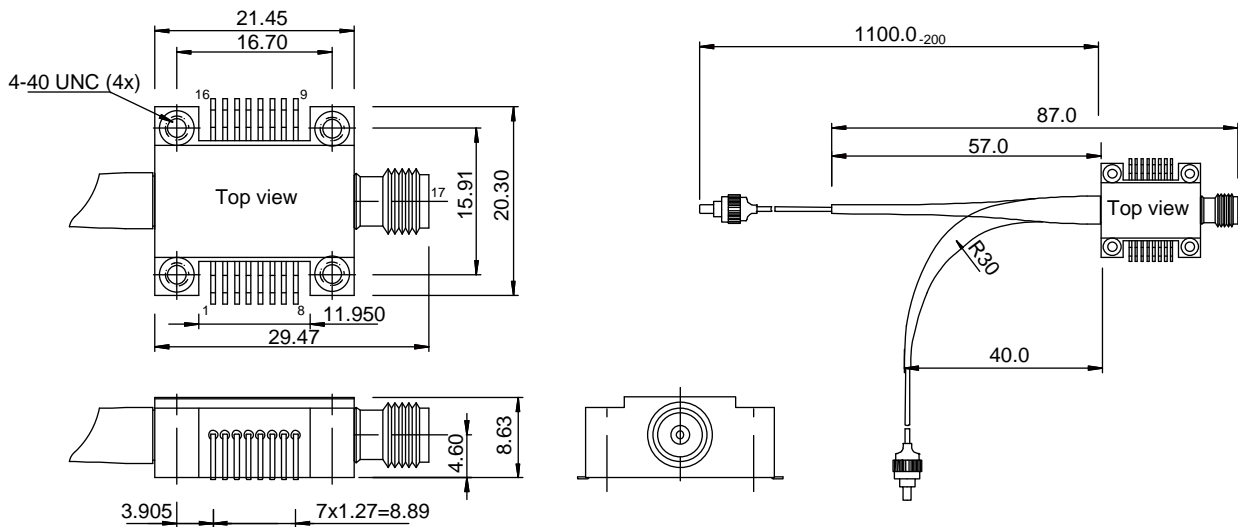
Block Diagram



Pin Description

Pin#	Symbol	Description
1,3,16	N/C	Not connected, 100 nF to GND, max +5 V
2,4,5,6,11,13,15	GND	Ground
7,8,9,10	RFU	Reserved for future use - please do not connect
12	V _{CC}	Amplifier supply
14	V _{PD}	Photodiode supply
17	out	Rf output, V connector

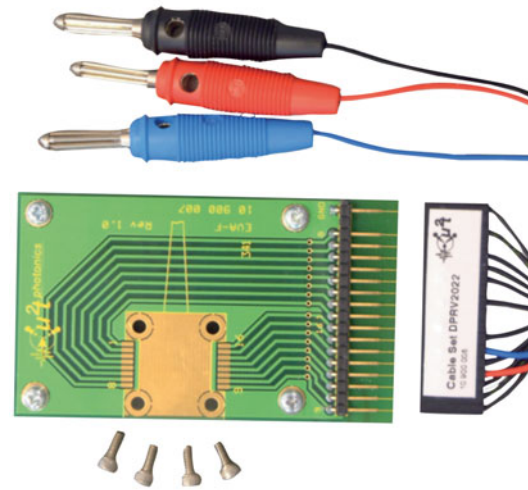
Mechanical Dimensions



All dimensions in mm.

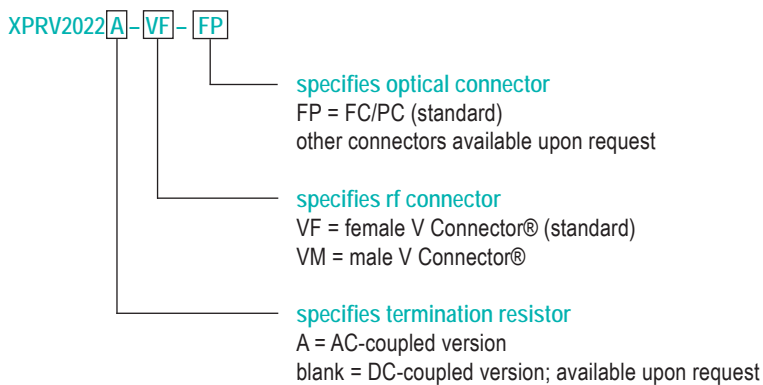
Accessories

The u2t Evaluation Kit EVA-XPRV serves as an easy-to-use utility to characterize the u2t photoreceiver XPRV2022(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.



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