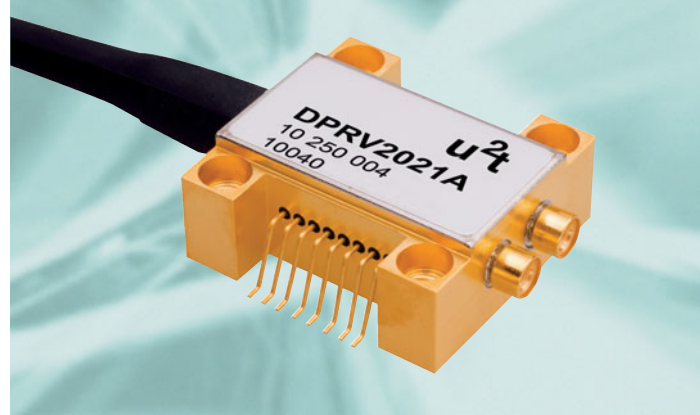


43 Gbit/s High Bandwidth Differential Photoreceiver

Product Code: DPRV2021A



Product Description

The photoreceiver module DPRV2021A is a differential front-end with a high bandwidth of 40 GHz and differential gain of typically 400 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 (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. 1000 mV different. Incorporated blocking capacitors enable AC output coupling.

Features

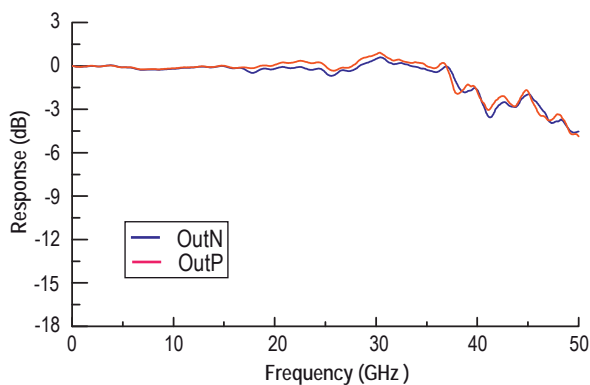
- PIN / TIA photoreceiver module
- 40 GHz bandwidth
- 400 V/W conversion gain
- SMD package with GPPO™ connector
- Differential AC coupled output

Applications

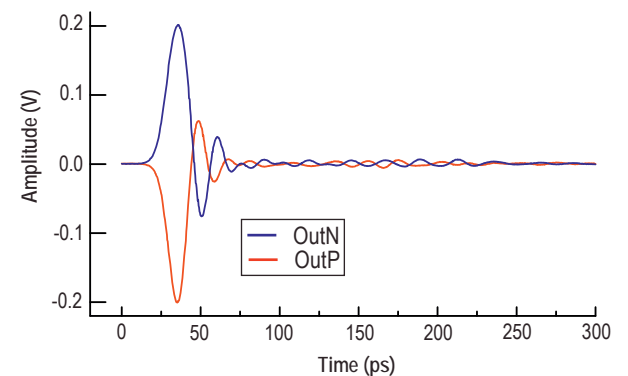
- 43 Gbit/s communication systems (OC-768)
- Transponder and line card designs

Typical Performance

Frequency Response



Pulse Response



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} = Min to Max	2		4	V
Amplifier supply voltage	V _{CC}	V _{PD} = 2 V to Max	0		4	V
Maximum average optical input power	P _{opt}	NRZ			6	dBm
Electro static discharge	V _{ESD}	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 _{case}		0		+75	°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

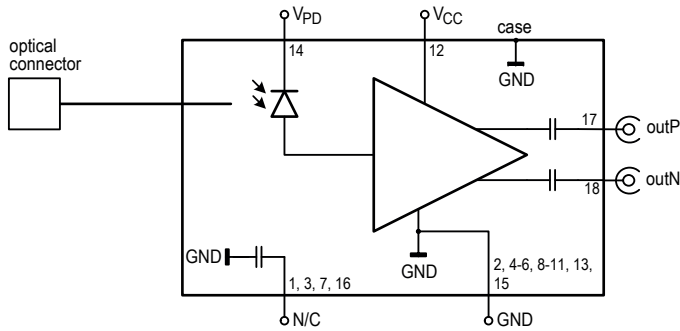
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Differential conversion gain	CG	1), 2)	200	400		V/W
Photodiode DC responsivity	R	optimum polarization	0.42		0.75	A/W
Polarization Dependent Loss	PDL			0.4	0.9	dB
Optical return loss	ORL	λ = 1550 nm	+25			dB
3dB cut-off frequency	f _{3dB}	2)	33	40		GHz
Lower frequency cut off	f _{3dB_L}	2)			100	kHz
Output reflection coefficient	S ₂₂	0.5-15 GHz 15-30 GHz		-15 -7	-10 -2	dB
Differential output voltage swing	V _{out_diff}	P _{opt} ≥ 0 dBm			1200	mV
Equivalent input noise density	i _{noise}				40	pA/√Hz
Overload	P _{overl}	3)	3			dBm
Sensitivity	Sens	3)		-10	-8.5	dBm
Photodiode dark current	I _{dark}	T _{case} = 25°C		8	200	nA
Power consumption	P _{con}	V _{CC} = max			0.3	W

Notes: 1) Measurements performed in single ended conditions

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

3) Evaluated from NRZ eye diagram and BER measurement at 40Gbit/s (BER 10⁻¹², PRBS 2³¹-1, back to back)

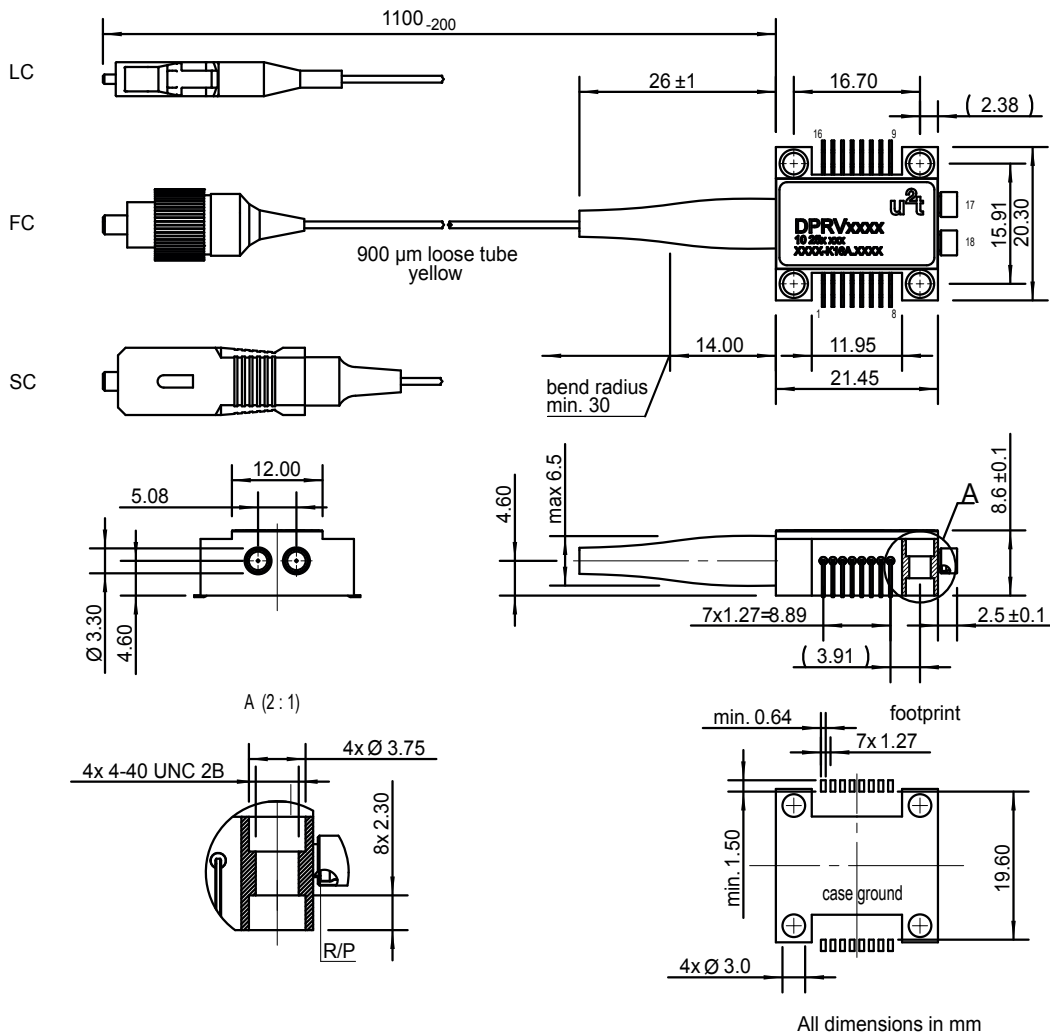
Block Diagram



Pin Description

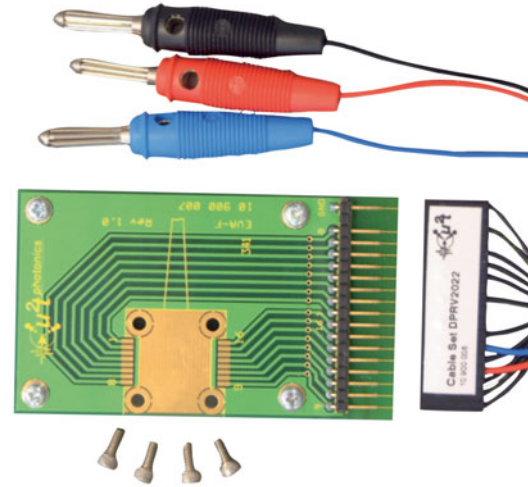
Pin#	Symbol	Description
1,3,16	N/C	Not connected
2,4,5,6,11,13,15	GND	Ground
7,8,9,10	RFU	Reserved for future use - please do not connect
12	V _{CC}	Amplifier supply
14	V _{PD}	Photodiode supply
17	outP	Positive rf output, GPPO connector
18	outN	Negative rf output, GPPO connector

Mechanical Dimensions



Accessories

The u2t Evaluation Kit EVA-DPRV serves as an easy-to-use utility to characterize the u2t photoreceiver DPRV2021A 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.

DPRV2021 A - LP

_____ specifies optical connector
LP = LC / PC (standard)
other connectors available upon request

For the Evaluation kit please use the following code.

EVA - DPRV

_____ specifies matching photodetector/photoreceiver type

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