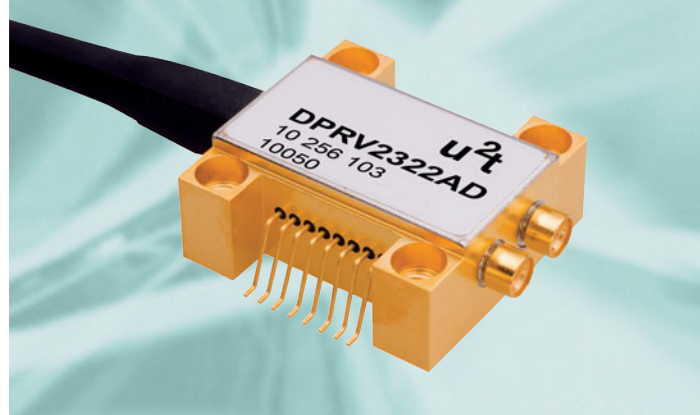


43 Gbit/s High Gain Differential Photoreceiver

Product Code: DPRV2322AD



Product Description

The photoreceiver module DPRV2322AD is a differential front-end with high differential gain of typically 1000 V/W and a bandwidth of 33 GHz. The photoreceiver module DPRV2322AD 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 differential. Incorporated blocking capacitors enable AC output coupling.

Features

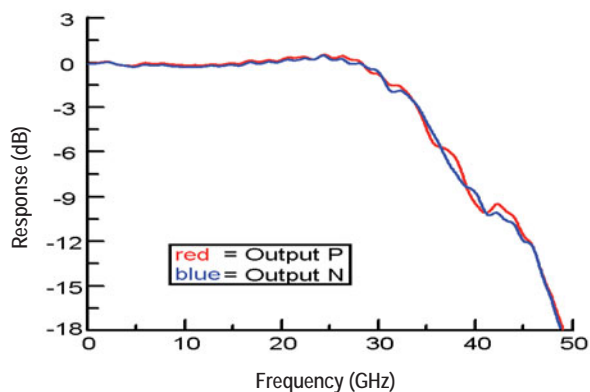
- PIN / TIA photoreceiver module
- 33 GHz bandwidth
- 1000 V/W conversion gain
- SMD package with GPPO™ connector
- Differential AC coupled output

Applications

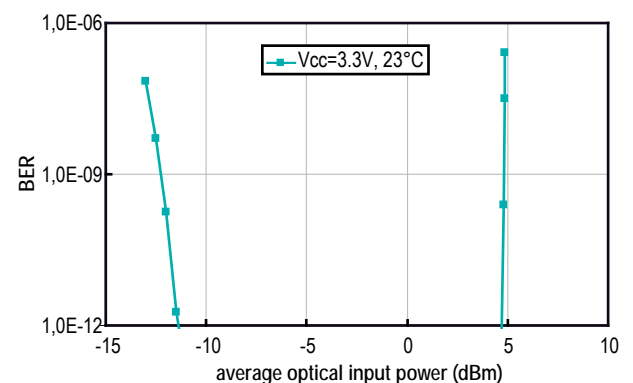
- 43 Gbit/s communication systems (OC-768)
- Transponder and line card designs

Typical Performance

Frequency Response



BER Performance



Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Storage temperature	T_{stg}	non condensing	-40		+85	°C
Photodiode 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		+75	°C
Relative humidity range	RH	Non condensing	5		85	%
Operating wavelength range	λ		1300 1530		1330 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

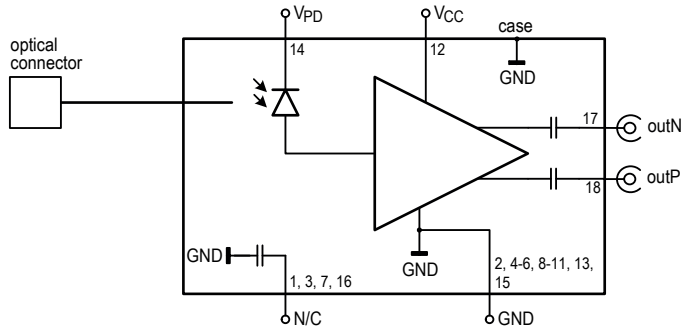
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Differential conversion gain @ 1550 nm	CG	1), 2)	600	1000		V/W
Differential conversion gain @ 1310 nm			360	600		
Photodiode DC responsivity @ 1550 nm	R	optimum polarization	0.42	0.6		A/W
Photodiode DC responsivity @ 1310 nm			0.29	0.35		
Polarization dependent loss	PDL			0.3	0.9	dB
Optical return loss	ORL	$\lambda = 1550 \text{ nm}$	27			dB
3dB cut-off frequency	f_{3dB}	2)	25	33		GHz
Lower frequency cut off	f_{3dB_L}	2)			100	kHz
Output reflection coefficient	S_{22}	0.5 - 15 GHz 15 - 30 GHz		-15 -6	-10 -2	dB
Differential output voltage swing	V_{out_diff}	$P_{opt} \geq 0 \text{ dBm}$			1200	mV
Equivalent input noise density	i_{noise}				40	pA/ $\sqrt{\text{Hz}}$
Sensitivity @ 1550 nm	Sens	3)		-11	-9	dBm
Sensitivity @ 1310 nm				-7	-5	
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) Measurements performed in single ended conditions

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 2³¹-1, back to back)

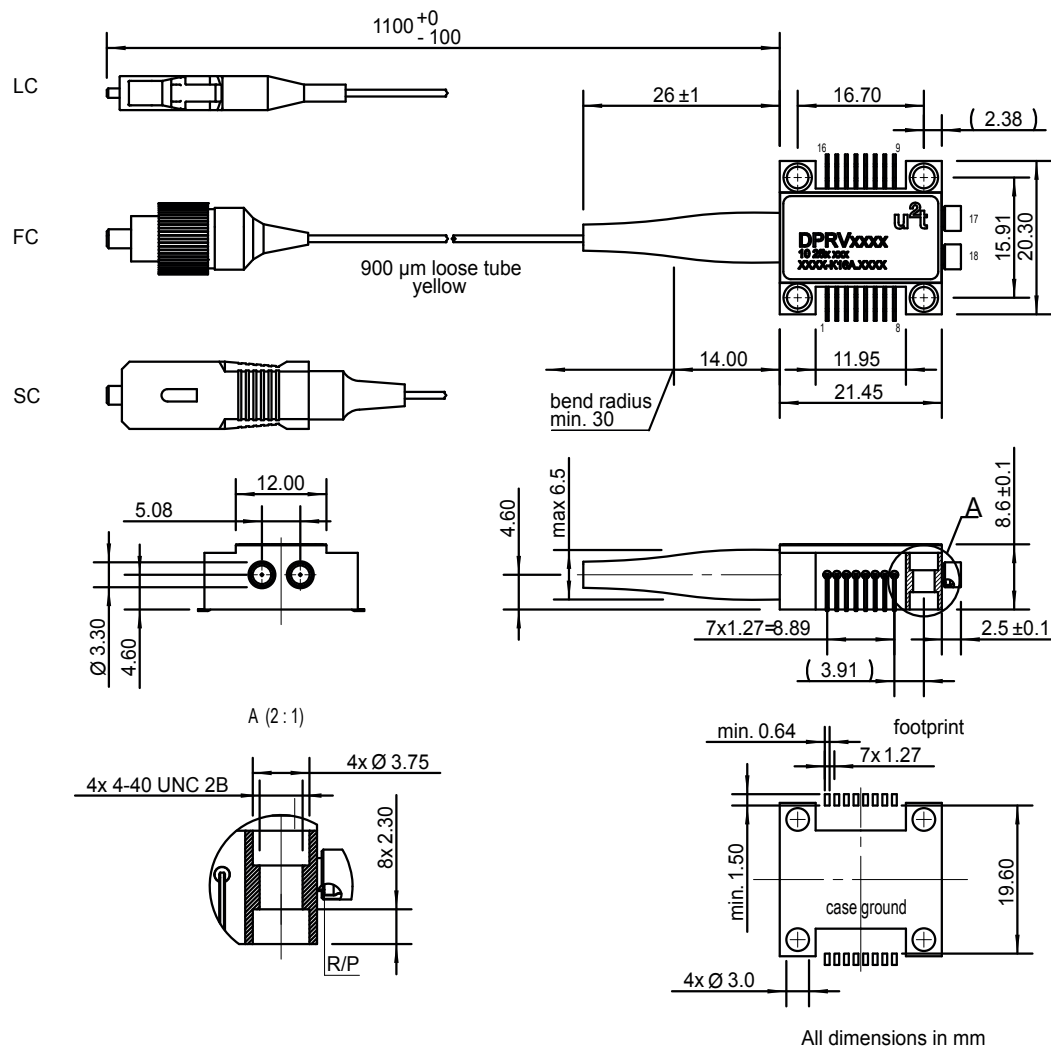
Block Diagram



Pin Description

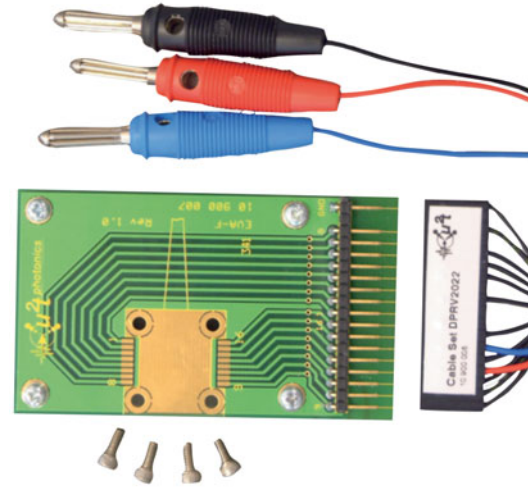
Pin#	Symbol	Description
1,3,16	N/C	Not connected, 100 nF to GND, max +5 V
2,4,5,6,11,13,15	GND	Ground
7,8,9,10	RFU	Reserved for future use - please do not connect
12	V _{CC}	Amplifier supply
14	V _{PD}	Photodiode supply
17	outN	Negative rf output, GPPO connector
18	outP	Positive rf output, GPPO connector

Mechanical Dimensions



Accessories

The u2t Evaluation Kit EVA-DPRV serves as an easy-to-use utility to characterize the u2t photoreceiver DPRV2322AD 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.

DPRV2322AD - **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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