FINISAR

Product Specification

Coherent 64 Gbaud Polarization Diversity Cartesian Phase Detector

CPDV1200R-GM

PRODUCT FEATURES

- Up to 64 Gbaud
- 40 GHz bandwidth
- Surface mount package
- GPPO® compatible RF-output interface
- Polarization diversity

APPLICATIONS

- Coherent T&M Systems
- 400 Gb/s and 1 Tb/s coherent detection
- OFDM
- Intradyne and homodyne coherent detection

The coherent detector module CPDV1200R-GM consists of an integrated polarization beam splitter and four balanced photodiodes pairs monolithically integrated with optical 90° hybrids. The detector is a fully differential optical front-end suited for up to 64 Gbaud polarization diversity x-QAM measurement applications featuring high common mode rejection ratio. The optical 90° hybrids demodulate the I/Q incident signal for each respective polarization state using external reference oscillator laser sources. The mixing products are detected by pin-photodiodes and signal is available via GPPO® compatible connectors.

ORDERING INFORMATION

CPDV1200R-GM-zz

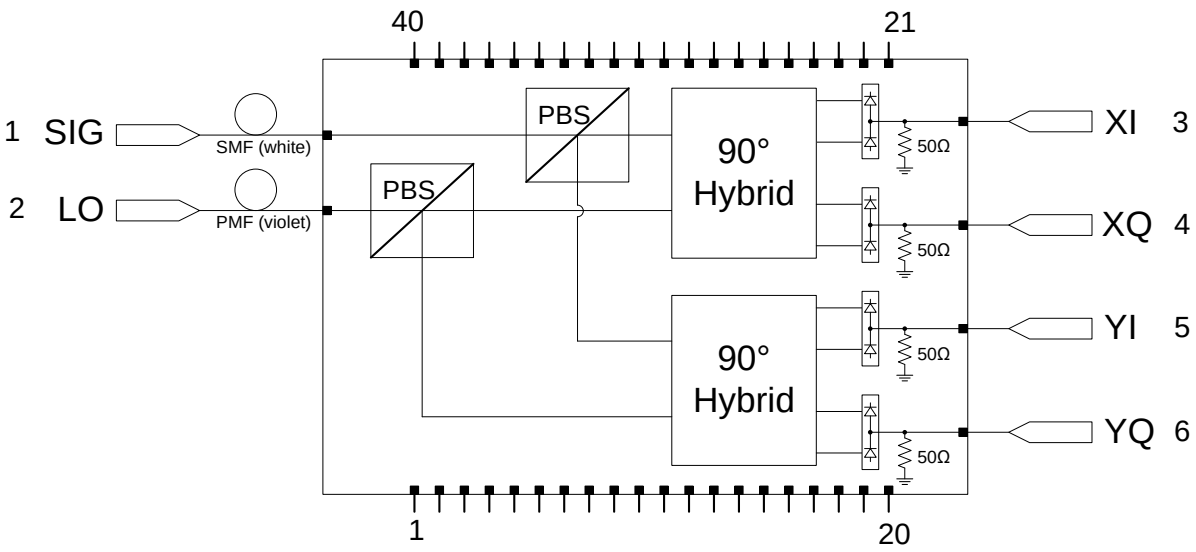
R:	R	= 50 Ω internal, DC
GM:	GM	= GPPO® compatible, male
zz:	FA	= FC/APC connector
	LP	= LC/PC connector

For accessories, please check section IX

I. Pin Description

# Pin	Symbol	Description	# Pin	Symbol	Description
1	NC	future use	40	NC	future use
2	NC	future use	39	NC	future use
3	NC	future use	38	NC	future use
4	NC	future use	37	NC	future use
5	DNU	future use (reserved for MPD, cathode)	36	T2	thermistor (NTC)
6	DNU	future use (reserved for MPD, anode)	35	T1	thermistor (NTC)
7	NC	future use	34	NC	future use
8	GND	ground reference	33	GND	ground reference
9	PD-YI+	positive I-photodiode supply voltage Y-pol.	32	PD-XQ-	negative Q-photodiode supply voltage X-pol.
10	PD-YI-	negative I-photodiode supply voltage Y-pol.	31	PD-XQ+	positive Q-photodiode supply voltage X-pol.
11	PD-YQ+	positive Q-photodiode supply voltage Y-pol.	30	PD-XI-	negative I-photodiode supply voltage X-pol.
12	PD-YQ-	negative Q-photodiode supply voltage Y-pol.	29	PD-XI+	positive I-photodiode supply voltage X-pol.
13	GND	ground reference	28	GND	ground reference
14	NC	future use	27	NC	future use
15	NC	future use	26	NC	future use
16	NC	future use	25	NC	future use
17	NC	future use	24	NC	future use
18	NC	future use	23	NC	future use
19	NC	future use	22	NC	future use
20	NC	future use	21	NC	future use

II. Block Diagram



III. Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode Bias Voltage	V_{PDP}		0		3.5	V
	V_{PDN}		-3.5		0	
Average Optical Input Power	$P_{opt, Sig}$	unpolarized CW			18	dBm
	$P_{opt, LO}$	polarized CW			18	dBm
ESD, Output Pins	V_{ESD}	human body model	-250		250	V
Fiber Bend Radius			20			mm

Notice

Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

IV. Environmental Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Case Temperature	T_{Case}		5		35	°C
Relative Humidity	RH	non condensing	5		85	%
Storage Temperature	T_{sto}		-40		85	°C

V. Operating Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode Bias Voltage	V_{PDP}		2.0	2.8	3.3	V
	V_{PDN}		-3.3	-2.8	-2.0	V
Wavelength Range	λ		1530		1570	nm
Average Optical Input Power Local Oscillator	P_{LO}	CW			16	dBm
Average Optical Input Power Signal	P_{SIG}	DP-QPSK	-20		10	dBm

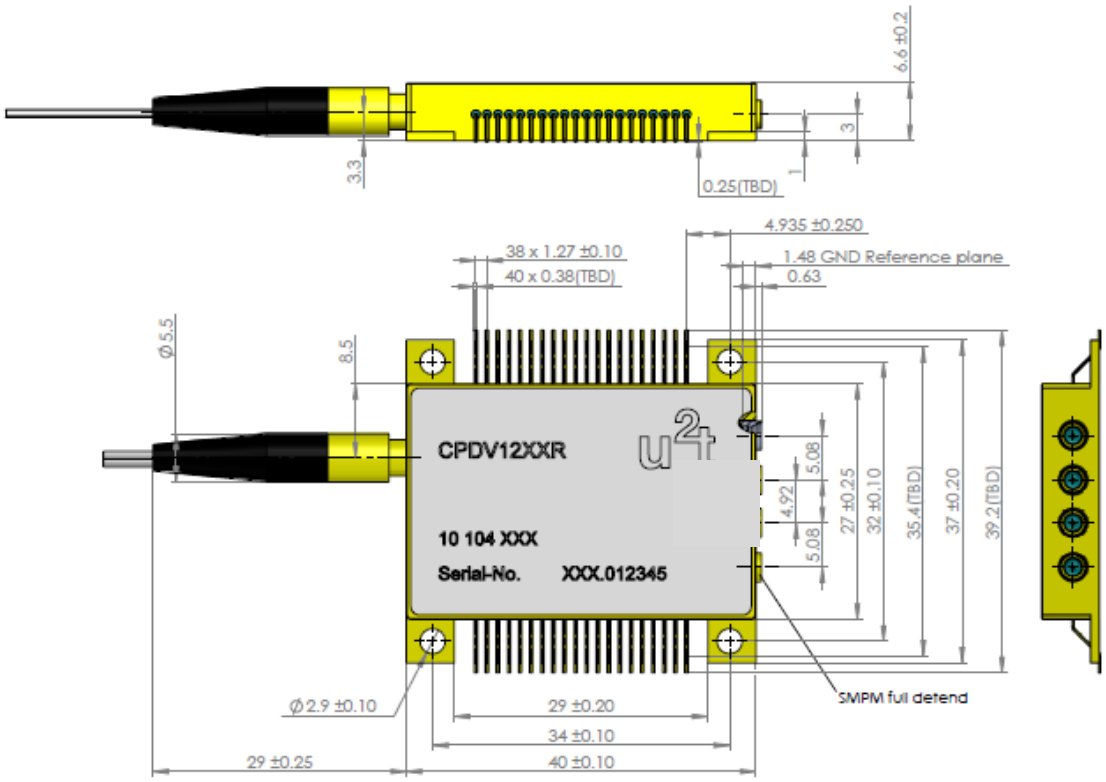
VI. Electro-Optical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photodiode Responsivity,	R_{Sig}	linear polarized, optimum transition at PBS	0.045	0.060		A/W
	R_{LO}	including 3 dB splitting loss	0.020	0.030		A/W
Photodiode Dark Current	I_{DARK}	sum of all photocurrents		100	500	nA
3dB Cut-off Frequency	f_{3dB}		40	42		GHz
6dB Cut-off Frequency	f_{6dB}		45			GHz
Electrical Output Reflection Coefficient	S_{XX}	f < 15 GHz 15 GHz - 50 GHz			-10 -1	dB dB
Common Mode Rejection Ratio[1]	CMRR	Sig & LO, DC			-18	dB_e
Skew	τ_{PN}	intra symbol		0		ps
	τ_{IQ}	inter symbol per polarization		0		ps
	τ_{XY}	inter polarization		1		ps
Imbalance[2]	I_{Sig}, I_{LO}	DC			2	dB_0
Phase Deviation from 90°	Δφ		-7.5		+7.5	Deg
Polarization Extinction Ratio for Sig & LO	PER		20			dB_0
Optical Return Loss	ORL		27			dB_0
Thermistor Resistance	R_{THERM}	T_{Case}= 25°C	9.9	10	10.1	kΩ
Thermistor B Value	$B_{25/50}$		3300		3400	K

Notes:
1. CMRR=20 log(ΔIPD / ΣIPD), 10*log(Rmax/Rmin)

VII. Mechanical Specifications*

(*All dimensions in mm, tolerances, if not stated otherwise: ±0.2 mm)



RF interface is realized in GPPO® compatible, male connectors.

VIII. Fiber Pigtail and Optical Connector

LO optical port has polarization maintaining single-mode fiber (e.g. Corning Panda PM 15-U25A). The connector key is aligned to the slow axis. Signal optical port has SMF. FC/APC connectors are used. The fiber length is 1400 +0/-200 mm.

IX. Accessories

Evaluation Kit

The evaluation kit EVA-CPDV serves as easy-to-use utility to characterize the Finisar photodetector CPDV1200R-GM under laboratory conditions. The kit consists of a PCB (printed circuit board), a DC cable set and 4 socket head screws (see picture).

ORDERING INFORMATION

EVA-CPDV

X. Revision History

Revision	Date	Description
A1	04/09/2014	• Document created.

Notes

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- Finisar Corporation reserves the right to make changes without notice.

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На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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