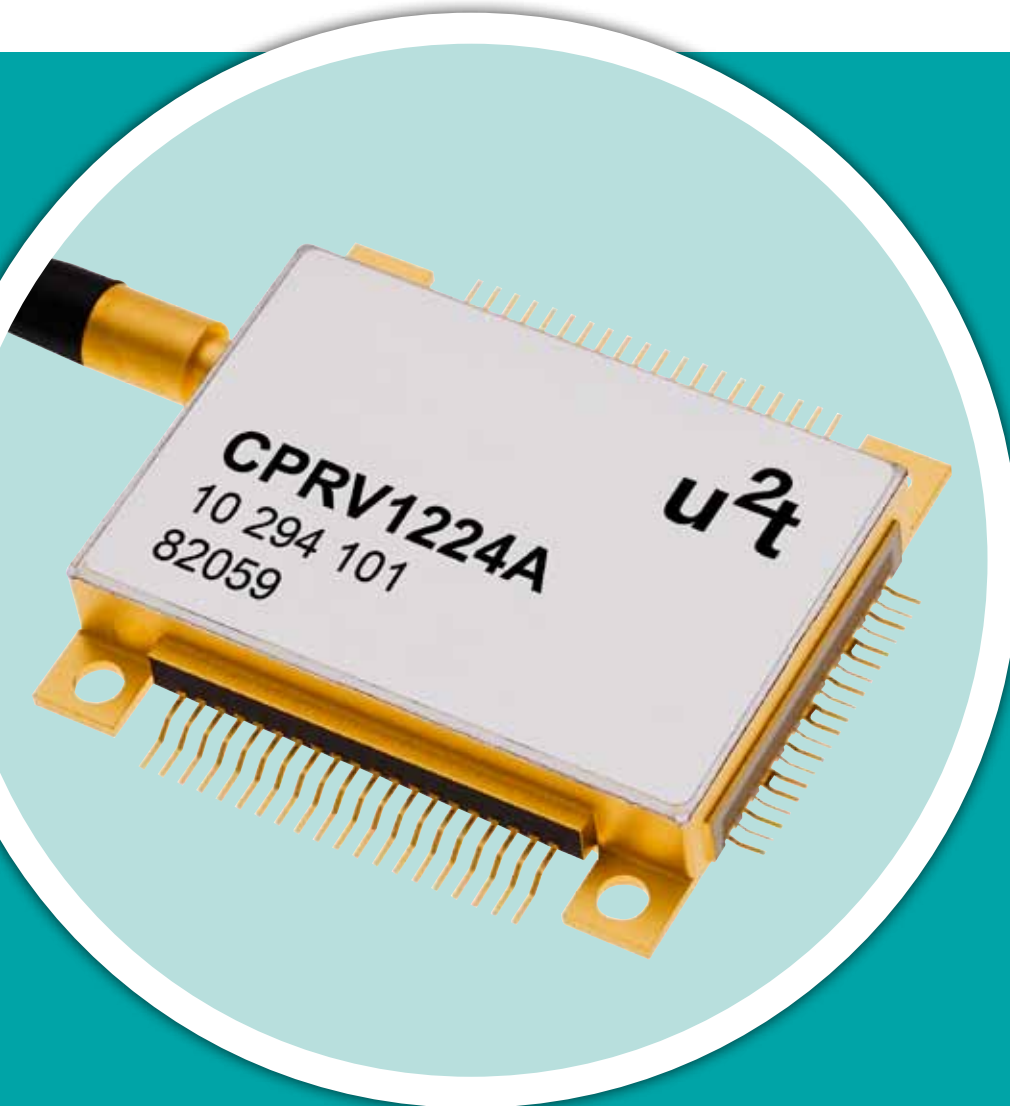


40G Coherent Receiver

Product code: CPRV1224A



Features

- Smallest, fully integrated coherent receiver
- CCRx-MSA compliant
- Data rate up to 4 x 10 GBaud
- Polarisation diversity
- Linear amplifier with peak detector output

Applications

- 40 Gbit/s Transmission Systems
- Dual polarization coherent detection QPSK receiver
- Intradyne and homodyne coherent detection

The coherent receiver module CPRV1224A consists of an integrated polarization beam splitter and four balanced photoreceivers monolithically integrated with optical 90° hybrids. The receiver is a fully differential optical front-end suited for 40 Gbit/s DP-QPSK applications featuring high linearity and 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 amplified by transimpedance amplifiers (TIA) with linear transfer characteristics.

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40G Coherent Receiver

Operation Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating case temperature range	T_{case}		0		+75	°C
Operating wavelength range	λ		1530		1570	nm
Average optical input power DP-QPSK-signal	P_{sig}	DP-QPSK	-20		6	dBm
Photodiode bias voltage	V_{PD}			3.3		V

Optical and Electrical Specifications ¹⁾

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Baud rate		DP-QPSK			12	GBaud
3dB cut-off frequency	f_{3dB}	assuming full VGA range	10			GHz
Average Photodiode responsivity	R_{avg}		50		120	mA/W
Common mode rejection ratio ²⁾	$CMRR_{sig}$	(I & Q) $f < 10$ GHz		-20		dB _e
I/Q imbalance ³⁾		DC			2	dB _o
LO/SIG imbalance ⁴⁾			-1		+1	dB _o
Phase deviation from 90°	$\Delta\phi$		-5		+5	deg
Optical return loss	ORL	1550 nm	27			dB _o
Power consumption	P_{con}				1000	mW
Polarization extinction for Sig / LO	PER		20			dB _o

Notes: 1) $\lambda = 1550$ nm, 23°C

2) $CMRR = 20 \log(\Delta I_{PD} / \Sigma I_{PD})$

3) $10 * \log(R_{max} / R_{min})$

4) $10 * \log(\Sigma R_{Sig} / \Sigma R_{Lo})$

Block Diagram and Mechanical Dimensions

