

FINISAR®

Key Features

- ▶ Fully integrated dual polarization coherent receiver:
 - Polarization beam splitter
 - Optical 90° hybrids with integrated balanced photodetectors
 - Linear trans-impedance amplifiers with peak detector output
 - Selectable automatic / manual gain control
- ▶ Conforms with OIF-DPC-RX-01.2 implementation agreement, Type 1 form factor
- ▶ Up to 32 Gbaud symbol rate
- ▶ 25 GHz bandwidth on each lane
- ▶ C- and L-band version available

Applications

- ▶ 100 Gb/s DP-QPSK coherent transmission systems
- ▶ 200 Gb/s DP-16QAM coherent transmission systems
- ▶ OIF MSA 100G long-haul transmission modules

100G Integrated Coherent Receiver CPRV1b2tA OIF-DPC-RX Type 1

Overview

Finisar's CPRV1b22A Integrated Coherent Receiver combines polarization beam splitting optics for the signal and local oscillator inputs, two matched optical 90° hybrids with monolithically integrated balanced photodetectors, and four linear trans-impedance amplifiers (TIAs) with differential outputs in a compact surface-mount package. The receiver is available in both C- and L-band versions.

The device separates the incoming signal in X and Y polarization channels. Optical 90° hybrids subsequently demodulate the incident signal for each polarization into its in-phase (I) and quadrature (Q) phase channels, relative to an external local oscillator laser source. The phase channels are converted to electrical signals by pairs of balanced photodetectors that are monolithically integrated with the optical 90° hybrids, and subsequently amplified by linear trans-impedance amplifiers (TIAs). The TIAs feature integrated peak detectors and support both manual and automatic gain control.

The CPRV1b22A conforms to the OIF-DPC-RX-01.2¹ implementation agreement, Type 1 form factor. The Integrated Coherent Receiver is RoHS compliant per Directive 2011/65/EU².

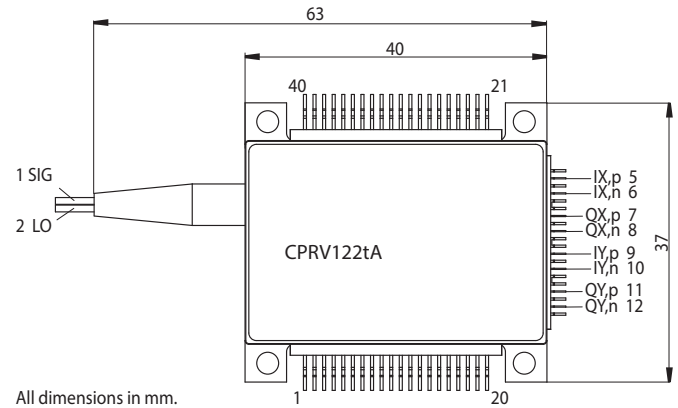
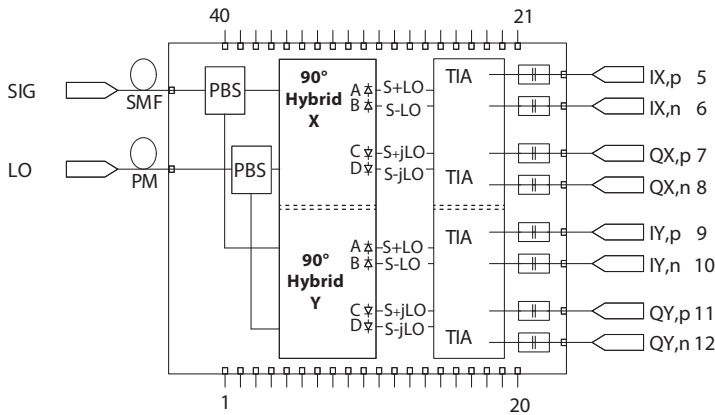
Key Advantages

- ▶ Industry standard form factor
- ▶ Field-proven, reliable, high-performance technology



100G Integrated Coherent Receiver

Block Diagram and Mechanical Dimensions



Operating Conditions

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Case Temperature	T_{case}		0		+75	°C
Wavelength Range	λ	C-band CPRV122tA L-band CPRV112tA	1530 1570		1570 1612	nm
Average Optical Input Power Signal	P_{sig}	DP-QPSK	-20		6	dBm
Supply Voltage		$\pm 5\%$		3.3		V

Optical and Electrical Specifications¹⁾

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Baud Rate		DP-QPSK			32	Gbaud
3 dB cut-off Frequency	f_{3dB}	assuming full VGA range		25		GHz
Average Photodiode Responsivity	R_{avg}	CW single input	50			mA/W
Common Mode Rejection Ratio ²⁾	$CMRR_{sig}$	DC		-20		dB _e
Imbalance ³⁾	I_{sig} I_{LO}	DC DC			2 2	dB ₀
Phase Deviation	$\Delta\phi$		-7.5		+7.5	deg
Optical Return Loss	ORL	1550 nm	27			dB ₀
Power Consumption	P_{con}			1000	1600	mW
Polarization Extinction Ratio for Sig & LO	PER			20		dB ₀

- Notes: 1) $\lambda = 1550$ nm, 23°C
 2) $CMRR = 20 \log(\Delta I_{PD} / \Sigma I_{PD})$
 3) $10 * \log(R_{max} / R_{min})$

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