

MONOLITHLY ACROMATIC INTEGRATED 120 DEGREE LOWER CONVERTER

Description:

The incorporation of reconfigurable optical add-drop multiplexers (ROADMs) in optical transport networks has provided flexibility and configuration possibilities for network operators. The introduction in the near future of achromatic ROADMs will also allow any wavelength to be added / extracted at any port. In this context, achromatic receivers can be used in the extraction ports to increase the efficiency and reduce the cost of reconfigurable optical networks. In an achromatic receiver, only by adjusting the local oscillator (LO), an individual wavelength-division multiplexed (WDM) channel can be selected and detected without using any optical filtering device (for example a demultiplexer or a filter). In particular, the present invention relates to a monolithically achromatic integrated lower 120° converter based on a 2x3 multimode interference coupler (MMI) and with three photodiodes followed by their respective TIAs with IQ recovery from an analog calibrated circuit that allows to increase to 80 the number of coincident channels efficiently, showing a good dynamic range of signal and high manufacturing performance.

Keywords:

[Communications](#), [Optical Communications](#), [Optical Receivers](#), [Integrated Optical Receivers](#)

Sectors:

[ICT](#)

Areas:

[Telecommunications](#), [Components](#), [Communications](#)



Advantages:

This lower converter makes use of the least number of power measurements necessary for the perfect recovery of the signal IQ components, resulting in an interesting alternative to conventional 90° receivers. This converter, compared to the lower balanced 90° converter (based on a 2x4 MMI), not only shows the same sensitivity to noise under ideal hardware, but also exhibits a greater dynamic signal range, a wider operating bandwidth, and greater tolerance to manufacturing errors for single-channel reception.

Uses and Applications:

The invention falls within the field of Information and Communication Technologies (ICTs), in the optical communications sector, and refers in particular to monolithically achromatic integrated lower converters. Likewise, an object of the invention is a coherent optical receiver comprising said monolithically achromatic integrated 120 degree lower converter.

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