

Title (en)

PHOTONICALLY INTEGRATED CHIP, OPTICAL COMPONENT HAVING A PHOTONICALLY INTEGRATED CHIP, AND METHOD FOR THE PRODUCTION THEREOF

Title (de)

PHOTONISCH INTEGRIERTER CHIP, OPTISCHES BAUELEMENT MIT PHOTONISCH INTEGRIERTEM CHIP UND VERFAHREN ZU DEREN HERSTELLUNG

Title (fr)

PUCE INTÉGRÉE PHOTONIQUE, COMPOSANT OPTIQUE COMPRENANT UNE PUCE INTÉGRÉE PHOTONIQUE ET PROCÉDÉ DE FABRICATION ASSOCIÉ

Publication

**EP 3201664 A1 20170809 (DE)**

Application

**EP 15794067 A 20150925**

Priority

- DE 102014219663 A 20140929
- DE 2015200463 W 20150925

Abstract (en)

[origin: WO2016050242A1] The invention relates, inter alia, to a photonic integrated chip (2) having a substrate (20), a plurality of material layers arranged on a top side (21) of the substrate (20), an optical waveguide which is integrated in one or more wave-guiding material layers of the chip (2), and a grating coupler (60) which is formed in the optical waveguide and effects beam deflection of radiation guided in the waveguide in the direction out of the layer plane of the wave-guiding material layer(s) or effects beam deflection of radiation to be coupled into the waveguide in the direction into the layer plane of the wave-guiding material layer(s). With respect to the chip, the invention provides for an optical diffraction and refraction structure (100, 100a) which carries out beam forming of the radiation before being coupled into the waveguide or after being coupled out of the waveguide to be integrated in a material layer of the chip (2) above or below the optical grating coupler (60) or in a plurality of material layers above or below the optical grating coupler (60) or on the rear side of the substrate (20).

IPC 8 full level

**G02B 6/124** (2006.01)

CPC (source: EP US)

**G02B 6/124** (2013.01 - EP US); **G02B 6/136** (2013.01 - US); **G02B 6/4206** (2013.01 - US); **G02B 6/42** (2013.01 - EP US); **G02B 2006/12097** (2013.01 - EP US); **G02B 2006/12107** (2013.01 - EP US)

Citation (examination)

- US 2004156589 A1 20040812 - GUNN LAWRENCE C [US], et al
- US 2011052114 A1 20110303 - BERNASCONI PIETRO A G [US], et al
- LIAO T ET AL: "INTEGRATED WAVEGUIDE DIFFRACTIVE DOUBLET FOR GUIDED-WAVE MANIPULATION", APPLIED OPTICS, OPTICAL SOCIETY OF AMERICA, WASHINGTON, DC; US, vol. 36, no. 22, 1 August 1997 (1997-08-01), pages 5476 - 5481, XP000720874, ISSN: 0003-6935, DOI: 10.1364/AO.36.005476
- See also references of WO 2016050242A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

**DE 102014219663 A1 20160331**; CN 106796326 A 20170531; DE 112015004443 A5 20170720; EP 3201664 A1 20170809; US 2017242191 A1 20170824; WO 2016050242 A1 20160407

DOCDB simple family (application)

**DE 102014219663 A 20140929**; CN 201580049618 A 20150925; DE 112015004443 T 20150925; DE 2015200463 W 20150925; EP 15794067 A 20150925; US 201515515486 A 20150925