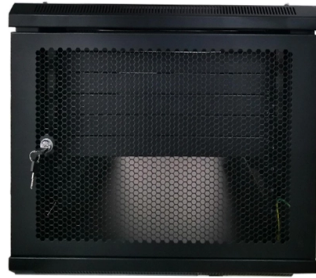


High-precision arrayed waveguide gratings for subway applications



Article Overview

High-precision AWGs offer compact, robust, and low-crosstalk optical multiplexing suitable for subway communication and sensing systems.

Overview of AWG Technology

Arrayed waveguide gratings (AWGs) are planar photonic devices that separate or combine optical signals of different wavelengths using interference in an array of single-mode waveguides. Light entering the device is split into multiple waveguides with slightly different path lengths, producing wavelength-dependent phase shifts that focus specific wavelengths at designated output ports. This allows AWGs to function as wavelength division multiplexers (WDMs) or compact spectrographs, making them ideal for high-density optical networks.

Key Performance Parameters

For subway applications, AWGs must meet stringent requirements:

- High spectral resolution: Ensures precise separation of closely spaced wavelength channels, critical for dense WDM systems.
- Low crosstalk: Crosstalk below 1-2% (-20 dB) minimizes interference between channels, maintaining signal integrity in noisy subway environments.
- High throughput: On-chip transmission efficiency of 80% or higher reduces signal loss over long fiber runs.

Article Content

APN-24-100501 1..8

Abstract. A high-performance silicon arrayed-waveguide grating (AWG) with 0.4-nm channel spacing for dense wavelength-division

Large bandwidth array waveguide grating design for FBG interrogation ...

The array waveguide grating (AWG) demodulation method has the advantages of large demodulation range, high

High Resolving Power and Highly Compact Arrayed Waveguide

The next step is to build an RDL-AWG with a larger number of arrayed waveguides and output channels, which means a higher FSR.

Review Paper of Array Waveguide Grating (AWG)

Abstract – An array waveguide grating multiplexer and demultiplexer in particular is one of most successful optical filters and it is a

Arrayed Waveguide Gratings – AWG

Figure 1: Structure of an arrayed waveguide grating. Particularly for AWGs with large numbers of channels, a high precision of the

Design, fabrication and characterization of arrayed waveguide grating ...

The structures of the AWGs we designed are composed of five main parts, including the input/output waveguides, two

Custom Arrayed Waveguide Gratings with Improved Performance

In this review, an overview of the available methods for improving the bandwidth, spectral resolution, and transmission

High-Performance Compact 48-Channel Arrayed Waveguide Grating

Increasing the number of channels typically leads to larger chip sizes, which is contrary to the trend of higher chip

(PDF) High-Resolution Arrayed-Waveguide-Gratings in

A comprehensive design of a folded-architecture arrayed-waveguide-grating (AWG)-device, targeted at applications as

(PDF) High-resolution arrayed waveguide grating-assisted passive ...

Integrated optical phased arrays (OPAs) based on arrayed waveguide gratings (AWGs) enable two-dimensional (2D)

Arrayed Waveguide Gratings

The interference of light waves in the single-mode waveguides results in wavelength-dependent throughput at the output ports.

Arrayed Waveguide Gratings on Integrated Thin-Film Lithium Tantalate

Arrayed Waveguide Gratings (AWGs) are ubiquitous and efficient photonic devices used to split and combine different wavelengths

High Resolving Power and Highly Compact Arrayed Waveguide Grating

Keywords— astrophotonics, arrayed waveguide grating, silicon photonics, photonics integrated circuits I. INTRODUCTION

Shivaprasad Umesh Hulyal Arrayed waveguide gratings in lithium ...

Fabrication was carried out on a 600 nm-thick X -cut lithium tantalate substrate using deep ultraviolet lithography at wafer scale, with

Anisotropy-free arrayed waveguide gratings on X-cut thin film ...

This leads to the first implementation of arrayed waveguide gratings on X-cut thin-film lithium niobate with various

Silicon-Based Arrayed waveguide gratings for WDM and

We compare the performance of silicon-based arrayed waveguide gratings (AWGs) with star couplers of Rowland and

High resolution, high channel count silicon arrayed waveguide grating ...

A 32×32 100 GHz silicon photonic integrated arrayed waveguide grating router (AWGR) is experimentally

On-chip arrayed waveguide grating fabricated on thin film lithium niobate

Keywords: thin film lithium niobate, arrayed waveguide grating, photonic integrated circuits Abstract: We design an on-chip 8-channel

Custom Arrayed Waveguide Gratings with Improved Performance

Arrayed waveguide gratings (AWGs) are key optical components of various new applications in telecommunication, astronomy,

Design, fabrication and characterization of arrayed waveguide grating ...

As the common devices for optical communication networks, arrayed waveguide grating (AWG) devices can be used

Subwavelength grating devices in silicon photonics

Abstract Subwavelength grating (SWG) waveguides in silicon-on-insulator are emerging as an enabling technology for

Silicon Nanowire-Assisted High Uniform Arrayed Waveguide Grating

Abstract: Determining how to improve the non-uniformity of arrayed waveguide grating (AWG) is of great significance for dense

SPIE_AWG_Manuscript_8

A promising photonic technology to achieve these requirements is Arrayed Waveguide Gratings (AWGs). We have developed our

NTT Technical Review, Vol. 19, No. 4, Apr. 2021

Abstract We describe the progress in integrated wavelength-division multiplexing (WDM) photoreceivers that feature low-loss arrayed

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