

Size Reduction Method of CPW EBG Structures Using Slow Wave Design

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DESCRIPTION OF WORK

- ◆ The goal of the work is to develop a reduction method for electromagnetic band-gap (EBG) structure size.
- ◆ Slow wave structures were studied to increase the effective dielectric constant.
- ◆ Three slow wave coplanar waveguide (CPW) EBG lines, SW CPW-EBG, designs were studied to evaluate and determine the range by which effective dielectric constant could be increased.

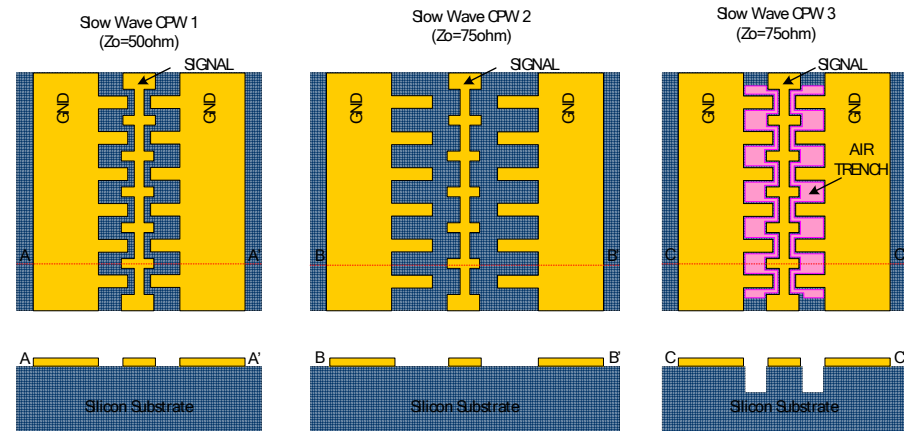


Fig. 1 Three types of slow wave CPW lines

MAJOR OBSERVATIONS

- ◆ The effective dielectric constant of the slow wave CPW lines in this work increase from 6 to 25.
- ◆ One SW CPW-EBG structure reduces the physical length of a conventional EBG structure by 45.4%.
- ◆ A second SW CPW-EBG structure reduces the length of a conventional CPW EBG structure by 37.5 and the width by 16.8%.

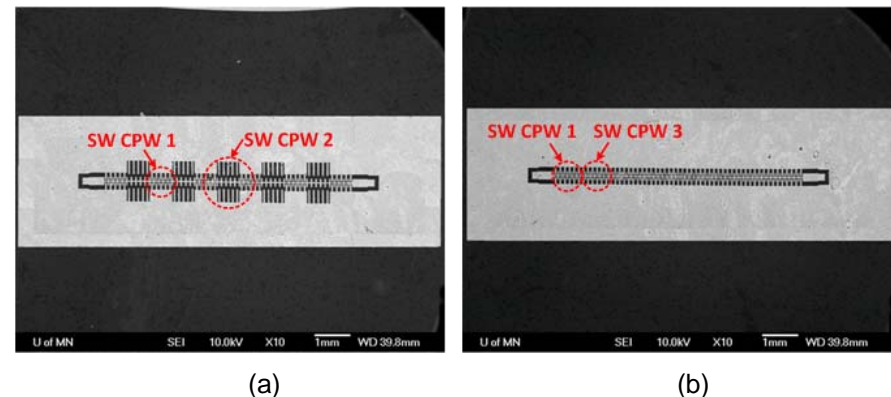


Fig. 2 The fabricated EBG Structures. (a) EBG structure A. (b) EBG structure B

Publications

- ◆ Hosaeng Kim; Rhonda F. Drayton, "Size Reduction Method of Coplanar Waveguide (CPW) Electromagnetic Bandgap (EBG) Structures Using Slow Wave Design," 7th Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems (SiRF07) 10-12 January 2007.