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Authors:Magri, Vanessa P.R. (1); Lima, Rodolfo A.A. (2); Mosso, Marbey M. (1)
Author affiliation:(1) Centro de Estudos em Telecomunicacões, Pontifícia Universidade Catõlica Do Rio de Janeiro - PUC-Rio, Rua Marquês de São Vicente, 225, CEP 22453-900, Rio de Janeiro, RJ, Brazil; (2) Grupo de Guerra Eletrônica, IPqM Instituto de Pesquisas da Marinha, Rio de Janeiro, RJ, Brazil
Corresponding author:Mosso, M.M.(marbey@cetuc.puc-rio.br)
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Abstract:This work presents the research, design, and development of guided-wave connections in SiGe semiconductor substrates.The integration of digital systems using semiconductor integrated waveguides (S-SIWG) with QAM modulation formats are highlighted for ultrafast inter-chip and intra-chip connections at 100 Gbit/s extended to the Terahertz domain. The simulations of the frequency response for the prototype model with coaxial probe excitations in the frequency range 50-150 GHz are evaluated, showing far than satisfactory performance. The S-SIWG is then simulated in the 0.5-1.5 THz bandwidth, presenting excellent insertion loss. A SiGe S-SIWG prototype was fabricated and tested at 15-60 GHz. © 2012 Wiley Periodicals, Inc.
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