Abstracts

Si/SiGe MMIC's

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Silicon-based millimeter-wave integrated circuits (SIMMWIC's) can provide new solutions for near range sensor and communication applications in the frequency range above 50 GHz. This paper gives a survey on the state-of-the-art performance of this technology and on first applications. The key devices are IMPATT diodes for mm-wave power generation and detection in the self-oscillating mixer mode, p-i-n diodes for use in switches and phase shifters, and Schottky diodes in detector and mixer circuits. The silicon/silicon germanium heterobipolar transistor (SiGe HBT) with f/sub max/ values of more than 90 GHz is now used for low-noise oscillators at Ka-band frequencies. First system applications are discussed.

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