Abstracts

RF-SoC-expectations and required conditions

A. Matsuzawa. "RF-SoC-expectations and required conditions." 2002 Transactions on Microwave Theory and Techniques 50.1 (Jan. 2002, Part II [T-MTT] (Special Issue on Silicon-Based RF and Microwave Integrated Circuits)): 245-253.

This paper discusses the expectations for the development of radio-frequency systems-on-chip (RF-SoCs) that integrate RF, analog, and digital circuits, and the conditions under which they can be realized. Future RF systems will be increasingly large and complex. However, high integration technology is expected to reduce the circuit size, number of components, and total system cost. Over the past few years, rapid progress of scaled CMOS technology and the introduction of SiGe technology have improved the performance of silicon RF devices and circuits to meet the requirements for conventional RF applications. The RF-SoC, which may be said to be the ultimate goal for RF systems, is expected to improve silicon RF devices even further. However, before this is possible, strict requirements for system perfection, continuous cost reduction, ease of function and specification change, and process portability issues must be resolved. Difficulty in lowering power consumption of RF and analog circuits and of reducing the size of passive components and analog transistors diminish the appeal of the RF-SoC. The RF-SoC in deep submicrometer technology may be an unreasonable solution for some application areas. System-in-package may be one way to address this issue.

❑ Return to main document.