Abstracts

Millimeter-wave silicon MMIC interconnect and coupler using multilayer polyimide technology

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This paper reports our latest progress in developing low-loss and low-crosstalk silicon MMIC interconnects for millimeter-wave applications. The proposed silicon/metal/polyimide (SIMPOL) structure based on multilayer polyimide technology is extremely effective in reducing noise crosstalk, and also provides very low line loss, even at the millimeter-wave regime. The measurement results of the developed SIMPOL structures demonstrate extremely low noise crosstalk (<-40 dB) in the entire frequency range (up to 50 GHz), which is limited by the dynamic range of the measurement equipment, and excellent insertion loss (<-0,25 dB/mm) up to 45 GHz. In addition, the SIMPOL concept is applied for the first time successfully in the design and fabrication of branch-line hybrids at millimeter-wave frequencies, 30 and 37 GHz.

❑ Return to main document.