Abstracts

GHz-Band Monolithic Modem IC's (Dec. 1987 [T-MTT])

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GHz-band monolithic modem IC's, such as a double balanced mixer IC, a 90° phase shifter IC, and a carrier switch IC, for high-speed QPSK modems have been developed using monolithic lumped constant circuit techniques and advanced silicon bipolar process technology and are discussed in this paper. A double balanced mixer with unbalance-balance converters and a common-mode feedback circuit has achieved an amplitude error of less than 0.2 dB/sub p-p/ and a phase error of Iew than 1.7° p-p at 1 GHz local oscillator frequency. A precise monolithic 90° phase shifter for the 1-GHz band was constructed by using variable RC phase shifters. An ON/OFF ratio of more than 65 dB for frequencies below 1 GHz has been achieved by employing a carrier switch consisting of a differential stage with a cascode circuit configuration. These IC's are applicable to QPSK modems transmitting baseband signals to the extent of 400 Mb/s at 1 GHz local oscillator frequency.

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