Abstracts

Miniaturized and broadband V-band balanced frequency doubler for highly integrated 3-D MMIC

K. Nishikawa, B. Piernas, T. Nakagawa and K. Araki. "Miniaturized and broadband V-band balanced frequency doubler for highly integrated 3-D MMIC." 2002 MTT-S International Microwave Symposium Digest 02.1 (2002 Vol. I [MWSYM]): 351-354 vol.1.

This paper presents a compact V-band balanced frequency doubler 3-D MMIC with broadband performance. The MMIC was fabricated by combining a commercial 0.15 /spl mu/m GaAs pHEMT technology with the 3-D MMIC technology. A fabricated frequency doubler MMIC, which occupies 0.92 mm/sup 2/, achieves 2.5-dBm output power and more than 15-dB fundamental signal suppression over 50-GHz to 68-GHz (30% bandwidth) for an 8-dBm input signal. A transmit MMIC, intended for 50-GHz application, realizes a 10-dBm output power and 40-dB isolation in an area of 1.48 mm/sup 2/, it is supported by input and output buffer amplifiers. These fabricated MMICs are very effective in realizing compact and highly integrated single-chip transceiver MMICs. Furthermore, they can be re-used for various V-band applications, resulting in significant cost reduction.

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