Abstracts

High-Yield W-Band Monolithic HEMT Low-Noise Amplifier and Image Rejection Downconverter Chips

H. Wang, K.W. Chang, T.N. Ton, M. Biedenbender, S.T. Chen, J. Lee, G.S. Dow, K.L. Tan and B.R. Allen. "High-Yield W-Band Monolithic HEMT Low-Noise Amplifier and Image Rejection Downconverter Chips." 1993 Microwave and Guided Wave Letters 3.8 (Aug. 1993 [MGWL]): 281-283.

High-yield W-band monolithic integrated circuits (a three-stage low-noise amplifier (LNA), and a monolithic image rejection downconverter (IRD) using the LNA as the front end followed by an image rejection mixer (IRM)) are discussed. These MMIC's were fabricated in the 0.1-µm AlGaAs-InGaAs-GaAs HEMT production line at TRW. The LNA demonstrated a typical 17-dB gain and 4.5-5.5-dB noise figure at 94 GHz. The complete monolithic IRD has a measured conversion gain of 7-9 dB with a single side-band (SSB) noise figure of 6 dB when downconverting 93-95-GHz RF signal to 50-500 MHz. The downconvertion requires an LO power of 9 dBm. The development of these MMIC's shows the increasing maturity of GaAs based HEMT MMIC technology at W-band.

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