Abstracts

High-Performance Ka-Band and V-Band HEMT Low-Noise Amplifiers

K.H.G. Duh, P.-C. Chao, P.M. Smith, L.F. Lester, B.R. Lee, J.M. Ballingall and M.-Y. Kao. "High-Performance Ka-Band and V-Band HEMT Low-Noise Amplifiers." 1988 Transactions on Microwave Theory and Techniques 36.12 (Dec. 1988 [T-MTT] (1988 Symposium Issue)): 1598-1603.

Quarter-micron-gate-length high electron mobility transistors (HEMT's) developed in our laboratory have exhibited state-of-the-art low-noise performance at millimeter-wave frequencies, with minimum noise figures of 1.2 dB at 32 GHz and 1.8 dB at 60 GHz. At Ku-band, two-stage and three-stage HEMT low noise amplifiers have demonstrated noise figures of 1.7 and 1.9 dB, respectively, with associated gains of 17.0 and 24.0 dB at 32 GHz. At V-band, two-stage and three-stage HEMT amplifiers yielded noise figures of 3.2 and 3.6 dB, respectively, with associated gains of 12.7 and 20.0 dB at 60 GHz. The 1 dB gain compression point of all the amplifiers is greater than +6 dBm. These results clearly show the potential of short-gate-length HEMT's for high-performance millimeter-wave receiver applications.

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