Abstracts

A V-Band High-Efficiency Pseudomorphic HEMT Monolithic Power Amplifier

A.K. Sharma, G.P. Onak, R. Lai and K.L. Tan. "A V-Band High-Efficiency Pseudomorphic HEMT Monolithic Power Amplifier." 1994 Transactions on Microwave Theory and Techniques 42.12 (Dec. 1994, Part II [T-MTT] (1994 Symposium Issue)): 2603-2609.

This paper presents a high-power and high-efficiency monolithic power amplifier at V-band utilizing highly reliable and manufacturable 0.15 µm InGaAs/AIGaAs/GaAs pseudomorphic HEMT fabrication technology. The performance of the power amplifier is 13.8 dB small signal gain, 13.9% power-added efficiency, and 26.83 dBm (482 mW) compressed power output at 60 GHz for unpassivated HEMT process. The same circuit with passivated process produced a linear gain of 13.2 dB, 11% power-added efficiency, and compressed output power of 25.68 dBm (370 mW). The producibility of this amplifier has been demonstrated in volume production with several wafer lots resulting in a 20% total yield through RF tests.

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