

Abstracts

Ka-Band Power PHEMT On-Wafer Characterization Using Prematched Structures

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High power Ka-band power amplifiers have been developed using monolithic prematched structures utilizing power InGaAs pseudomorphic HEMT (PHEMT) devices. On-wafer load-pull impedance data on the structures containing $0.15\text{ }\mu\text{m} \times 400\text{ }\mu\text{m}$, $0.15\text{ }\mu\text{m} \times 800\text{ }\mu\text{m}$ and $0.15\text{ }\mu\text{m} \times 1600\text{ }\mu\text{m}$ devices were obtained. Based on the above information, a two stage MIC amplifier consisting of a single $1600\text{ }\mu\text{m}$ monolithic prematched structure driving four $1600\text{ }\mu\text{m}$ monolithic prematched structures was realized. The amplifier achieved an output power of 1.6 watts (32.2 dBm) with 8.1 dB gain at 35 GHz.

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