Abstracts

AlGaAs/GaAs Heterojunction Bipolar Transistors with 4W/mm Power Density at X-Band

B. Bayraktaroglu, N. Camilleri, H.D. Shih and H.Q. Tserng. "AlGaAs/GaAs Heterojunction Bipolar Transistors with 4W/mm Power Density at X-Band." 1987 MTT-S International Microwave Symposium Digest 87.2 (1987 Vol. II [MWSYM]): 969-972.

Fabrication and microwave characterization of X-band AIGaAs/GaAs heterojunction bipolar transistors are described. MBE was used to prepare the device structure with heavily doped (1x10/sup 19/cm/sup -3/) 1000Å thick base layers. Two 2 µm x 10 µm emitter fingers separated by 2 µm (total emitter periphery of 40 µm) were used in a self-aligned emitter-base configuration. From the S-parameter measurements f/sub t/ and f/sub max/ values of 25 and 20 GHz respectively were determined. Devices operating under CW conditions produced 80 mW CW output power (2W/mm of emitter periphery) with 4 dB gain and 23% power added efficiency at 10 GHz. Under 0.25 µs pulses, 160 mW output power (4 W/mm) was obtained with 4 dB gain and 35% power added efficiency.

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