Abstracts

A high-performance AlInAs/InGaAs/InP DHBT K-band power cell

R.S. Virk, M.Y. Chen, Chanh Nguyen, Takyiu Liu, M. Matloubian and D.B. Rensch. "A high-performance AlInAs/InGaAs/InP DHBT K-band power cell." 1997 Microwave and Guided Wave Letters 7.10 (Oct. 1997 [MGWL]): 323-325.

In this work the device design and power performance of several AlInAs/InGaAs/InP double heterojunction bipolar transistors (DHBTs) are reported for 18 GHz. The power cells utilize a wet chemical etching technique to create a micro-airbridge base connection and to remove extrinsic collector material from beneath the base which both contribute to a reduced base-collector capacitance and improved f/sub max/ and power gain. For class B operation, the eight-finger 2 /spl mu/m/spl times/30 /spl mu/m power cells achieved 1.17-W output power, which indicates 4.88-W/mm emitter length, with 54% power-added efficiency (PAE) and 7.3-dB gain, This is believed to be the best combination of PAE and output power reported for this power density at K-band frequencies.

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