Abstracts

A 44-GHz monolithic waveguide plane-wave amplifier with improved unit cell design [using pHEMTs]

Youngwoo Kwon, E.A. Sovero, D.S. Deakin and J.A. Higgins. "A 44-GHz monolithic waveguide plane-wave amplifier with improved unit cell design [using pHEMTs]." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1237-1241.

A 44-GHz monolithic waveguide plane-wave amplifier (PWA) with improved unit cell design is presented in this paper. The unit cell is a two-stage direct-coupled design and satisfies size, bistability, and stability requirements of the waveguide PWA. The ultra-compact unit cell had a cell size of 0.8 mm/sup 2/, and showed a small-signal gain of 8 dB and an output power of 15 dBm at 44 GHz with a corresponding dc-to-RF efficiency of 10%. A monolithic waveguide PWA using these unit cells showed a "flange-to-flange" gain of 5 dB, an output power of 0.3 W, and an efficiency of 2% at 44 GHz.

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