Abstracts

22 GHz Performance of the Permeable Base Transistor

L.J. Kushner, M.A. Hollis, R.H. Mathews, K.B. Nichols and C.O. Bozler. "22 GHz Performance of the Permeable Base Transistor." 1988 MTT-S International Microwave Symposium Digest 88.1 (1988 Vol. I [MWSYM]): 525-528.

Small-signal and power performance of GaAs permeable base transistors (PBTs) at 22 GHz is reported. A small-signal gain of 14.5 dB was demonstrated over a 1 GHz bandwidth from a device having a 3200-Å-periodicity base grating and an 8 x 20 μm² active area. A similar device, biased for Class AB operation, achieved 45% power-added efficiency with an output power of 83 mW, and an associated gain of 5.7 dB. We believe this to be the highest reported efficiency of any device operating at this frequency and power level. An output power of 210 mW with 4.7 dB of gain and 37% efficiency were obtained from a larger device having an 8 x 40 μm² active area. A pair of these large devices in parallel delivered 370 mW with 3.7 dB gain and 33% efficiency, and 410 mW with 3.1 dB gain and 31% efficiency.

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