Abstracts

Lightly doped emitter HBT for low-power circuits

C.E. Chang, P.F. Chen, P.M. Asbeck, L.T. Tran, D.C. Streit and A.K. Oki. "Lightly doped emitter HBT for low-power circuits." 1997 Microwave and Guided Wave Letters 7.11 (Nov. 1997 [MGWL]): 377-379.

We report an approach to reduce the base-emitter capacitance in AlGaAs-GaAs heterojunction bipolar transistors (HBT's) by adding a lightly doped emitter (LDE) region together with appropriate planar (/spl delta/) doping region to a conventional base-emitter junction. This improves both the f/sub t/ and /spl beta/ for low collector current density (J/sub c/) operation while preserving the high peak f/sub t/ at high J/sub c/. When applied to a current mode logic 128/129 programmable prescaler, the LDE HBT results in a reduction in power dissipation and improved bandwidth without any circuit modifications.

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