Abstracts

Design Optimization of Microwave Power Heterojunction Bipolar Transistor Cells

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Results of a design optimization study of power heterojunction bipolar transistor cells are presented. AIGaAs/GaAs HBTs have been fabricated using a simple heterostructure design grown by molecular beam epitaxy and a novel self-aligned fabrication process which offers relatively low parasitics. The influence of power transistor cell design on device performance is emphasized. The design optimization study involved simultaneous fabrication of transistor cells with a relatively wide range of geometries. Transistors with a wide range of emitter finger sizes and number of emitter fingers, but with the same number of collector contacts and the same basic cell design approach, have been fabricated and characterized by DC and microwave testing. The results of this study provide a basis for obtaining further improvements in microwave power HBT performance.

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