Abstracts

A physical, yet simple, small-signal equivalent circuit for the heterojunction bipolar transistor

Y. Gobert, P.J. Tasker and K.H. Bachem. "A physical, yet simple, small-signal equivalent circuit for the heterojunction bipolar transistor." 1997 Transactions on Microwave Theory and Techniques 45.1 (Jan. 1997 [T-MTT]): 149-153.

A physical, yet simple, small-signal equivalent circuit for the heterojunction bipolar transistor (HBT) is proposed. This circuit was established by analyzing in detail the physical operation of the HBT. The model verification was carried out by comparison of the measured and simulated S- and Z-parameters for both passive (reverse-biased) and active bias conditions. A feature of this model is that it uses a direct extraction method to determine the parasitic elements, in particular, the parasitic capacitances. The excellent agreement between the measured and simulated parameters was verified all over the frequency range from 0.25 to 75 GHz.

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