Abstracts

A new analytical and broadband method for determining the HBT small-signal model parameters

S. Bousnina, P. Mandeville, A.B. Kouki, R. Surridge and F.M. Ghannouchi. "A new analytical and broadband method for determining the HBT small-signal model parameters." 2000 MTT-S International Microwave Symposium Digest 00.3 (2000 Vol. III [MWSYM]): 1397-1400.

An original, rigorous and accurate method for the direct extraction of HBT small-signal model parameters is proposed. The main advantage of this method is that a unique and physical-meaningful set of intrinsic parameters is extracted from the measured S-parameters for the whole frequency range of operation. The extraction procedure uses a set of closed form expressions derived without any approximation. In this sense, the extraction method is more accurate and robust in comparison with those employing special test structures or global numerical optimization techniques. Experimental validation on a HBT device with a 2/spl times/25 /spl mu/m emitter was carried out, and excellent results were obtained up to 30 GHz. The calculated data-fitting residual error over 1-30 GHz was less then 2%.

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