Abstracts

Technology independent degradation of minimum noise figure due to pad parasitics

C.E. Bilber, M.L. Schmatz, T. Morf, U. Lott, E. Morifuji and W. Bachtold. "Technology independent degradation of minimum noise figure due to pad parasitics." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 145-148.

In order to investigate the influence of pad parasitics on device noise performance, noise parameters on Si CMOS, GaAs MESFET and GaAs p-HEMT transistors were determined. Measurements of devices with various gate widths demonstrate that the parasitic losses of the pads substantially influence the noise performance independent of FET technology. To accurately separate the noise contribution of the pad and the device, a noise parameter de-embedding procedure has been developed. It is shown that for an improvement of minimum noise figure NF/sub min/ of devices on non ideal substrates, pad losses must be minimized. Especially for small input transistors of amplifiers, pad parasitics must be considered during device modeling and design. A mathematical procedure using noise correlation matrices allows the embedding and de-embedding of noise parameters.

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