Abstracts

Via Hole Studies on a Monolithic 2-20 GHz Distributed Amplifier

C. Yuen, S.G. Bandy, S. Salimian, C.B. Cooper, III, M. Day and G.A. Zdasiuk. "Via Hole Studies on a Monolithic 2-20 GHz Distributed Amplifier." 1988 Transactions on Microwave Theory and Techniques 36.7 (Jul. 1988 [T-MTT]): 1191-1195.

The role of source inductance on the performance of a distributed amplifier is investigated. A simple theoretical analysis shows that optimum performance is obtained with as low a source inductance as possible (as would be intuitively expected), and that the flattest gain and minimum gate line attenuation occur with the inductance common to the whole amplifier rather than parceled out to each FET individually, as would occur for a MIC distributed amplifier. A novel through-the-wafer via hole process has been developed for a low-inductance contact on monolithic circuits. A 2-20 GHz variable-gate-width monolithic distributed amplifier fabricated with this via-hole grounding technique has demonstrated a 2 dB gain improvement as well as a flatter gain profile compared to that without via grounding. Evidence is presented that indicates that MMIC designs may not be as ideal as expected with regard to being typified by the common inductance case.

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