Abstracts

Power and noise limitations of active circulators

G. Carchon and B. Nanwelaers. "Power and noise limitations of active circulators." 2000 Transactions on Microwave Theory and Techniques 48.2 (Feb. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 1999 Radio Frequency Integrated Circuits (RFIC) Symposium)): 316-319.

In this paper, new simple formulas expressing the power and noise limitations for three three-way circulator architectures and three quasi-circulator architectures are derived. It is shown that the power-handling capability of the active three-way circulators is determined by the required transconductance of the transistors in the circuit, while the noise is determined by the drain noise current source. The suitability of the different active circulator architectures for transmit/receive applications is investigated, We conclude that the quasi-circulators based on passive isolation offer the highest performance.

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