Abstracts

A novel configuration for 1:N multiport power dividers using series/parallel transmission-line division and a polyimide/alumina-ceramic structure for HPA module implementation

M. Nakatsugawa and K. Nishikawa. "A novel configuration for 1:N multiport power dividers using series/parallel transmission-line division and a polyimide/alumina-ceramic structure for HPA module implementation." 2001 Transactions on Microwave Theory and Techniques 49.6 (Jun. 2001, Part II [T-MTT] (Special Issue on RF Power Amplification)): 1187-1193.

A novel configuration for 1:N multiport power dividers using series and parallel division of the transmission lines with a polyimide/alumina-ceramic structure is proposed and successfully demonstrated. Since these circuits need only line divisions and mode transitions to function as power dividers, they inherently possess an extremely flat frequency response. The polyimide/alumina-ceramic substrate suits the three-dimensional arrangement of various kinds of transmission lines and their transitions. It is also useful in implementing high power amplifier multichip modules because the alumina substrate can hold all active devices or monolithic microwave integrated circuits and provides convenient interfaces between them and the power dividers. The line divisions and mode transitions are analyzed by a commercial electromagnetic simulator. Two types of 1:4 power dividers, which are series/parallel and parallel/series configurations, are fabricated. No peculiar resonance was observed over the frequency range of 1-8 GHz. The amplitude deviation over this range was less than 3.2 dB.

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