Abstracts

Evolutionary generation of microwave line-segment circuits by genetic algorithms

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Evolutionary generation of microwave line-segment circuits is presented in this paper. Topology and dimensions of line-segment circuits are expressed by sets of parameters, which describe the way of structural growth of line-segment circuits. The sets of parameters are then optimized by genetic algorithms (GAs) to satisfy specifications. Using line segments, we can obtain not only small components for limited space applications, but also large components for wide-band frequency specifications without increasing computational complexity. In the GA process, to reduce computation time, a circuit is decomposed into lines and discontinuous elements. The S-parameters are then synthesized to obtain the response of the circuit. Three filters and a power divider are designed and tested. The results have validated our proposing procedure.

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