Abstracts

Design of a novel lumped element backward directional coupler based on parallel coupled-line theory

Taek-Young Song, Jae-Ho Kim, Sang-Hyuk Kim, Jae-Bong Lim and Jun-Seok Park. "Design of a novel lumped element backward directional coupler based on parallel coupled-line theory." 2002 MTT-S International Microwave Symposium Digest 02.1 (2002 Vol. I [MWSYM]): 213-217 vol.1.

In this paper, a novel lumped equivalent circuit for a conventional parallel directional coupler is proposed. The equivalent circuit and design formula for the presented lumped element coupler is derived based on the even and odd-mode properties of a parallel-coupled line. By using the derived design formula, we have designed the 3 dB and 10 dB lumped element directional couplers at the center frequency of 100 MHz. Furthermore, a chip type directional coupler has been designed to fabricate with multilayer configurations by employing the Low Temperature Cofired Ceramic (LTCC) process. The designed chip-type directional coupler has a 10 dB coupling value at the center frequency of 2 GHz. Excellent agreements between simulations and measurements on the designed directional couplers show the validity of this paper.

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