Abstracts

Alignment tolerant stripline directional couplers

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The design methodology for a new type of alignment tolerant, broadside coupled, stripline, directional coupler is developed. The coupler uses an even number of cascaded, asymmetric, broadside coupled line stages that are electrically short (</spl lambda//sub g//8) and have been alternately inverted to achieve nearly symmetric coupling and return loss at all ports. The results demonstrate layer to layer alignment insensitivity that enables coupler designs where misalignment between layers is a critical parameter. Measured S-parameter results for 3 dB and 10 dB coupler designs are presented and agree well with theory. Coupling range variations less than 0.5 dB are achieved for a 3 dB alignment tolerant coupler design compared to 0.9 dB for a standard, symmetric 3 dB design with misalignments of +/-0.25 mm (+/-0.010"). An 8.4 dB alignment tolerant directional coupler displays a variation of 0.3 dB over the same layer to layer alignment range compared to an equivalent 10 dB standard design that has a coupling variation of 4.9 dB with similar misalignment between layers.

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