# Abstracts

## Design of Digital Loaded-Line Phase-Shift Networks for Microwave Thin-Film Applications

*F.L. Opp and W.F. Hoffman. "Design of Digital Loaded-Line Phase-Shift Networks for Microwave Thin-Film Applications." 1968 Transactions on Microwave Theory and Techniques 16.7 (Jul. 1968 [T-MTT] (Special Issue on Microwave Integrated Circuits)): 462-468.*

This paper describes the design approach, fabrication techniques, and electrical performance for two types of microwave hybrid thin-film phase shifters. Emphasis is placed on the practical aspects of the overall design and fabrication. A simplified set of design equations for loaded-line phase-shift networks is presented and divided into three categories based on the type of loading employed. The two circuits presented are a 4-bit 90° network employing single-section multibits to minimize physical size, and a 4-bit 360° network employing the 45° section as a basic building block.

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