Abstracts

Structural conditions for offering high-performance printed-circuit devices in millimeter-wave range

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The power leakage effect on printed-circuit transmission lines often produces serious performance difficulties in millimeter-wave integrated circuits. One of difficulties is that the critical frequency only for the fundamental bound mode propagation becomes lower in millimeter-wave range. Such a critical frequency for single-mode operation changes significantly depending on the structural dimensions of a line cross section. In this paper, therefore, we discuss for the first time this important issue systematically and deeply for transmission lines frequently used, and present several useful results that offer us the preferable structural dimensions of a transmission line suitable for developing high-performance millimeter-wave devices.

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