Abstracts

High performance air gap transmission lines for millimeter wave applications

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The air gap transmission lines are developed by a new multi-layer process. The developed transmission lines are air gap coaxial line, air gap strip line and air gap BMSL (buried microstrip line). Air gap transmission lines show very low signal loss and very high isolation performances. The transmission line loss of the coaxial line is less than 0.08 dB/mm up to 40 GHz. Those of the strip line and the BMSL are about 0.15 dB/mm and 0.13 dB/mm, respectively. Reduction of the parasitic coupling between signal lines is very important in high-density MICs and MMICs. The isolation characteristics of the coaxial line and the BMSL are measured. In case of coaxial lines with 2 mm coupling length and 60 /spl mu/m distance between signal lines, the coupling is less than -52 dB up to 40 GHz. Under the same conditions, the coupling of the BMSL is less than -43 dB. Therefore the air gap transmission lines are very suitable structures for high performance and high-density RF applications.

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