

小型化5位数控延迟线的设计

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摘要 设计了一种新颖的小型化5位数控延迟线. 其中, 小时延单元采用传统的右手传输线实现, 而大的时延单元采用左手传输线来实现. 该方法能够克服传统右手传输线实现大的时延单元时存在的体积和插入损耗大的缺点. 该延迟线工作在9GHz~10GHz频段上, 延迟时间调节范围可达100ps~3100ps, 时间步长间隔100ps. 整个延迟线尺寸仅10mm×20mm×0.5mm, 插入损耗小于6.2dB.

关键词 [5位数控延迟线](#) [左手传输线](#) [右手传输线](#) [单刀双掷开关](#)

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Design of the compact 5-bit time delay line

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Abstract

A new compact 5-bit digital delay line is designed and fabricated. In this design, small time delay units are realized with right-handed transmission lines, and large delay units are designed with left-handed transmission lines. This method can avoid the disadvantages of big dimensions and losses which appear in large time delay units realized with right-handed transmission lines. This delay line operates at 9GHz~10GHz, provides 100ps up to 3100ps time delay with an interval of 100ps. The dimension of whole delay line is 10mm×20mm×0.5mm, and the insert losses are less than 6.2dB.

Key words [5-bit delay line](#) [left-handed transmission line](#) [right-handed transmission line](#) [SPDT switch](#)

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