

研究简报

开关电容V/Q变换器及其在接地阻抗模拟中的应用

李文哲

北京邮电学院 北京

收稿日期 1987-4-15 修回日期 1989-4-14 网络版发布日期 2010-4-2 接受日期

摘要

文中提出一个V/Q变换的广义跨导概念,并应用在开关电容阻抗模拟中。使用V/Q变换器,可以用电压传递函数实现所希望的阻抗函数。由此概念出发,分别导出了前差FD,后差BD和双线性S/Z变换的三种接地开关电容频变负阻SC-FDNR电路。如果所选用的电压传递函数电路对杂散电容不灵敏,那么实现的模拟阻抗电路对杂散电容也是不灵敏的。作为文中的一个例子,用FD-FDNR电路组成一个谐振回路,实验表明其频响特性与理论分析相一致。

关键词 [有源网络](#) [开关电容滤波器](#) [开关电容变换器](#)

分类号

SWITCHING CAPACITANCE V/Q TRANSVERTER AND ITS APPLICATION IN GROUNDED IMPEDANCE SIMULATION

Li Wenzhe

Peijing Institute of Posts and Telecommunications,Beijing

Abstract

A concept of general transconductance of V/Q (voltage/charge) transformation is proposed, and applied to the simulation of switching capacitance impedance. By Using V/Q transverter, the expected impedance function can be implemented by means of volrage transfer function. Starting from this concept, the switched capacitor-FDNR (frequency dependent negative resistor) circuits of three kinds of S/Z transformation (i.e. forward differential SfZ transformation, backward differential S/Z transformation, bilinear S/Z transformation) are respectively deduced. If the selected voltage transfer function circuit is not sensitive to stray capacitance, then the implemented simulation impedance circuit is also not sensitive to stray capacitance. As an example, a resonant loop is composed of forward differential FDNR circuit. The experiments show that the characteristics of its frequency response coincide with the theoretical analysis.

Key words [Active electric network](#) [Switching capacitance filter](#) [Switching capacitance traasverter](#)

DOI:

通讯作者

作者个人主页 [李文哲](#)

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(789KB\)](#)
- ▶ [\[HTML全文\]\(OKB\)](#)
- ▶ [参考文献\[PDF\]](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“有源网络”的 相关文章](#)
- ▶ 本文作者相关文章
- [李文哲](#)