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Chapter 7 - RF-MEMS for 5G: high performance switches and reconfigurable passive networks

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Abstract

This chapter discusses the potential of radio frequency microelectromechanical systems (RF-MEMS) technology in meeting the challenging requirements of 5G emerging applications. The chapter begins by discussing the evolution of RF-MEMS technology and how it was affected by market expectations and forecasts. It is observed that the widespread use of smartphones and the rise of 4G-LTE created a need for RF passive networks with unprecedented capabilities in terms of reconfigurability/tunability, which marked the beginning of RF-MEMS breakthrough into mass-market applications.

The chapter then focuses on the critical application field of 5G and discusses the key specifications required for basic RF passive components by 5G applications. A list of passives that are of interest for 5G is composed, and a set of reference desired characteristics is reported. The discussion then moves on to the technical aspects of RF-MEMS technology and solutions, with practical examples of RF-MEMS-based devices reported, leveraging both experimental data and simulations of their electromagnetic characteristics. The chapter concludes by introducing and discussing two more complex design solutions, including a multistate RF-MEMS-based impedance matching network.

References (0)

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