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Research Letter

Investigation of CMOS Varactors for High-GHz-Range Applications

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Abstract

This paper explores a variety of different CMOS varactor structures for RF and MMICs. A typical 0.18 μm CMOS foundry process was used as the study platform. The varactors' capacitance-voltage characteristics and cutoff frequencies have been examined up to 55 GHz. The primary aim of this work is to design varactors that can improve nonlinear-transmission-line (NLTL) pulse-compression circuits. The results should also be valuable for other applications up to millimeter wavelengths.