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标题: A 186 to 212 GHz Downconverter in 90 nm CMOS

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摘要: The design and measurements of a 200 GHz downconverter in 90 nm standard CMOS are presented. A positive conversion gain of +6.6 dB, a noise figure of 29.9 dB and an output bandwidth of 3 GHz are measured for an LO power of -14.9 dBm. The conversion gain remains within 3 dB for an RF frequency between 186 and 212 GHz. Downconversion of BPSK and QPSK signals is demonstrated with eye diagrams and constellation plots with data rates over 4 Gbit/s. A mathematical analysis is made of the MOSFETs in the triode region and a new small-signal parameter κ is introduced, which enables the design of the mixing transistors for minimum conversion loss.

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