

Abstracts

Monolithic rat-race mixers for millimeter waves

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In this paper, we report on fully monolithic millimeter-wave Schottky-barrier diode (SBD) down-converters with an IF amplifier using heterojunction bipolar transistors (HBT's). A rat-race circuit is used for the mixer, and is analyzed using a harmonic-balance simulator. The measured conversion gain and the isolation are 7.1 and 29 dB in the V-band design, and 8.0 and 25 dB in the W-band design, respectively. The conversion gains are matched well with the circuit simulation.

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