A Novel HBT Frequency Doubler Design for Millimeter-Wave Applications

In this paper we present a novel HBT frequency doubler design for millimeter-wave application. A HBT frequency doubler theory is described which leads to accurate design equations for optimal performance. The developed theory shows that an optimal HBT frequency doubler can be achieved using a novel second harmonic feedback network. Preliminary measurements on a frequency doubler implemented in a high-speed InP DHBT technology demonstrates an increase in the maximum output power from -14 dBm to -11.5 dBm at an input frequency of 31.4 GHz due to the presence of the second harmonic feedback network.

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