Abstracts

High-power millimeter-wave planar doublers

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This paper presents two different planar doubler designs for MM-wave applications. The doublers are fabricated using two Schottky varactor diodes in series for high power operation. The high-Q design (Q=6) results in a conversion loss of 6.4 dB at an output frequency of 72-73 GHz. The low-Q design (Q=1.6) results in a conversion loss of 9.6/spl plusmn/0.7 dB from 64-78 GHz at -2 V bias, and delivers 71 mW at 74 GHz for an input power of 490 mW (conversion loss of 8.4 dB, at optimal bias of -7 V). The output power shows no sign of saturation, and is limited to 71 mW due to the input source power. The results are quoted "on-chip" and are state of the art for MM-wave planar multipliers. The application areas are in automotive collision avoidance radars and MM-wave communication systems.

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