

High-Power MM-Wave Sources based on Schottky Diodes

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Abstract

A novel approach has been developed at ACST for realization of high-power frequency multipliers in MM/SubMM-Wave range. This approach is based on discrete Schottky structures with monolithically-integrated diamond heatspreader. This technology allows a very efficient heat dissipation from hot area of the diode structure and allows to increase power-handling capability by several times in comparison to traditional diodes on GaAs-substrate. Experimental results demonstrate feasibility of state-of-the-art conversion efficiency in combination with high power-handling capability. As a result, up to 180 mW and up to 40 mW peak output power has been demonstrated at 150 GHz and at 300 GHz, respectively, from a single-chip multiplier (no power combining).