

Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz

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A cryogenic, single-ended, fundamental frequency mixer is reported. Contrary to common practice, the mixer utilizes a Schottky diode with high zero bias capacitance of 7 fF and a very short whisker (less than 90 μm). This unusual approach together with a careful design and optimization have yielded an extremely broadband, low-noise mixer which, when fixed tuned and cooled to 21K, has a single sideband (SSB) mixer temperature less than 600K for a local oscillator frequency range of greater than 200 GHz to 270 GHz.

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