A 0.4 dB noise figure wideband low-noise amplifier using a novel InGaAs/InAlAs/InP device

Materials Science in Semiconductor Processing, Volume 14, Issue 2, June 2011, Pages 89–93.

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Abstract

In this work, the design of a novel low-noise amplifier (LNA) based on 1 μm gate-length InGaAs/InAlAs/InP pHEMT transistors is discussed. Designed for radioastronomy applications, this amplifier exploits a common-drain configuration as input stage and a common-source inductive degeneration topology as output stage. It exhibits a maximum gain of 30 dB within an input 1 dB compression point of −16 dBm. The noise figure is 0.4 dB with an input return loss greater than −10 dB and an output return loss of −12.5 dB. The LNA consumes 85 mW from a 1.5 V power supply.

Keywords : HEMT; LNA; SKA; SKADS; Telescope.

Link http://www.sciencedirect.com/science/article/pii/S1369800110000934