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Author Yu-Sheng Lin
Author's Email Address No Public.
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Abstract
The thesis proposes low-noise amplifiers (LNAs). For the 2.4 GHz ISM-band, the bipolar junction transistors (BJTs) are used to design single- and two- stage LNAs. The 2.4 GHz LNAs are implemented on 1.6 mm-thick FR4 substrates. For the 28 GHz Ka-band, the two-stage LNAs are implemented in 0.15 μm GaAs/InGaAs pseudomorphic high-electron mobility transistors (PHEMTs) processes. The circuit is used in a multi-function transmit/receive (T/R) module for local multipoint distribution system (LMDS). The 28 GHz LNAs exhibit a gain of 21 dB, a noise figure less than 1.5 dB in the 27.5-29.5 GHz range. The chip size of this MMIC LNA is 1.5x1 mm2.
Advisory Committee Yu-Shyan Lin - advisor

Fuh-Cheng Jong - advisor

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