

Multifunction Small-Signal Chip Set for Transmit/Receive Modules

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This paper presents design and test results for small-signal multifunction MMIC's for C-band transmit/receive (T/R) modules. This chip set includes the entire receive path and a portion of the transmit path (seven stages of amplification and 11 passive circuits) in just four chips. These IC's, fabricated with the multifunction self-aligned gate (MSAG) process, demonstrate a high level of integration, excellent performance, and a good yield. The variable-gain low noise amplifier has 30 ± 1 dB gain and 2.5 dB noise figure, the phase shifter/SPDT switch has 8 ± 1 dB loss, the transmit/receive buffer amplifier has 6.5 ± 0.2 gain and 3.5 dB noise figure, and the variable gain buffer amplifier has 8.5 ± 0.5 dB gain and 2.5 dB noise figure.

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