Abstracts

A 2.6 V GSM/PCN dual band variable gain low noise RF down conversion mixer

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As a building block for a GSM/PCN dual band RF transceiver IC, a low noise variable gain RF down conversion mixer is designed and fabricated using a 15 GHz-f/sub T/, 0.5 /spl mu/m 3-metal 2-poly BiCMOS process. Careful consideration is paid to the low noise performance of the mixer. Moreover, using constant-impedance input/output stages, RF input and IF output return losses are maintained under -16 dB for both high and low gain modes. Measured gain and DSB noise figure of the mixer are 10.9 dB and 9.1 dB, respectively, for GSM band, and 9.6 dB and 8.1 dB, respectively, for PCN band. Gain difference between high and low gain modes is 11 dB and 11.8 dB for GSM and PCN, respectively. Total DC currents are 13 mA for GSM and 11.5 mA for PCN from a 3 V supply voltage. Mixer performance is maintained with supply voltage down to 2.6 V.

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