

A low-voltage 6-GHz-band CMOS monolithic LC-tank VCO using a tuning-range switching technique

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A low-voltage 6-GHz-band monolithic LC-tank VCO has been fabricated using 0.2- μm CMOS/SIMOX process technology. The VCO features a tuning-range switching technique to achieve a wide tuning range. The output frequency range is between 5.71 and 6.21 GHz owing to the tuning-range switch. With the tuning-range switch on or off, the phase noise is about -100 dBc/Hz at 1-MHz offset and about -120 dBc/Hz at 10-MHz offset frequency at the supply voltage of 2 V, and the VCO can oscillate at over 6.0 GHz with 1.1-V supply voltage. In that case, the phase noise is also about -100 dBc/Hz at 1 MHz offset. The dissipation current of the VCO core is 21.4 mA at 2.0-V supply voltage and 7.4 mA at 1.1-V supply voltage.

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