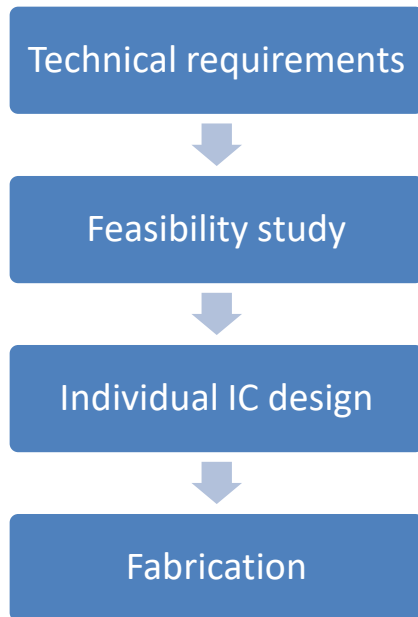


Design service

IHP offers full-custom circuit design service for high-frequency radar systems. According to your individual needs, we design electro-optical circuits or use available design IPs to fulfill your technical requirements. All designs are fabricated at IHP.



- Modular and scalable multi-band transceiver design in IHPs 0.13 μm SiGe BiCMOS technology
- Highly-integrated radar transceivers with mixed-signal fractional-N PLL
- Multi-channel transceivers for phased-array and MIMO radar applications
- Highly miniaturized radar sensor with on-chip antennas
- High-performance on-chip antenna arrays



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Leibniz-Institut für innovative Mikroelektronik

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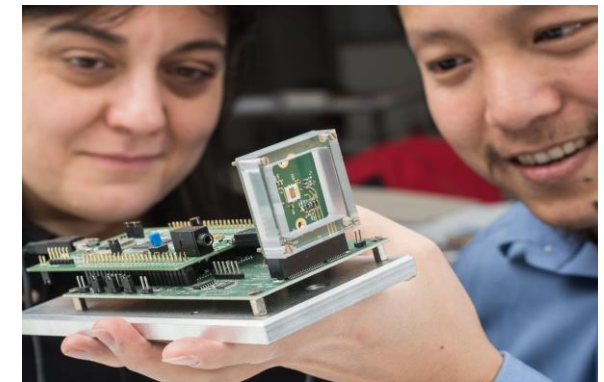
05/2021



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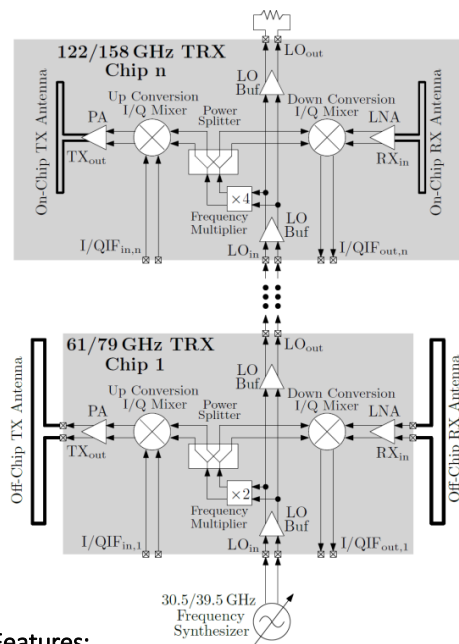
IHP Radar Sensors

Fully-Integrated Multi-Band Transceivers



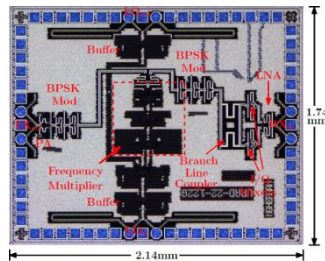
We design your circuits based on
available IPs in IHP's technologies

Scalable Multi-Band Transceivers

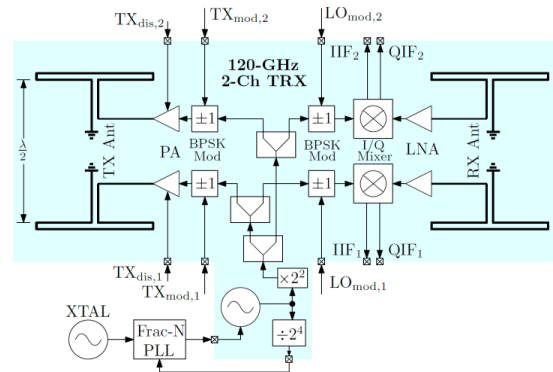


Features:

- Multi-purpose multi-band fully-differential transceivers for MIMO radar applications
- 61/79 GHz transceivers for high-dynamic range applications and 122/158 GHz transceivers for high-resolution applications
- Frequency multipliers scale 30.5/39.5 GHz LO signal to 61/79 GHz as well as 122/158 GHz
- Transceivers equipped with BPSK or vector modulators, PA, LNA, I/Q mixers
- Transceivers can be cascaded to build a daisy chain with flexible number of MIMO channels

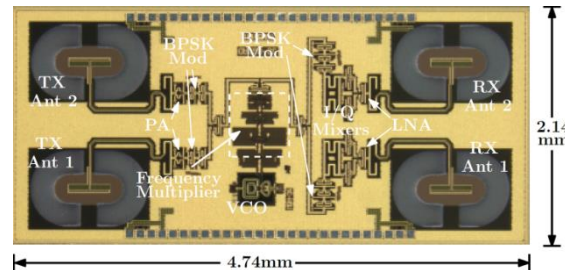


Fully-Integrated Multi-Channel Radar Transceiver With On-Chip Antennas

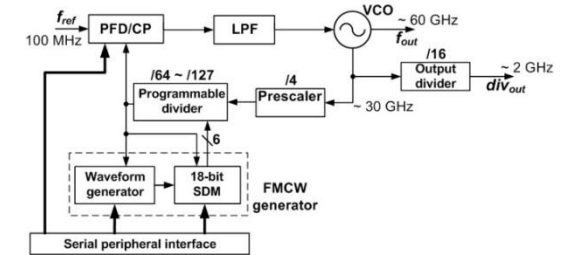


Features:

- MIMO radar transceiver for measurements of distance and relative angle of objects
- Efficient on-chip folded dipole antennas using localized backside etching technique
- Integrated LO signal generation unit consisting of VCO, prescaler and frequency multiplier
- Integrated BPSK modulators in TX and RX
- Integrated power amplifiers and I/Q receivers



Mixed-Signal Fractional-N PLL - based Frequency Synthesizer with Ramp Generation



Features:

- Multi-rate chirp generator for FMCW radar
- SPI interface for programming chirp generator
- Sigma-delta modulator with 18-bit resolution
- Push-push VCO
- Prescaler and programmable divider
- Phase-frequency detector and current steering charge-pump

