FHR170RM

D-Band FMCW Radar MMIC

Contact:

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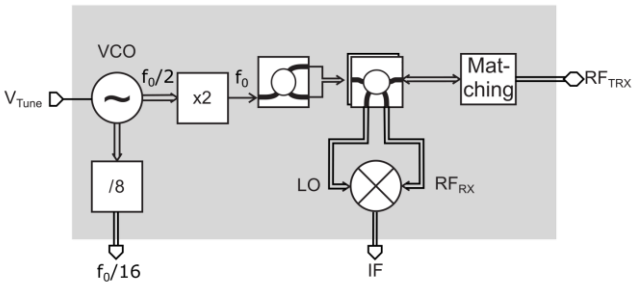
Description

FHR170RM is a large bandwidth frequency modulated continuous wave (FMCW) monolithic microwave integrated circuit (MMIC) intended for high precision monostatic D-Band radar modules. The chip features a voltage controlled oscillator (VCO) that can be modulated by an external phased locked loop via the frequency divided output signal. The received signal is down-converted by an integrated direct down conversion gilbert cell mixer. The MMIC has been successfully evaluated in a D-Band radar sensor achieving a range resolution of 3.3 mm.

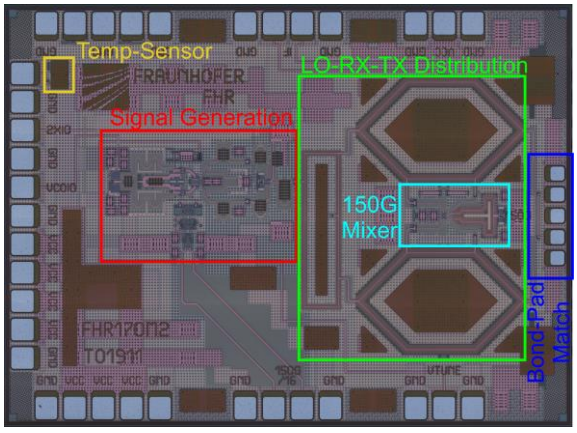
Specifications

Technology	**Infineon B11HFC, SiGe-BiCMOS**
Center Frequency [GHz]	**148**
Bandwidth [GHz]	**56**
Architecture	**monostatic**
Channels	**1 TRX**
$P_{out,MMIC}$[dBm]	**-7**
$P_{DC,MMIC}$ [mW]	**340**
Dimension [µm]	**1964 x 1448**

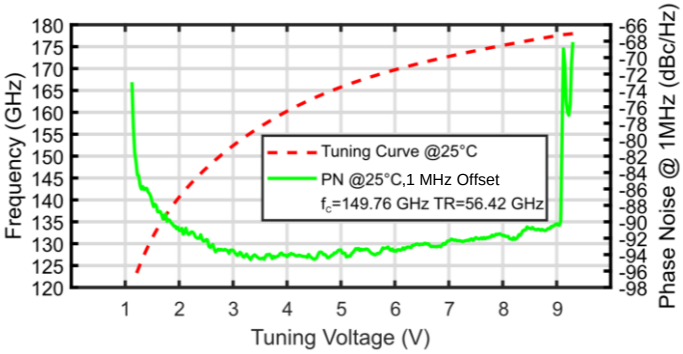
Block Diagram



Microphotograph



Tuning Curve and Phase Noise



Further Reading

S. Hansen, C. Bredendiek, G. Briese, A. Froehly, R. Herschel and N. Pohl, "A SiGe-Chip-Based D-Band FMCW-Radar Sensor With 53-GHz Tuning Range for High Resolution Measurements in Industrial Applications," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 70, no. 1, pp. 719-731, Jan. 2022, doi: 10.1109/TMTT.2021.3121746.