

W-Band FMCW Radar MMICs

FHR94G: Dual VCO Architecture
FHR94M: Single VCO Architecture

Contact:

Jan Wessel,
 Jan.wessel@fhr.fraunhofer.de

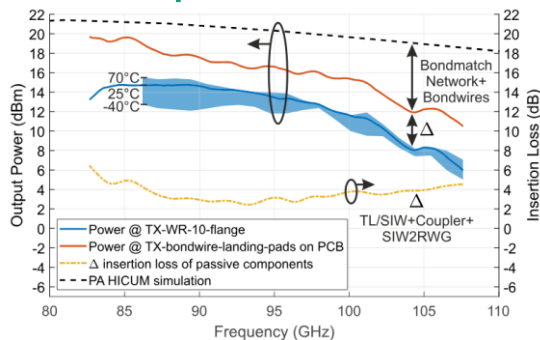
Description

The 94GHz MMIC family features high output power and bandwidth in the 94 GHz band in a compact SiGe chip. Up to two dedicated receive channels are integrated on one MMIC, offering high flexibility in its applications (AoA, polarimetric measurements). In the 94GHz family, single-PLL for minimal system design and dual-PLL architectures for best broadband performance are available. The MMIC has been successfully evaluated W-Band radar sensor achieving a detection ranges of more than a kilometer.

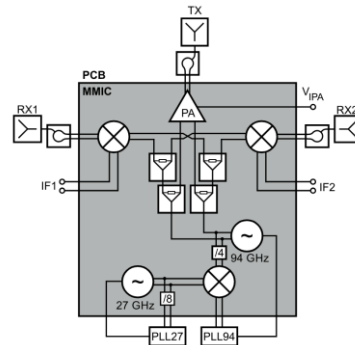
Specifications

Technology	Infineon B11HFC, SiGe-BiCMOS
Center Frequency [GHz]	96
Bandwidth [GHz]	26
Architecture	bistatic
Channels	1 TX / 2RX
$P_{out,MMIC}$ [dBm]	19.7
$P_{DC,MMIC}$ [mW]	840 (2RX)
Dimension [μ m]	1448 x 1448

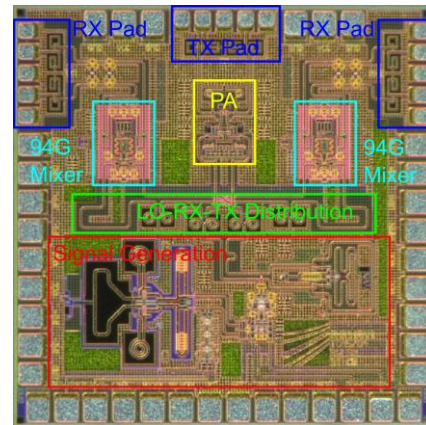
Output power vs. frequency and temperature



Block Diagram



Microphotograph



Further Reading

B. Welp et al., "Versatile Dual-Receiver 94-GHz FMCW Radar System With High Output Power and 26-GHz Tuning Range for High Distance Applications," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 68, no. 3, pp. 1195-1211, March 2020, doi: 10.1109/TMTT.2019.2955127.