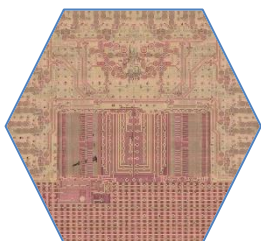
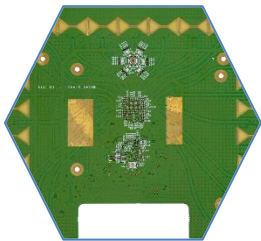




Vayyar VYR2401 4D UWB Radar Imaging SoC

Deep dive analysis of Vayyar's 4D UWB Radar Imaging System-on-Chip from the Walabot Home Fall Detection System.



Title: Vayyar VYR2401 4D UWB Radar Imaging SoC

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Historically, radar technology has been applied to industrial and defense applications. In 2020, this field still claim 75 % of the market; automotive applications started before 2010, and the market has maintained a 16% growth rate. Vayyar, a startup company has seen the potential of a new market in medical and consumer applications, currently with 0.13 % share. The Ultra-Wide Band (UWB) Radio Frequency (RF) System-on-Chip (SoC) from the company was introduced onto the market in 2013. Having first developed radar technology in medical applications such as breath-based cancer detection and fall detection the company is now diversifying into in-cabin monitoring and ultra-short-range radar in automotive. This report analyses the UWB 4D Imaging RF Radar SoC, VYR2401, extracted from the Walabot Home system that detects falls using the C and X bands.

Walabot is the consumer brand from Vayyar that offers UWB 4D imaging systems. The company built all its systems from the RF SoC manufactured by Vayyar. The first SoC developed by the company was the VYR2401, analyzed in this report. This chip is used in a smartphone add-on device that detects pipes and cables and behind walls and in a fall detection system torn down in this report.

The attraction of the Vayyar solution is the simplicity of integration of the system. The

RF SoC features an on-chip Digital Signal Processor (DSP) that processes the data from the transceiver. With an external Microcontroller Unit (MCU), it became understandable by any processor with machine learning features on the market like a Snapdragon from Qualcomm.

The report includes a full investigation of the component and its integration in the Walabot Home System. It features a detailed study of the structure of the RF board and the Monolithic Microwave Integrated Circuit (MMIC), including die analysis, process, and a Printed Circuit Board (PCB) cross-section. It contains a complete cost analysis and a selling price estimation of the RF SoC. Finally, it features a technical and cost comparison with the radar chipset from Infineon integrated in the Google Pixel 4 XL and the Antenna-on-Package system from Texas Instruments, model AWR1843AoP.

COMPLETE TEARDOWN WITH

- Detailed photos and cross-sections
- Precise measurements
- Material analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated sales price
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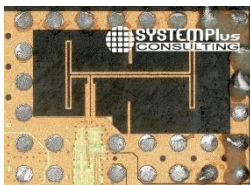


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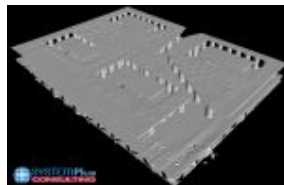


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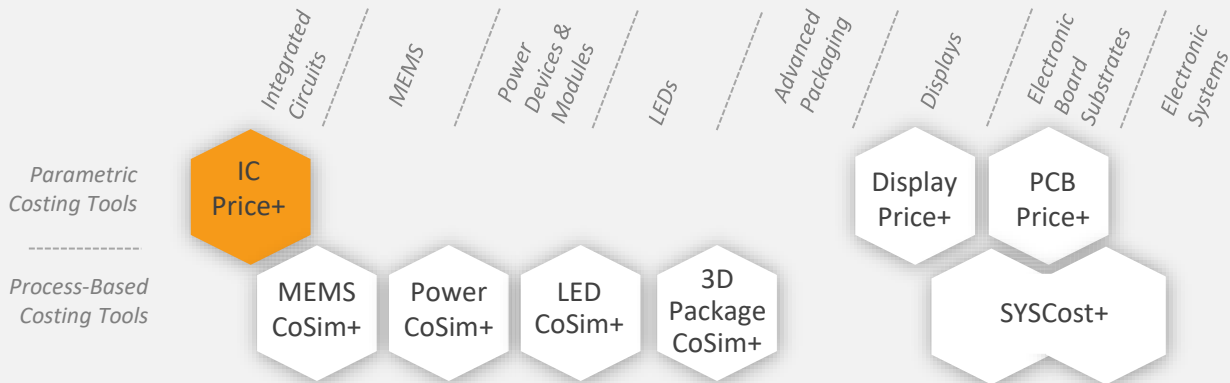


Infineon’s Radar Technology and Knowles’ Machine Learning drive Google Pixel 4XL Gesture Recognition
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