Delphi RACam: Integrated Radar and Camera - Complete Tear-Down Analysis

Description:
Delphi is the first to provide a single system combining 76Ghz Radar and Vision Sensing. With a compact design the system can be integrated behind the windshield and enables a broad array of active safety features, as lane tracking, collision avoidance or adaptive cruise control.

The visual detection is performed by a 1/3” CMOS Image Sensor supplied by a leader in the CIS automotive industry. The sensor is surmounted by a specific 7-lens module and the Mobileye EyeQ3 SoC is used for video processing. Concerning the radar function, Receiver and Transmitter chips from Infineon using SiGe HBT technology are assembled by wire bonding on the RF Board. The Antenna board uses a PTFE-based substrate and is equipped with planar antennas for transmission and reception of the RF signals.

Based on a complete teardown analysis of the Delphi RACam, the report provides the bill-of-material (BOM) and the manufacturing cost of the system. The report also includes analysis of the Image Sensor and Lens module. A structural analysis, with a comparison with Bosch MRR1, highlights the technical choices in RF design made by Delphi.

A physical analysis and manufacturing cost estimation of the Infineon RF chips is available in a separate report, which also includes a comparison with MMICs used in the Bosch MRR1 Radar.

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