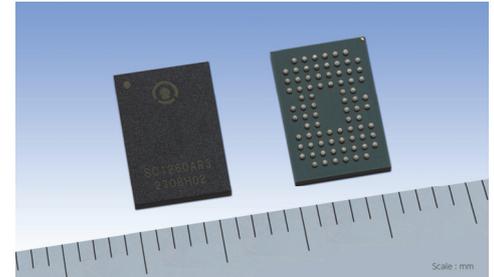


Automotive 60GHz Radio-wave sensor for In-Cabin Sensing SC1260AR3



SC1260AR3 is an extremely low-power, small size and intelligent all-in-one CMOS 60GHz radar sensor device with AiP (Antenna in Package), available for 3D (including 1D, 2D) sensing, and suitable for in-cabin sensing application.

It contains a high-performance radar signal processing unit and detects the 3D position of moving objects and the presence of the objects in any specific area.



SC1260AR3

■ Features

● High resolution 1D to 3D sensing

- 2-Tx and 4-Rx integrated antennas supporting TDM-MIMO operation realize 6x2 virtual antenna array
- Wide bandwidth (6.8GHz max.) and high-accuracy linear chirp FMCW radar
- Example of sensing target: infant lying in the child safety seat or persons sitting on the seat

● Highly integrated device enabling easy hardware design

- Integrate radar signal processing unit (Distance/Angle/Presence detection), antennas, RF circuit, ADC, FIFO and SPI interface
- Enable to use reasonable PCB, less BOM and easy assembly
- Smallest package for all-in-one interior radio sensor (6.0mm x 9.0mm, BGA package)

● Low power consumption reducing battery load

- 4-level operation states (Shutdown, Deep Sleep, Light Sleep, Sensing)
- Intelligent power control sequencer managing flexible duty cycle operation realize <1mW averaging power consumption
- Activate other device by integrated presence detection functionality

■ Applications



Child Presence Detection



Seat Occupant Detection

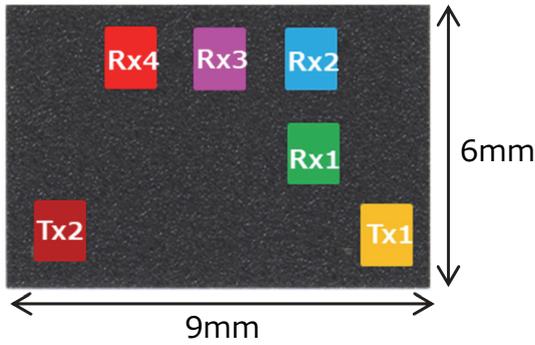


Theft Prevention

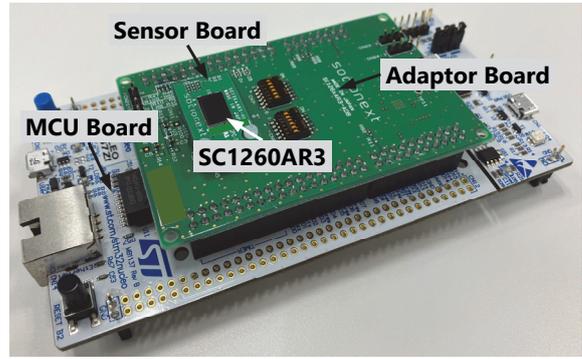


Touchless Gesture Control

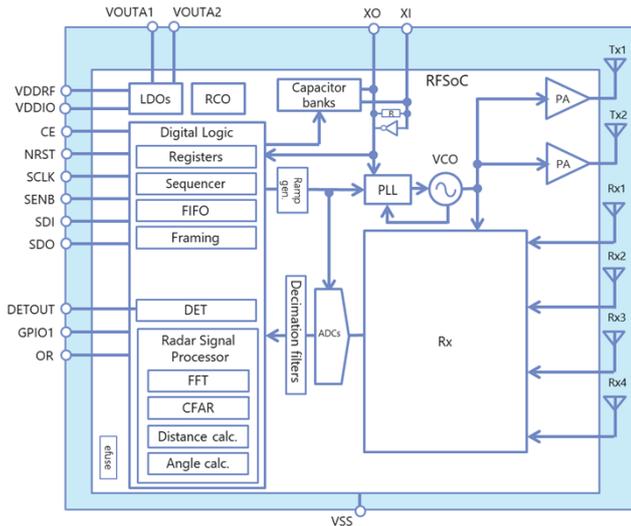
Antenna Configuration



Evaluation Kit

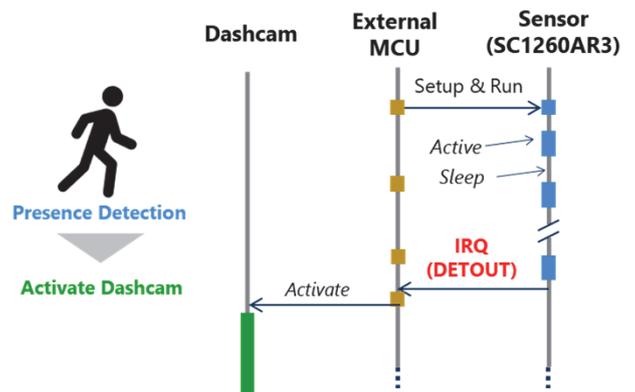


Block Diagram



Example (Theft Prevention System)

Activating camera device by presence detection result from SC1260AR3, system power consumption can be reduced.



Specifications

Radar mode	FMCW (Frequency Modulated Continuous Wave)
Power supply	1.8V (RF) / 1.8V - 3.3V (I/O)
Power consumption	0.7mW (Operation average ^{*2}) / 250mW (Operation maximum)
Transmitter	Frequency: 57.1 - 63.9GHz (bandwidth: up to 6.8GHz), EIRP (target): +3dBm
Receiver	Noise Figure: 12.5dB
Digital block	Radar signal processing (Range FFT, 3D location detection and Presence detection)
Temperature^{*1}	-40 to 125°C
Sensor output	Range FFT, 3D position (X, Y, Z) detection result, Presence detection result
Qualification	AEC-Q100 Grade 2

*1: Operating Junction temperature

*2: In case of 0.1% duty cycle operation

Deliverables of the Evaluation kit

- SC1260AR3 evaluation kit hardware
- Sensor driver/ library and sensing evaluation software (GUI)
- Related documents:
 - Evaluation software (GUI) operation manual
 - Control API specification
 - Application note (Sample C source for API)

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