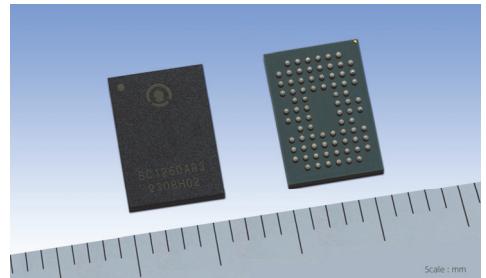


Automotive 60GHz Radio-wave sensor for In-Cabin Sensing SC1260AR3



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

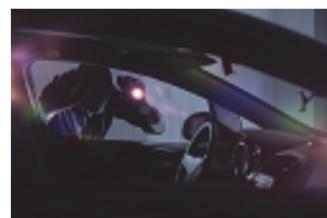
■ Applications



Child Presence Detection



Seat Occupant Detection

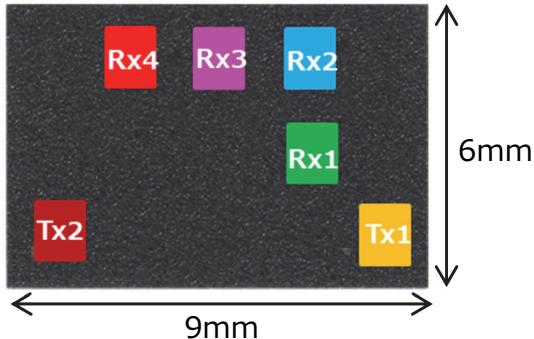


Theft Prevention

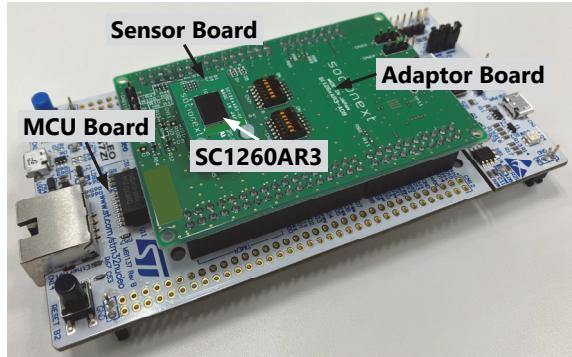


Touchless Gesture Control

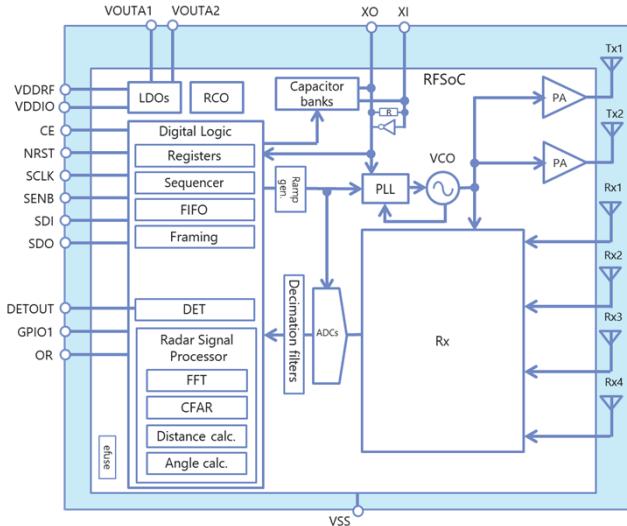
■ Antenna Configuration



■ Evaluation Kit

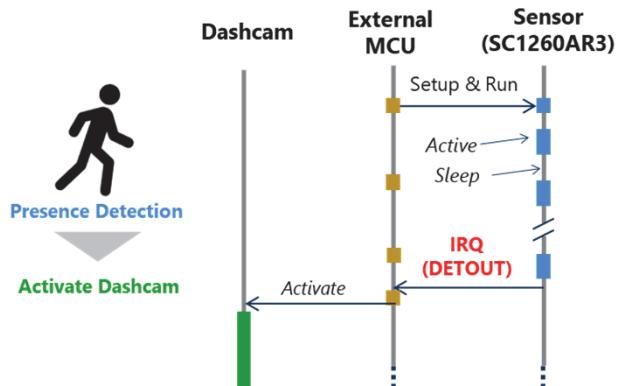


■ Block Diagram



■ 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
 - Application note (Sample C source for API)
 - Control API specification

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