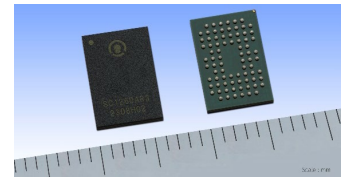


Automotive 60GHz Radio-wave Sensor for In-Cabin Sensing SC1260AR3



The 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 for in-cabin sensing applications.

The device comes with a high-performance radar signal processing unit that 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 and achieving a **6 x 2 virtual antenna array**
- Wide bandwidth (6.8 GHz 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 enables easy hardware design

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

● Low power consumption for reducing battery load

- 4 levels of operation (Shutdown, Deep Sleep, Light Sleep, Sensing)
- Intelligent power control sequencer for managing flexible duty cycle operation
- Activates other device by integrated presence detection functionality

■ Applications



Child Presence Detection



Seat Occupant Detection

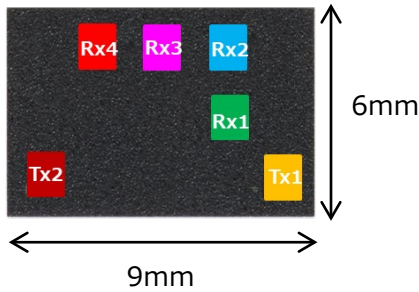


Theft Prevention

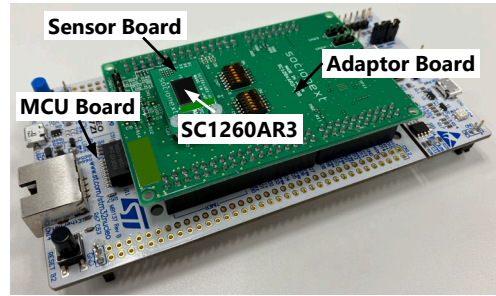


Touchless Gesture Control

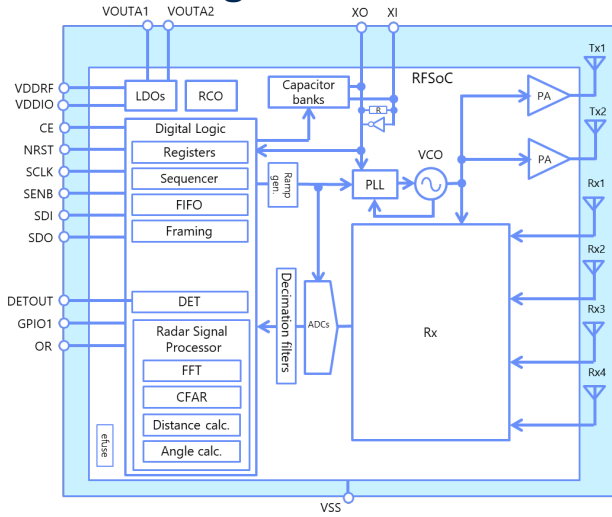
■ Antenna Configuration



■ Evaluation Kit

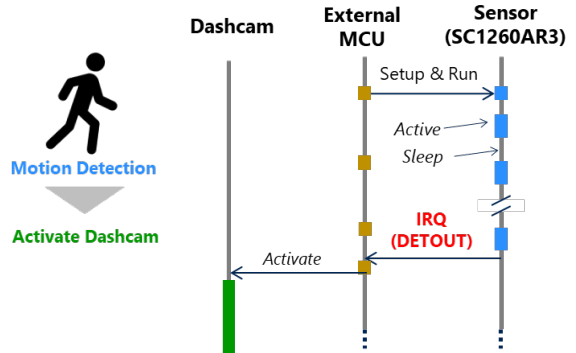


■ Block Diagram



■ Example of a Theft Prevention System

Significant power reduction of up to 50% when using SC1260AR3 to activate camera devices with motion detection.



■ Specifications

Radar mode	FMCW (Frequency Modulated Continuous Wave)
Power supply	1.8 V (RF) / 1.8 V - 3.3 V (I/O)
Power consumption	0.7 mW (Operation average ^{*3}) / 250 mW (Operation maximum)
Transmitter	Frequency: 57.1 - 63.9 GHz (bandwidth: up to 6.8 GHz), EIRP (target): +3 dBm
Receiver	Noise Figure: 12.5 dB
Digital block	Radar signal processing (Range FFT and 3D location detection), Presence detection
Temperature^{*2}	-40 to 125°C
Sensor output	Range FFT, 3D position (X, Y, Z) detection result, Presence detection result
Qualification	AEC-Q100 Grade2

*2: Operating Junction temperature, *3: In case of 0.1% duty cycle operation

■ 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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