

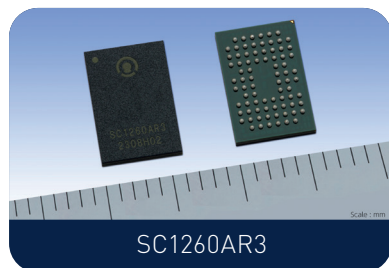
Automotive 60GHz Radio-wave Sensor for In-Cabin Sensing SC1260AR3



Overview

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.

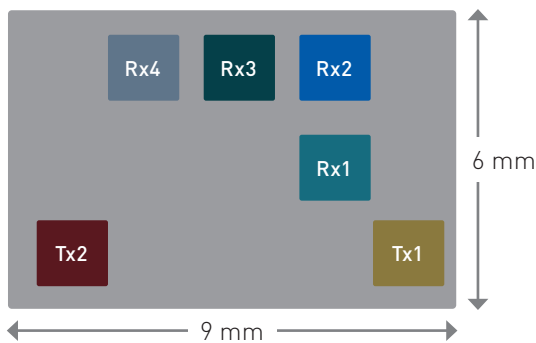
It contains a high-performance radar signal processing unit and detects the 3D position of moving objects and the presence of the objects in any specific area.



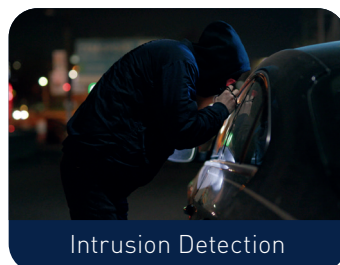
Features

- **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 (6.0 mm x 9.0 mm, 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 <math><1\text{mW}</math> averaging power consumption
 - Activate other device by integrated presence detection functionality

Antenna Configuration



Applications

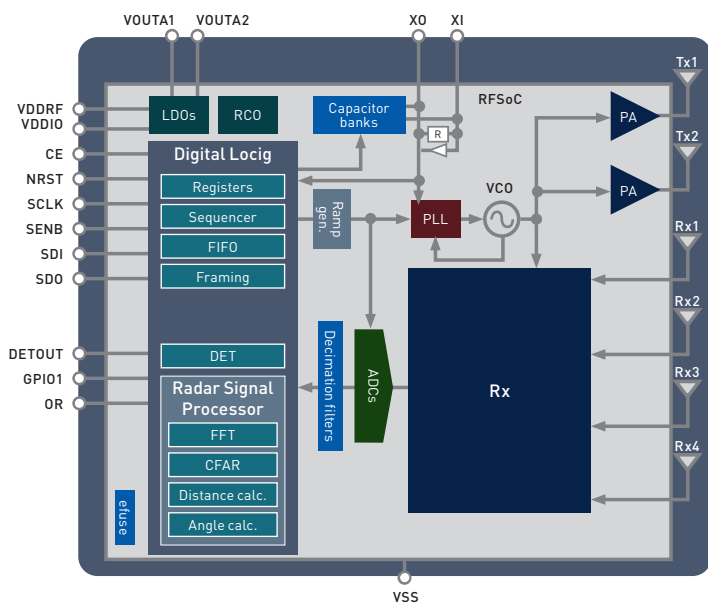


Specifications

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, 3D location detection and 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

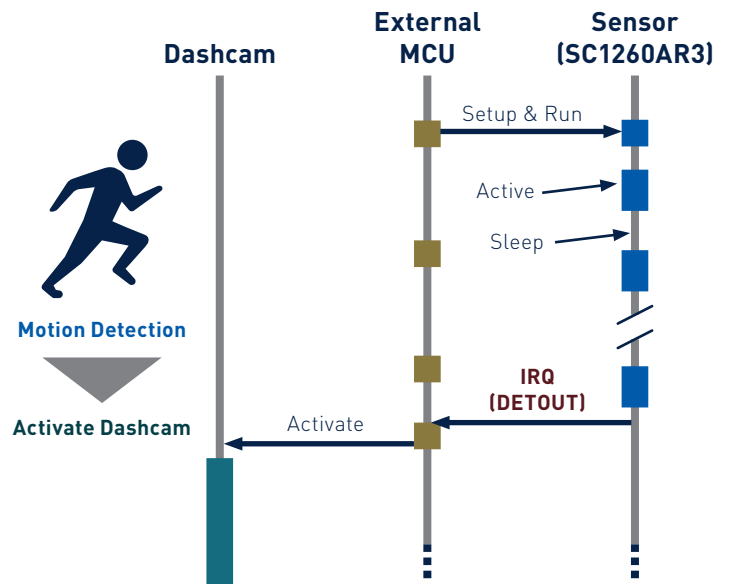
*2: Operating Junction temperature, *3: In case of 0.1% duty cycle operation

Block Diagram



Example System of Theft Prevention

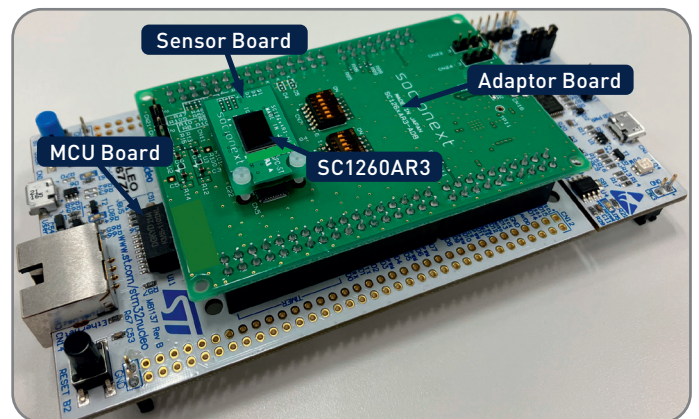
Activating camera device by Motion detection result from SC1260AR3, system power consumption can be reduced.



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)

Evaluation Kit



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