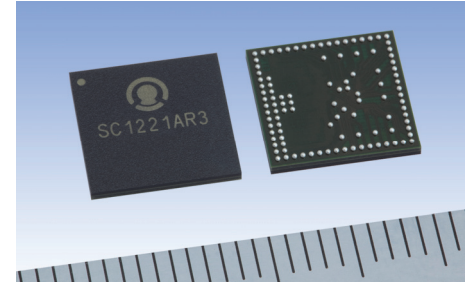


# 60GHz Radio-Wave Ranging Sensor

## 2D Detection Model SC1221AR3

SC1221AR3 is a low power CMOS 60GHz radar sensor device for 2D location sensing.



SC1221AR3

### ■ Features

#### ● Suited for 2D motion sensing

- 1 x 4 uniform linear array Rx antennas detect azimuth angle, velocity and distance of multiple objects
- High-accuracy linear chirp FMCW radar
- Sensing area example: up to 10m\*<sup>1</sup>, 120 degree\*<sup>1</sup> angular width

#### ● Highly integrated device enabling easy hardware design

- Integrating antennas, radio, ADC, FIFO and SPI interface
- 2RX antennas capable of 2D angle detection with external MCU calculation
- Small package (9.0mm x 9.0mm, BGA package)

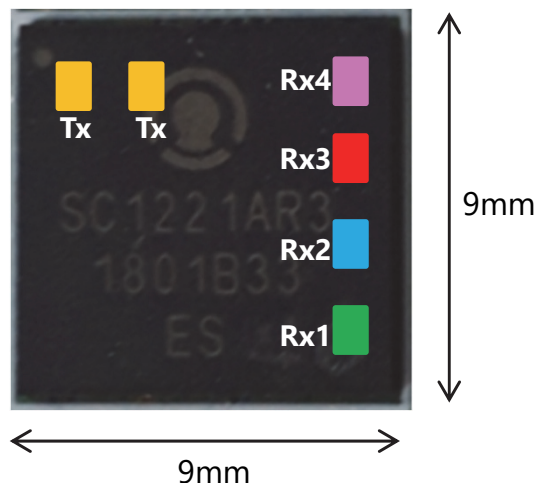
#### ● Low power consumption

- 4-Level operation states (Shutdown, Deep Sleep, Light Sleep, Sensing)
- Intelligent power control sequencer managing flexible duty cycle operation
- 1mW average power consumption at 2D location sensing\*<sup>2</sup>

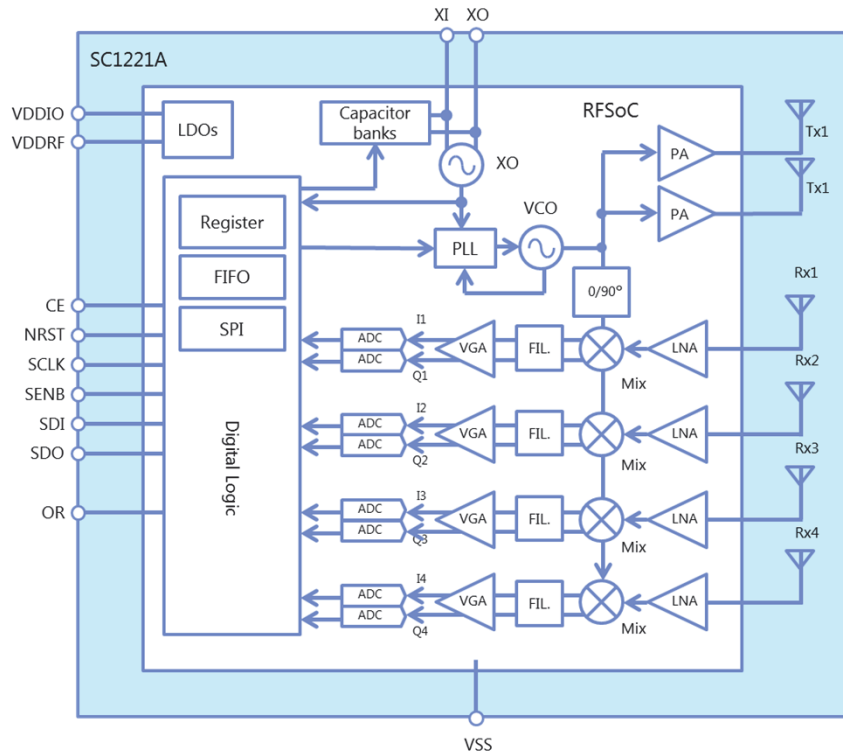
● 1: Depending on sensor configuration and environmental conditions. To be changed according to further study

● 2: In case of conditions that Socionext assumed

### ■ Antenna Configuration



## ■ Block Diagram



## ■ Specifications

|                          |  |
|--------------------------|--|
| <b>Radar mode</b>        | FMCW/FSKCW/CW  |
| <b>Power Supply</b>      | 1.5V - 1.8V (core) / 1.8 - 3.3V (I/O)  |
| <b>Power Consumption</b> | 368mW (Peak power consumption)<br>1mW (0.2% duty cycle operation using Deep sleep) |
| <b>Transmitter</b>       | Frequency: 60.025 - 61.475GHz<br>EIRP: +5dBm                                       |
| <b>Receiver</b>          | Noise Figure: 12dB   |
| <b>Digital block</b>     | ADC (11bit 10MHz), FIFO (32kB),SPII/F (≤50MHz)                                     |
| <b>Temperature</b>       | -40 to 85°C  |

## ■ Evaluation Kit Deliverables

- SC1221AR3 evaluation kit hardware with USB cable
- Sensor driver/ library and 2D location sensing evaluation software (GUI)
- Related documents
  - Evaluation software (GUI) operation manual
  - API specification of control API
  - Application note (MATLAB and Sample C source for API)