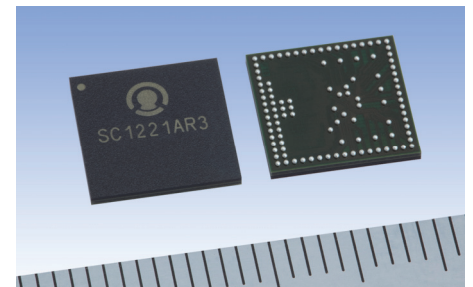


60GHz Radio-Wave Ranging Sensor

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*¹, 120 degree*¹ 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)

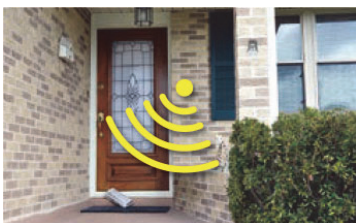
● Low power consumption

- 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*²

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

*2: In case of conditions that Socionext assumed

■ Applications



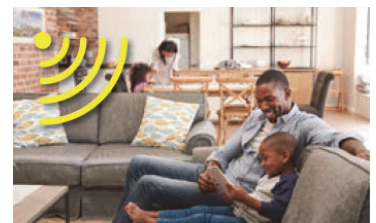
Detection of people at the front door
(use in a doorbell)



Detection of people to switch the liquid crystal display of smart home appliances on and off

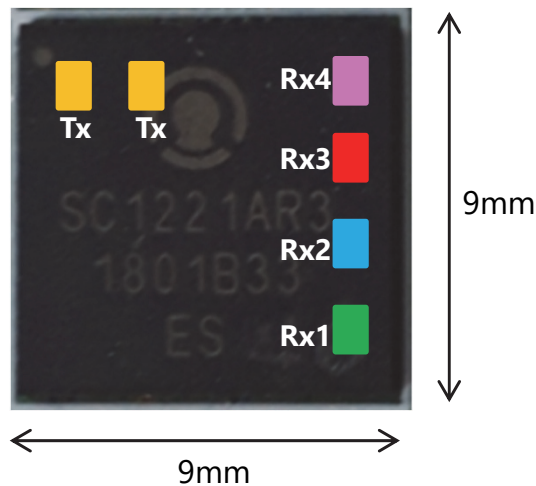


Gesture operations

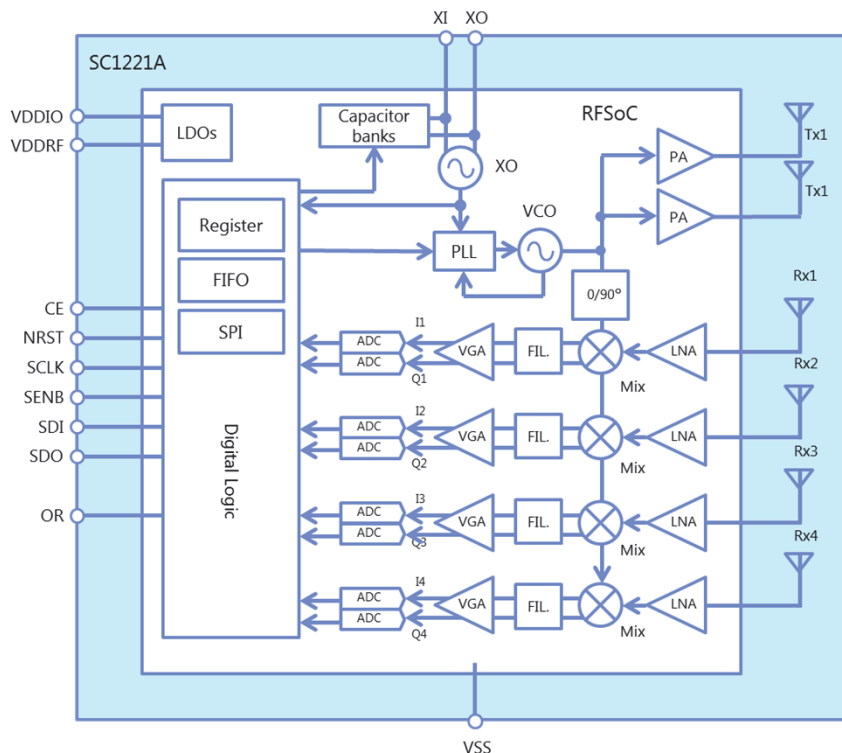


Detection of people in rooms such as the living room(use in a smart thermostat)

■ Antenna Configuration



■ Block Diagram



■ Specifications

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

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