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LT105OEM UWB Radar Module

Rev.1.0

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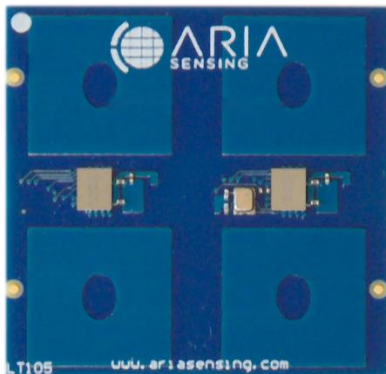
LT105OEM UWB Radar Module

Rev.1.0

1 Summary

LT105OEM is a high-precision, compact and lightweight SMT 2D Ultra-Wide Band Radar module for indoor applications. LT105OEM integrates high-end antennas and the SPI communication interface. It is designed to comply with EU EN 302 065 (EU), ARIB STD-T91 Ver. 2.0 2015 (Japan), FCC CFR 47 Part 15 (USA), RS220 03/2009 (Canada), KCC (South Korea) UWB Regulations.

General Specifications



- Maximum detection range: 10 meters
- Maximum power consumption: 200mW @ 1.8V
- Operating frequency: 7.3GHz to 8.5GHz
- Power supply: 1.8Vdc to 3.3Vdc
- Operating temperature: -40°C to +85°C
- Embedded antenna max aperture: $\pm 60^\circ$ (azimuth) by $\pm 60^\circ$ (elevation)
- Beam aperture: 30° (azimuth) by 120° (elevation)
- Beam peak angle steerable continuously in $\pm 40^\circ$ azimuth range
- Communication interface: SPI
- Dimensions: 30mm x 30mm

General Applications:

- Presence detection/ Position tracking
- Breath detection and monitoring
- Gesture recognition

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2 Features

The LT105OEM is a high configurable 2D UWB radar. This module combines no.2 full UWB transceivers.

The module is targeted for application like presence detection, position tracking, breath detection and analysis. The communication is achieved with an SPI interface.

3 Operating principle

LT105OEM radar module transmits the radar pulses from 2 transmit antennas, and these waveforms can be extracted from each of the 2 receive antennas and the corresponding receiver chains. The API system matches the acquisition to get a 2D target position and tracking.

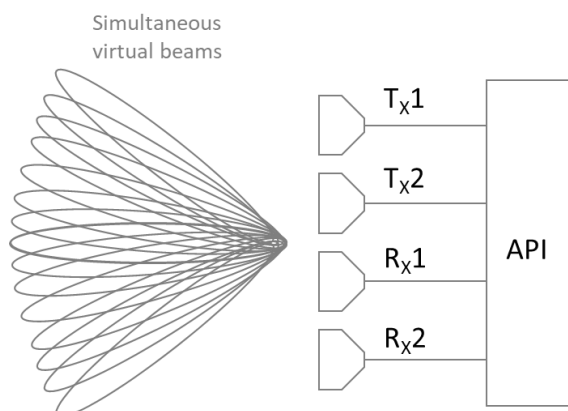


Fig. 1: The basic principle and the virtual beams generation

4 Electrical specifications

	Min	Typ	Max
Operating frequency	7.3GHz	7.9GHz	8.5GHz
Temperature range	-40°C		+85°C
Supply voltage (VddRF)	1.8V	3.3V	3.6V
Supply voltage (VddDIG)	1.8V	3.3V	3.6V
Supply current (IddRF+IddDIG)			140 mA
Range resolution		7 mm	
VIL	0		0.3 · VddDIG
VIH	0.7 · VddDIG		VddDIG
VOL (IOL=0 mA)	0.0		
VOH (IOH=0 mA)			VddDIG

Table 1: LT1030EM electrical specifications

5 Pin-out description

The LT1030EM pin-out reference drawing and functionality is described in Fig. 2 and Table 2 respectively.

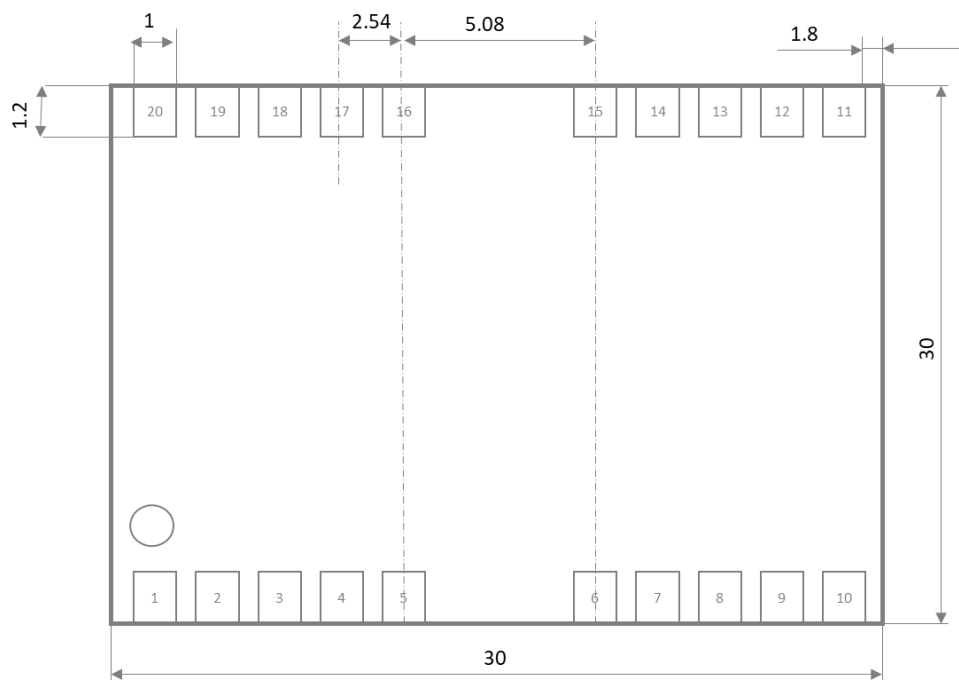


Fig. 2: Reference Drawing for Pin Out

Pin	Description
1	Ground
2	SPI1 Clock
3	Rx1 Data Ready
4	SPI1 Select (active low)
5	Ground
6	SPI1 MOSI
7	Rx1, Tx1 Enable
8	SPI1 MISO
9	Vdd
10	Ground (connect to 1,5,16,20)
11	Ground (connect to 1,5,16,20)
12	Vdd (connect to 9)
13	SPI2 MISO
14	SPI2 MOSI
15	Rx2, Tx2 Enable
16	Ground
17	SPI2 Clock
18	Rx2 Data Ready
19	SPI2 Select
20	Ground

Table 2: LT1030EM pins description

6 Firmware

Available Libraries for ARM STM32H7 or equivalent.