

ICL1112 mmWave Sensor SoC

µA-level 24G 1T1R mmWave sensor SoC

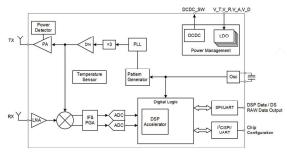
The ICL1112 stands as an industry-leading μ A-level 24GHz mmWave sensor SoC, boasting an impressive combination of ultra-low power consumption (a mere 55 μ A in a typical working scenario) and remarkable long-range detection capability (extending beyond 150 meters). This chip presents a fully integrated mmWave sensing solution, with all transceiver and signal processing paths consolidated onto a single, robust CMOS chip. With fewer external peripherals and enhanced user-friendliness, it ushers in a new era of convenience.

The latest enhancements not only cater to battery-powered applications but also empower extended-range monitoring in consumer scenarios. This innovative solution offers an ideal fit for a wide spectrum of sensor applications, facilitating the detection of human movement and even life presence. The ICL1112 is set to redefine sensor technology.

Key Parameters	ICL1112
RF Channel	1T1R
Operating Frequency Range	24 ~ 25 GHz
Max. TX Output Power	12 dBm
FMCW Ramp Rate	Max. 20 MHz/µs
Frequency Modulation Error	0.045% @250 MHz, FCC/CE compliant
RX Noise Figure	10 dB
PLL Phase Noise	-97 dBc @1 MHz
ADC	2.5 MHz/16 bit
DSP	Super-Resolution/Filter/CFAR Detection etc.
Interface	I2C/SPI/UART
Supply Voltage	3.0 ~ 3.6 V
Average Current Consumption	55 μA @0.3% duty cycle
High-precision TX Power Control/Detection	Support
Package and Size	QFN32/4 mm × 4 mm

Features

- Single chip SoC solution, with integration of 1 Tx, 1 Rx, ADC, PLL, DSP, PMIC. Powerful on-chip algorithms such as super-resolution, filtering and CFAR object detection for real-time detection of target's distance and velocity.
- Capable of µA-level battery-powered operation with the integration of power management and multiple low-power mode and suitable for ultra-low power consumption AloT applications.
- Extremely low frequency modulation error, large dynamic range and excellent RF performace. Capable of high precision and wide range detection, suitable for human presence detection.



ICL1112 Block Diagram



Low Energy Smart Homes Devices Smart Lock



Human Presence Sensor Smart Appliances



Distance and Velocity Detection Radar for Two-wheelers

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ICLEGEND MICRO is committed to implementing smart RF technology and developing high-performance wireless SoC. Our products have been widely used in the wireless field such as millimeter wave sensors, next generation mobile communication, and satellite communication. Integrating our professional capabilities in the fields of chip systems, software, and algorithms, we are creating disruptive chips and application products, and empowering smart devices wireless perception, cognition and communication capabilities.

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