



ST64UWB-A SERIES

Automotive UWB ICs for premium hand-free access and smart sensing



All-in-one ultra-wideband (UWB) chip with narrow-band assistance radio (NBA) for secure ranging and high-resolution radar

ST's next generation UWB ICs offer extended range and greater processing power for a variety of automotive applications. Enable secure connected applications such as hands-free car access and smart sensing with UWB secure ranging and precise localization capabilities.

The ST64UWB-A100 series enables use cases such as digital keys and precise vehicle localization. It features an Arm® Cortex®-M85 core and supports an ASIL A(B) automotive safety concept. The ST64UWB-A500 series adds AI acceleration and digital signal processing to support edge AI-powered radar applications, including child presence detection (CPD), kick sensing, and outward-facing use cases such as parking sensors and radar-based vehicle sentinel mode.

KEY FEATURE AND BENEFITS

- 8x greater secure ranging distance with IEEE 802.15.4ab NB-assisted secure ranging
- 50% greater range on IEEE 802.15.4z UWB technology via unique FD-SOI process
- Dual antennas for diversity, maximum ratio combining, and angle of arrival calculations
- Industry-leading radar resolution
- Lowest system cost with on-chip Arm® Cortex® M85 and CAN-FD
- CCC, ICCE compliant software for fast go-to-market

KEY APPLICATIONS

- CCC & ICCE digital key system (DKS)
- Child presence detection (CPD)
- Kick-sensing
- In-car and outside-facing radar

Extended channel support

ST64UWB-A supports UWB channels 5, 6, 8-12, covering 6.49 to 8.99 GHz. In addition, the ST64UWB-A500 offers market leading spatial resolution for radar applications. ST64UWB-A supports IEEE 802.15.4ab NB on channels UNII3 (5.8 GHz) and UNII5 (6.2 GHz).

Exceptional range

Combining a high transmitter (Tx) output power with 3 dB better sensitivity, the ST64UWB-A ICs offer 50% more range operating with the IEEE 802.15.4z standard. Narrowband-assisted multi-millisecond ranging based on IEEE 802.15.4ab increases the range by a factor of 8, increases the link budget by 18 dB (1 MMS), and adds 3 dB for each doubling of the MMS frames. This feature makes ST64UWB-A highly suitable for scenarios in which a UWB-enabled device or key fob is placed in a user's back pocket or purse. It significantly enhances the user experience and enables new use cases, such as "find my car".

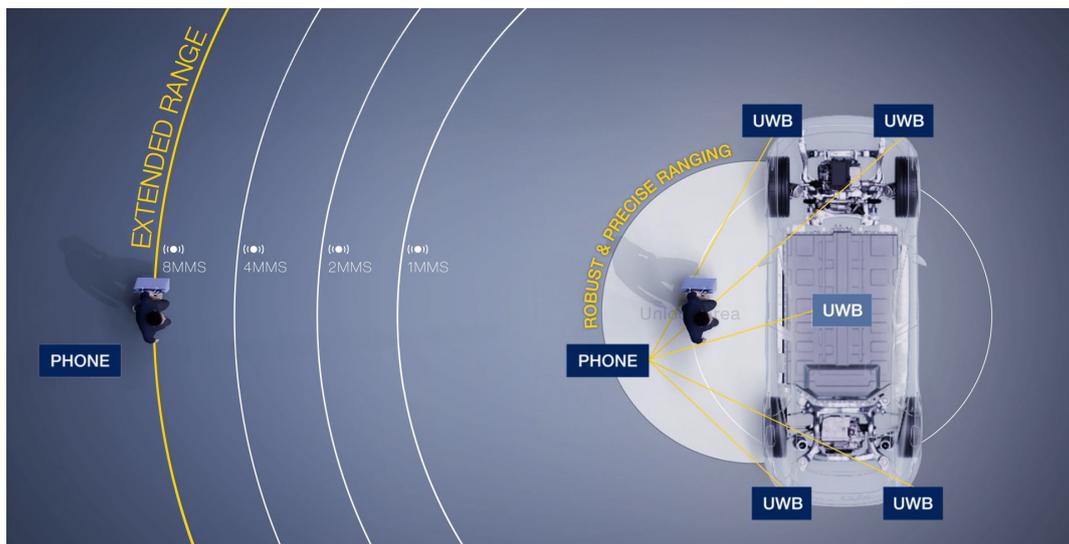
Unrivalled processing power

ST64UWB-A ICs run on the Arm® Cortex®-M85 processor, which offers twice the processing performance compared to an Arm® Cortex®-M33. Running at a maximum speed of 256 MHz, this allows 4x the processing capabilities compared to MCUs used in current UWB ICs.

Additionally, the Arm® Helium extension delivers a significant performance uplift for machine learning (ML) and digital signal processing (DSP) by adding M-Profile Vector Extension (MVE).

An on-chip secure enclave (SEVIP LVL3) provides secure storage and crypto co-processing and allows for secure ranging based on Time-of-Flight (ToF), uplink and downlink time difference of arrival (TDoA), and angle of arrival (AoA).

ST64UWB solution with MMS and NBA, extends range and enabling superior hands-free experience.



Product summary

Part number	Protocols	Interfaces	Processor	Temperature range	Package
ST64UWB-A100	IEEE 802.15.4z IEEE 802.15.4ab	CAN-FD SPI I ² C	Arm® Cortex®-M85 40-100 MHz	-40 to 115 °C	WFQFN40 (6 x 6 mm)
ST64UWB-A500	IEEE 802.15.4z IEEE 802.15.4ab Radar	CAN-FD SPI I ² C QSPI	Arm® Cortex®-M85 100-256 MHz with Helium MVE and AI accelerator	-40 to 115 °C	WFQFN40 (6 x 6 mm)

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