

Stamp UWB

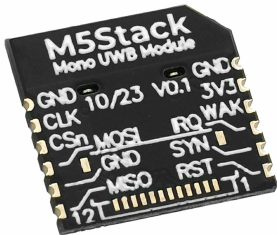
SKU:S017



1.27-6P

SPI
INTERFACE
11.5 x 12.0 x 1.6 mm

QM33120W
Max Range: 55 m
IEEE 802.15.4-2020 /
IEEE 802.15.4z-2020 BPRF
UWB Channel 9 @ 7987.2 MHz





Description

Stamp UWB is an ultra-compact embedded UWB ranging module that **supports castellated-hole SMT mounting**. It integrates the low-power QM33120W UWB transceiver, is compatible with IEEE 802.15.4-2020 and IEEE 802.15.4z-2020 BPRF, and operates on UWB Channel 9 with a center frequency of 7987.2 MHz. With its compact size and stable RF performance, the module supports TWR and TDoA positioning solutions for centimeter-level ranging and high-precision positioning. The current driver library supports both Single-Sided Two-Way Ranging (SS-TWR) and Double-Sided Two-Way Ranging (DS-TWR). It is suitable for indoor personnel positioning, cargo and asset tracking, proximity detection, robot navigation, and other applications.

Note

Power Supply

To ensure communication quality, power Stamp UWB using a high-PSRR LDO or a power supply with ripple within 12mVpp.

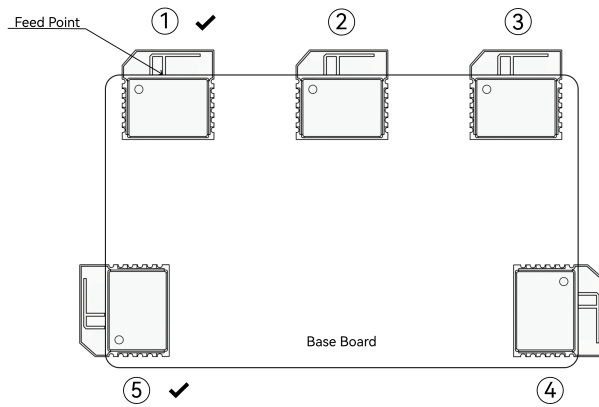
Warning

The FPC pad pinout of this Stamp UWB module is incompatible with the FPC pinout on the back of Stamp-S3 / S3A. In actual applications, please double-check the pin connections — failure to do so may cause permanent damage to the device.

Module Layout

When using the module in an on-board design, pay attention to its layout on the baseboard and minimize the impact of the baseboard on the module's PCB antenna performance and ranging accuracy. The module's antenna area should extend completely beyond the edge of the baseboard, with the antenna feed side positioned close to the baseboard edge. Avoid copper pours, traces, components, or other metal structures beneath and around the antenna area. In the module placement diagram below, "✓" indicates the strongly recommended position; the other positions are not recommended.

When designing the complete device, consider the impact of the enclosure, battery, display, and other metal structures on the module antenna, and maintain clearance around the antenna in all directions. After assembly, test the RF performance and ranging accuracy to ensure the product meets the design requirements.



Features

- Integrated QM33120W UWB transceiver with enhanced secure Time-of-Flight mode and integrated AES-256
- Supports UWB Channel 9
- Supports IEEE 802.15.4-2020 / IEEE 802.15.4z-2020 BPRF
- Supports TWR and TDoA positioning solutions
- Supports 850 kbps / 6.81 Mbps wireless communication data rates
- SPI communication interface
- Supports castellated-hole SMT mounting with 1.27 mm pitch

Includes

- 1 x Stamp UWB

Applications

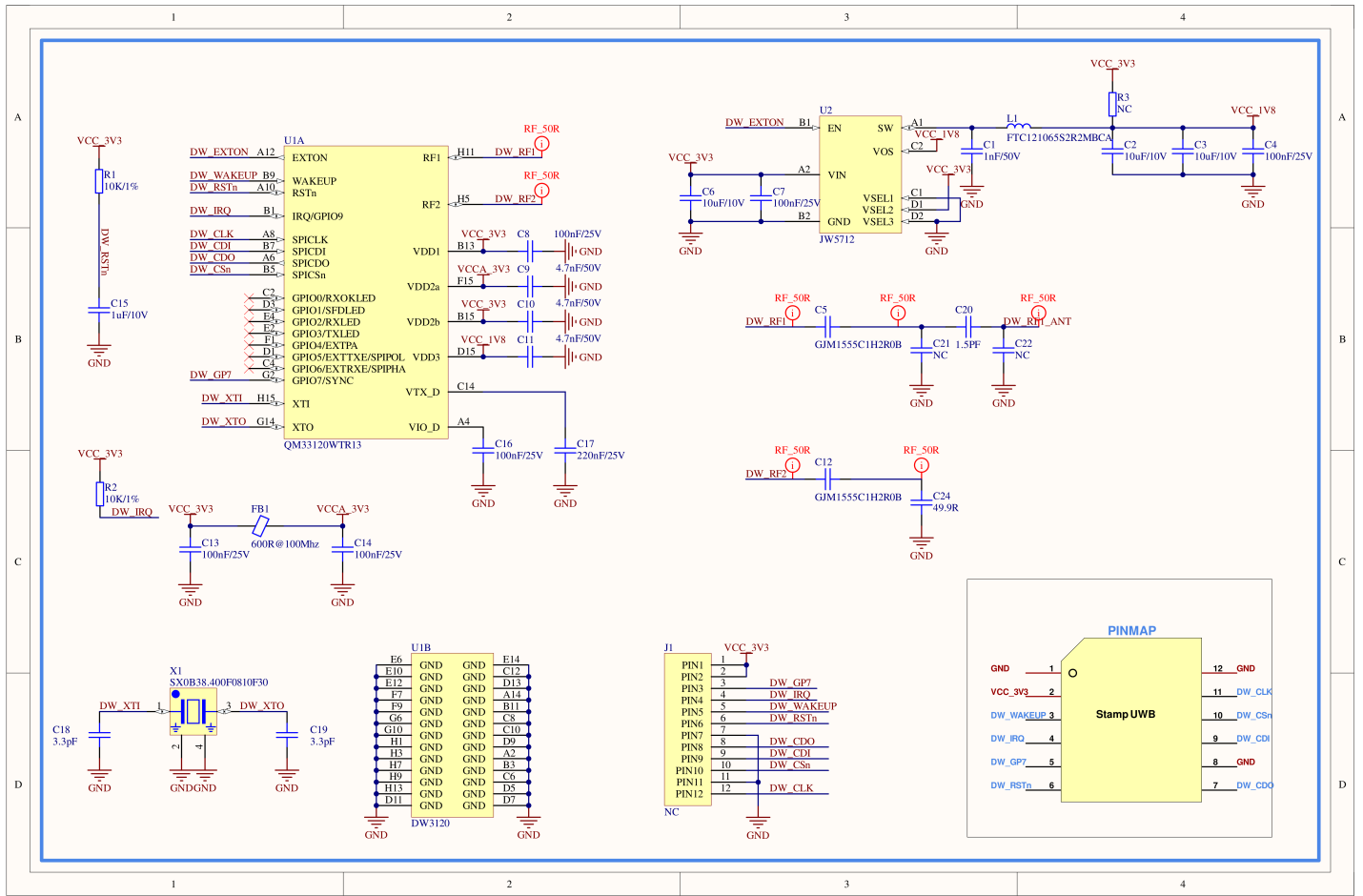
- Indoor personnel positioning
- Cargo and asset tracking
- Proximity detection
- Robot navigation

Specifications

Specification	Parameter
UWB Chip	QM33120W
UWB Frequency Range	8GHz (7987.2 MHz) Channel 9: 7987.2 MHz Low frequency: 7737.6 MHz Mid frequency: 7987.2 MHz High frequency: 8236.8 MHz Bandwidth: 499.2 MHz
UWB Communication Interface	SPI
Supported Standards	IEEE 802.15.4-2020 / IEEE 802.15.4z-2020 BPRF
Wireless Communication Data Rate	850 kbps / 6.81 Mbps
Ranging Function	Supports SS-TWR / DS-TWR ranging
Maximum Communication Distance	55m (when facing directly)
Positioning Function	Supports TWR and TDoA positioning solutions
Measurement Error	DS-TWR: approximately 0.14m
Castellated-Hole Pitch	1.27 mm
Sleep Power Consumption	DC 3.3V@75.9uA
Operating Power Consumption	As base station: DC 3.3V@5.23mA As slave: DC 3.3V@58.0mA
Product Size	11.5 x 12.0 x 1.6mm
Product Weight	0.5g
Package Size	138.0 x 93.0 x 15.0mm
Gross Weight	4.6g

Schematics

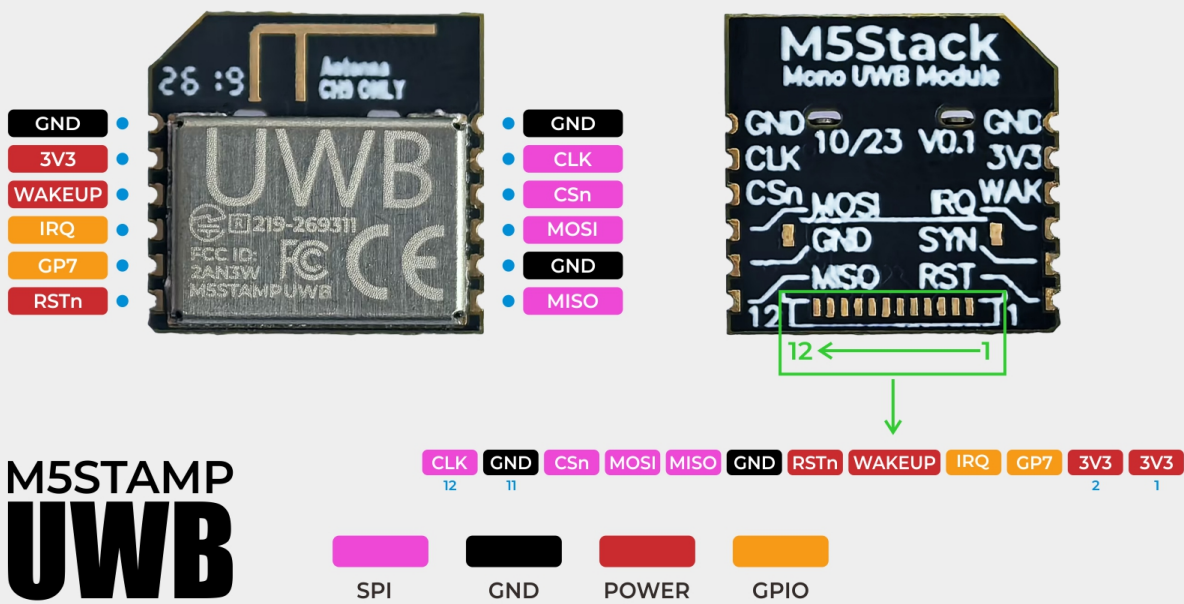
- [Stamp UWB Schematics PDF](#)



PinMap

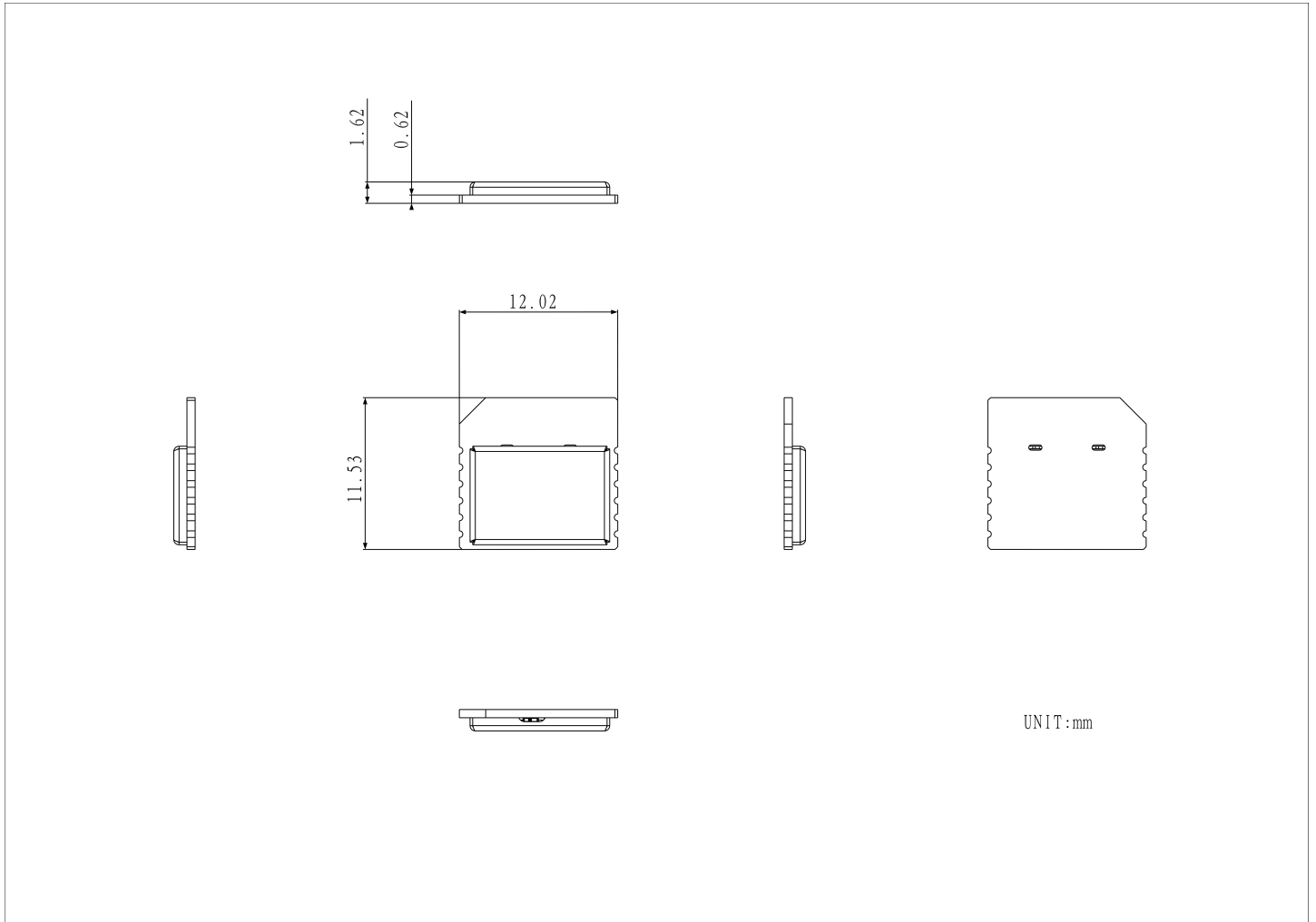


M5STACK



Model Size

- [Stamp UWB Model Size PDF](#)



PCB

- [Stamp UWB PcbDoc](#)
- [Stamp UWB KiCad Footprint Library](#)

Structure

- [Stamp UWB KiCad 3D](#)

Datasheets

- [QM33120W Datasheet](#)
- [QM33120W Product Brief](#)

Softwares

Arduino

- [Stamp UWB Arduino Tutorial](#)

Video

Product Comparison

Product Comparison		
	 F	
	Stamp UWB F	Stamp UWB
0.5mm-12P FPC Connector Soldered by Default	✓	✗
Comes with 0.5mm-12P FPC cable as standard	✓	✗