

# UWB SR040 Module (with embedded antenna)

Part Number : ASMOP1CO0A1

## 1. Main features

- Supports SHF UWB bands from 6.24 GHz to 8.24 GHz for worldwide use
- Programmable transmitter output power of up to +12dBm
- Data rates of 110 kbps, 850 kbps, 6.8 Mbps, 7.8 Mbps
- Supports 2-way ranging
- Configurable current limiter for applications with coin cell battery supply
- ARM® Cortex-M33 32-bit Processor
- Low energy consumption
- One SPI Interface
- Supply voltage 1.8 V to 3.6 V(Typ. 3.3V)
- Module and Shield CAN size : 13mm x 18mm x 2.7mm
- Reference Clock 55.2MHz
- Applications are IoT application, UWB Tracker, and UWB Tags.



Figure 1. UWB SR040 Module with Ant. (Top View)

## 2. Module Block Diagram

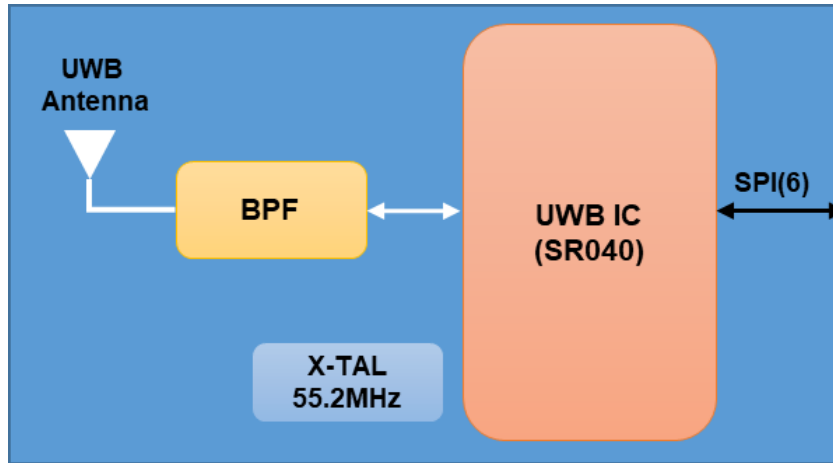


Figure 2. Block Diagram of UWB SR040 Module w/ Ant.

## 3. UWB SR040 Module with Ant. Pin Diagram

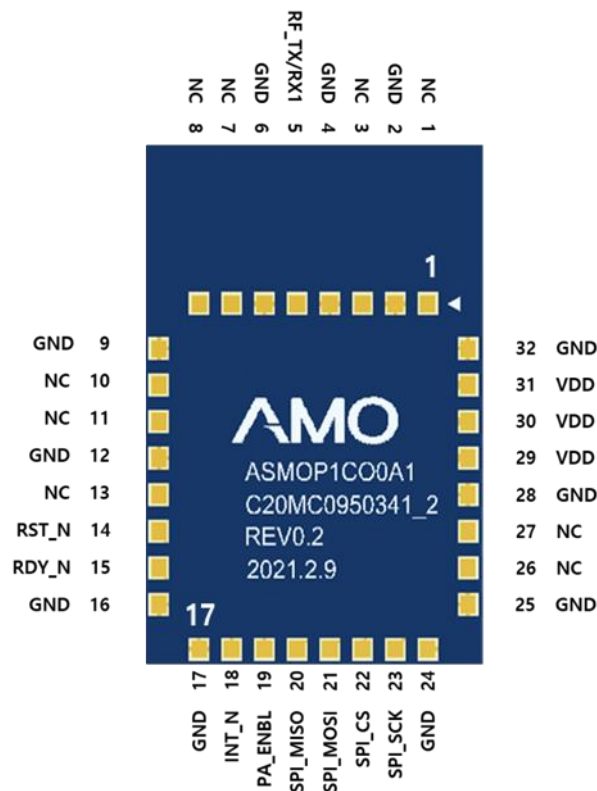


Figure 3 : Pinout Description(Bottom View)

PIN	PIN Name	PIN Type	Description
P1	NC		
P2	GND	G	Ground supply
P3	NC		
P4	GND	G	Ground supply
P5	RF_TX/RX1	RF	TX/RX(NC)
P6	GND	G	Ground supply
P7	NC		
P8	NC		
P9	GND	G	Ground supply
P10	NC		
P11	NC		
P12	GND	G	Ground supply
P13	NC		
P14	RST_N	I	Reset input
P15	RDY_N	I/O	Ready output
P16	GND	G	Ground supply
P17	GND	G	Ground supply
P18	INT_N	I/O	Interrupt output
P19	PA_ENBL	I/O	Gating signal for an optional external PA
P20	SPI_MISO	I/O	MISO connection for the SPI host interface
P21	SPI_MOSI	I/O	MOSI connection for the SPI host interface
P22	SPI_CS	I/O	Slave select connection for the SPI host interface
P23	SPI_SCK	I/O	clock for the SPI host interface
P24	GND	G	Ground supply
P25	GND	G	Ground supply
P26	NC	P	
P27	NC	I/O	
P28	GND	G	Ground supply
P29	VDD	P	3.3V Power supply
P30	VDD	P	3.3V Power supply
P31	VDD	P	3.3V Power supply
P32	GND	G	Ground supply

Table 1. Pin Description

**4. Reference Circuit**

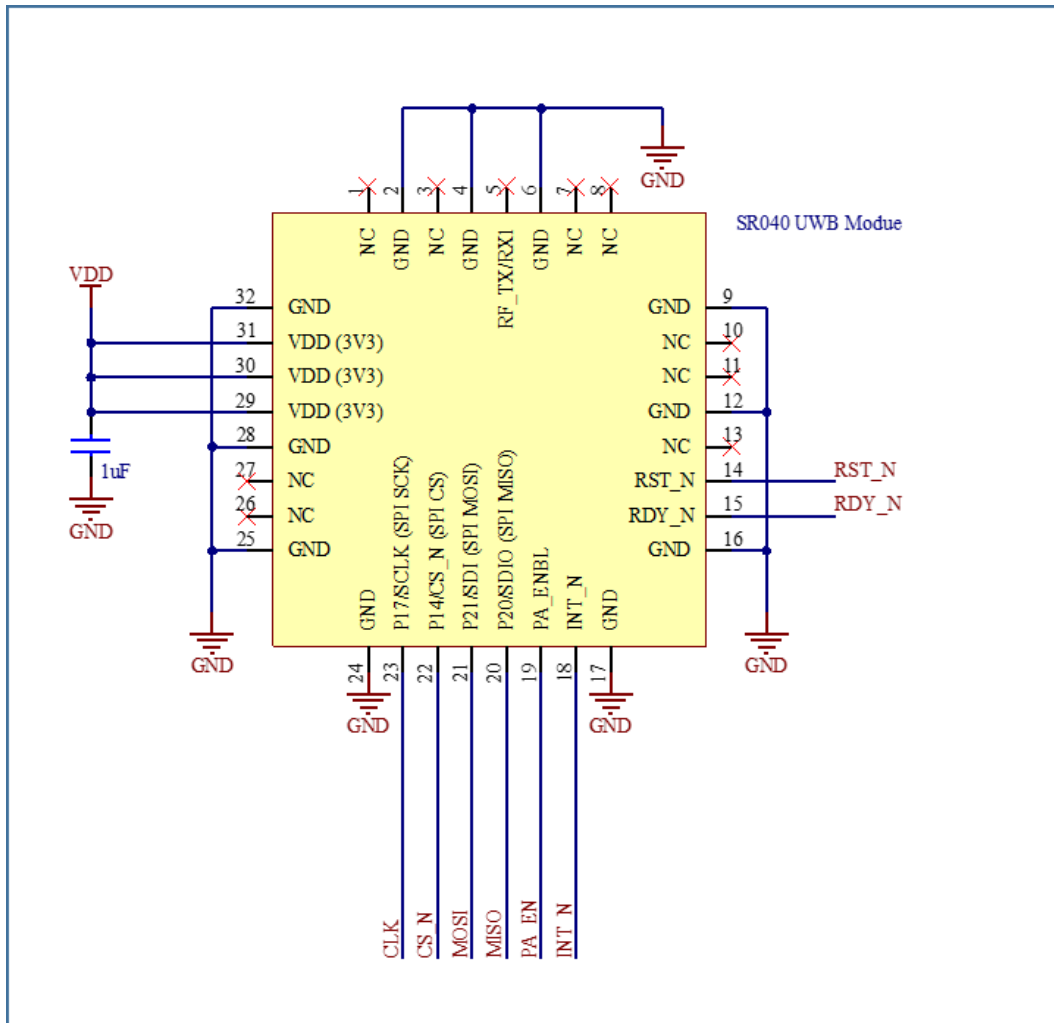


Figure 4 : UWB SR040 Module with Ant. Reference Circuit

## 5. Host interface (SPI)

These connections are used for communication between host and SR040 via SPI bus.

Pin	functionality	HW connection when used	HW connection when NOT used
Host connection			
SPI_MISO	MISO connection for the SPI host interface	host	Must be connected
SPI_MOSI	MOSI connection for the SPI host interface	host	Must be connected
SPI_CS	Slave select connection for the SPI host interface	host	Must be connected
SPI_SCK	clock for the SPI host interface	host	Must be connected
RDY_N	Ready output	host	Must be connected
INT_N	Interrupt output	host	Must be connected

Table 2. Host interface

## 6. Power interface

UWB SR040 Module needs several external power supplies to work.

- ✓ Configurable current limit from 5 mA to 20 mA, in steps of 1 mA

Parameter	Min	Typ.	Max	Unit
Supply Voltage(VDD)	1.8	3.3	3.6	V

Table 3. Power interface

## 7. Current limiter in UWB SR040 module

The current limiter is intended for applications with coin cell battery supply, to maximize the lifetime of the battery. It minimizes battery stress by limiting the maximal current drawn by the IC. The current limit is configurable by SW. Figure 5 shows how the current limiter is connected in the application.

The current limiter comprises from 5 mA to 20 mA, in steps of 1 mA.

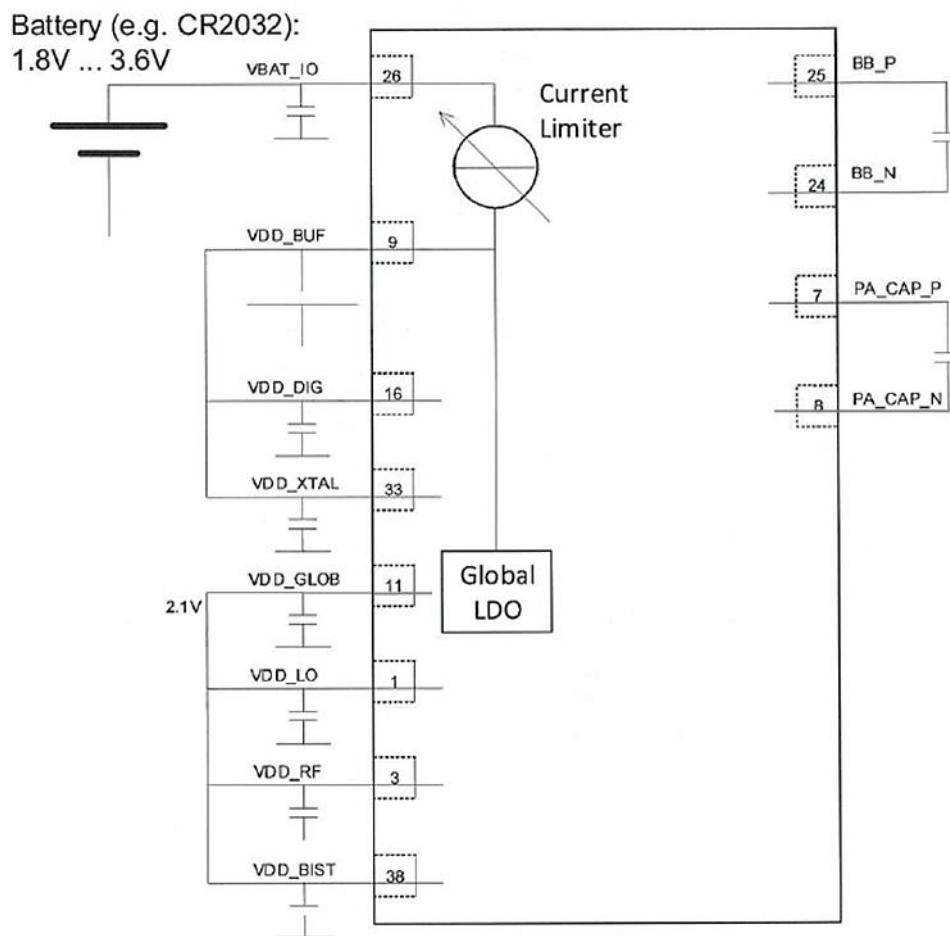


Figure 5 : Current limiter in UWB SR040 module

## 8. UWB Antenna

No	Item	Spec.	Remark
1	Frequency Range [MHz]	6000 ~ 8000	
2	VSWR	Max 2.0:1	
3	Polarization	Linear	
4	Impedance [ $\Omega$ ]	Nominal 50	

Table 4. UWB Antenna Electrical Specifications

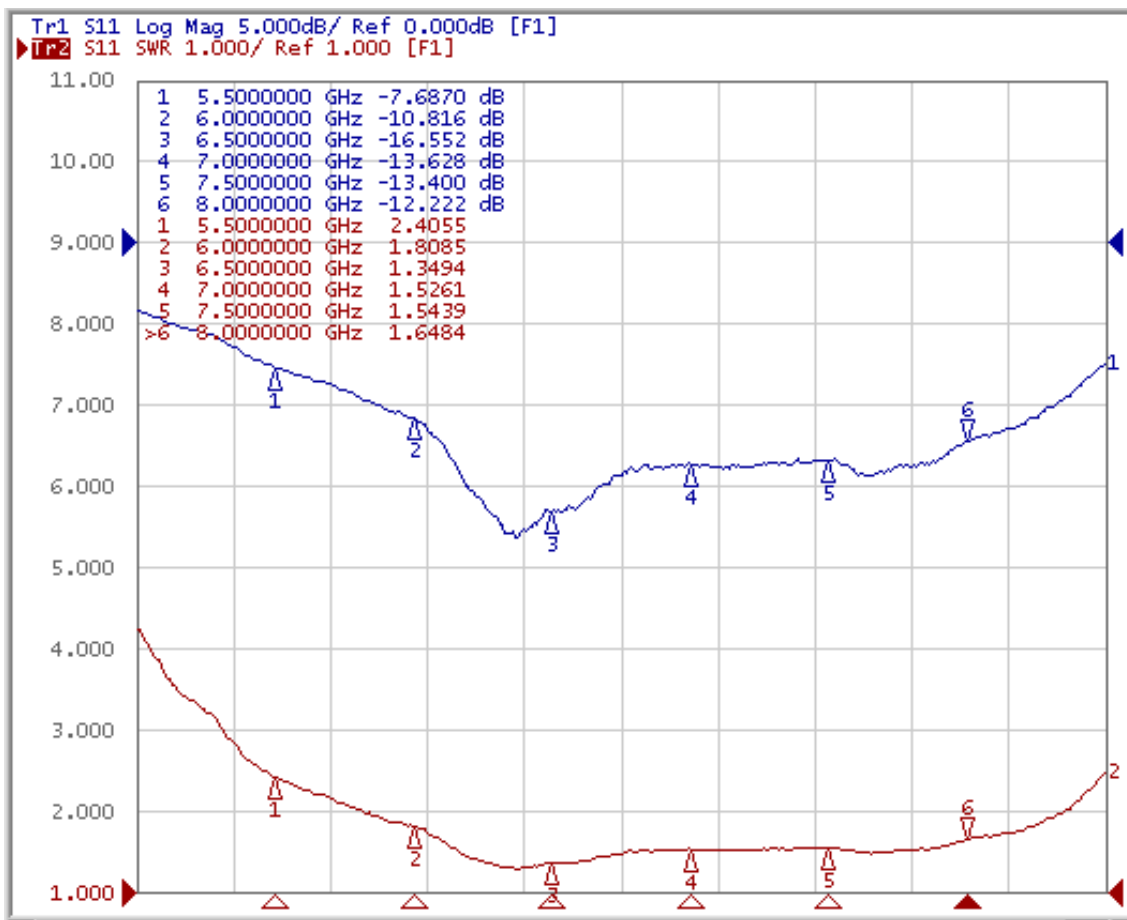


Figure 4 : Typical Measurement Result (VSWR & Return-loss)

Freq. [MHz]	Peak Gain [dBi]	Avg. Gain [dBi]	Efficiency [%]
6000	4.50	-1.49	70.9
6500	4.14	-0.94	80.6
7000	3.86	-0.87	81.7
7500	4.90	-1.25	75.0
8000	4.28	-0.82	82.8

Table 5. UWB Antenna Measured Radiation Characteristics

