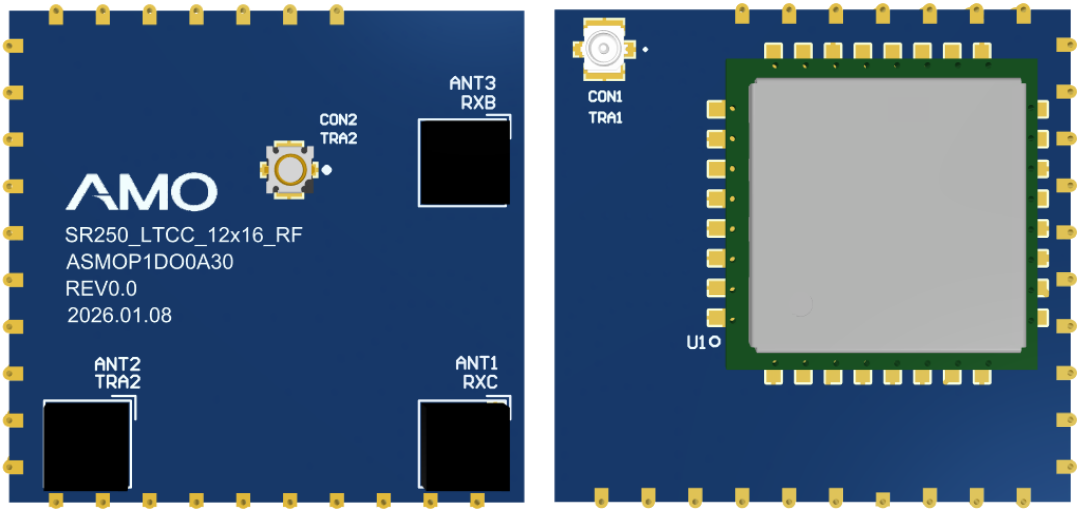
AMO UWB + ANT Module(SR250)

Rev 0.0

(ASMOP1DO0A30)



Revision	Contents	Date
0.0	New	June, 2026.

June, 2026

AMOSENSE Co., LTD.

Notes

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1. Introduction

The UWB Antenna Module is based on NXP's SR250 second-generation, single-die UWB controller. It integrates an ARM Cortex-M33 embedded processor along with all essential RF and circuitry, fully compliant with the IEEE802.15.4z enhanced secure UWB PHY standard.

To facilitate the evaluation and implementation of Single-Sided(SS) Double-Sided(DS) Two-way Ranging(TWR), Time Difference of Arrival(TDoA) ranging, and UWB Radar applications, the module features integrated LTCC(Low Temperature Co-fired Ceramic) antennas. Powered by NXP's Firewall technology and advanced secure cryptographic hardware accelerators, it is capable of secure ranging with a high measurement accuracy of ±5cm.

1.1 Key Features

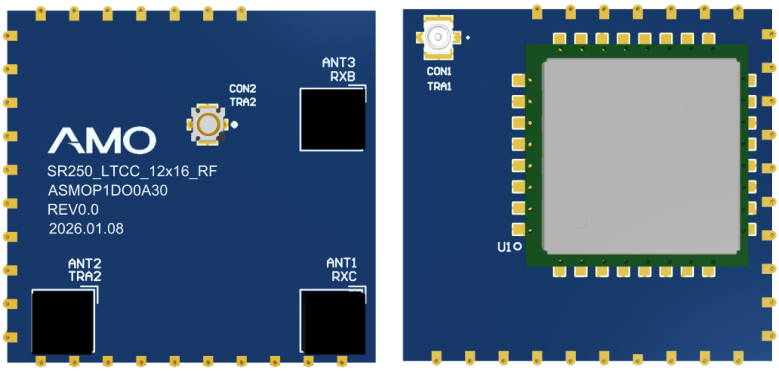
AMO UWB SR250 Module	
	
ANT Type	• Chip Antenna
Size	• 22 mm x 21 mm x 5.7 mm
Interface	• SPI(Host Interface)
Main ICs	• SR250, ARM® Cortex-M33 32 Bit processor (384 kB eNV storage, 100 kB RAM, 128 kB ROM)
Reference Clocks	• 38.4 MHz clock • 32.768 KHz clock
Frequency Band	• 6.24 GHz ~ 8.24 GHz
Supply Voltage	• 2.3 to 5 (Typ. 3.3) V, (Legacy mode : 1.71 V ~ 1.89 V)
Output Power	• MAX +14 dBm
Package	• Metal shield can

Table 1. Key Features

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1.2 Applications

① Computing

② Smart access for residential and enterprise

③ Device to device positioning

④ Location-based services

⑤ Home Application

⑥ UWB Radar

2. Part Numbering

[Example]

Device Family

AS MO P 1D O 0 A3 0

Company name

AT = AMOTECH, **AS** = AMOSENSE

Device type

MO = Module, **DT** = Tag, **DA** = Anchor

Type

P = PCB, **F** = FPCB, **K** = Package

Chipset

1A = SR100T, **1B** = SR150T, **1C** = SR040B, **1D** = SR250

Configuration

O = UWB Only, **B** = UWB + BLE(MCU), **M** = UWB + MCU

MCU Part number

0 = UWB Only, **1** = QN9090

Antenna

N0 = None, **A3** = Antenna 3EA, **R2** = Receptacle 2EA, **S1** = SMA 1EA

Version

0

Note : Provisional designation

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3. Module Block Diagram

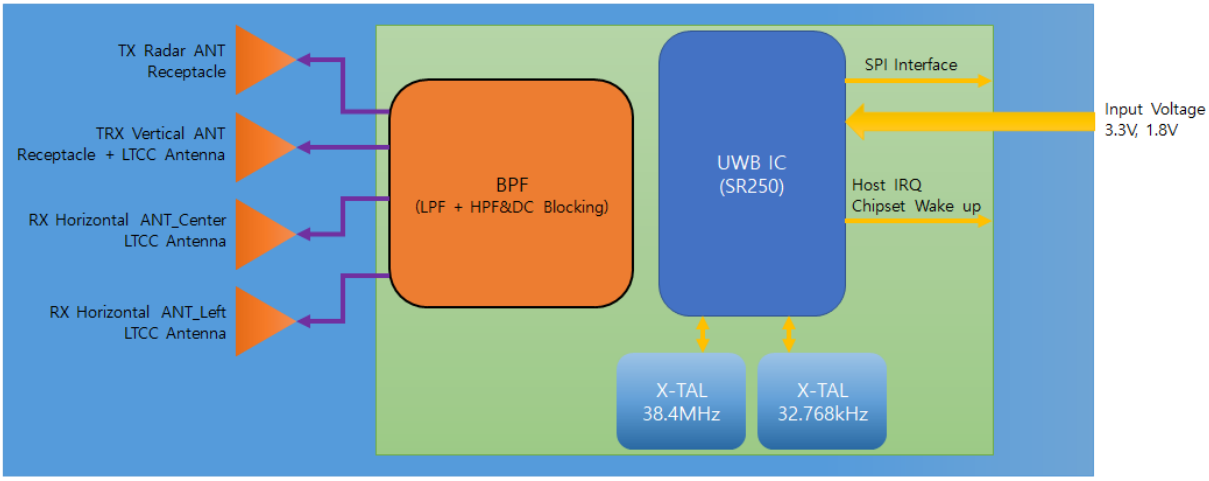

Figure 1. Block Diagram of AMO UWB + ANT Module

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4. Electrical Characteristics

4.1 Absolute Maximum Ratings

Parameter		Min	Typ.	Max	Unit
Supply Voltage(VDD)		2.3	3.3	5.0	V
Operating Temperature		-30	25	85	℃
RF Input Power	PWR off	-	-	10	dBm
	Operating	-	-	-14	dBm
	Tx Operating	-	-	17	dBm

Table 2. Absolute Maximum Ratings

4.2 Transmitter Power Table

- T = 25°C, VDD = 3.3 V (typ.)

Power table	
Tx Power 1.8 V, CH5	Typ. 12.0 dBm
Tx Power 1.8 V, CH9	Typ. 12.0 dBm
Tx Power 3.6 V, CH5	Typ. 14.0 dBm
Tx Power 3.6 V, CH9	Typ. 14.5 dBm

Table 3. TX Power

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4.3 RF Characteristics

- T = 25°C, VDD = 3.3 V (typ.)

Parameter	Condition	Min	Typ.	Max	Unit
Frequency Range		6.24	-	8.24	GHz
TX Output Power	Programmable transmitter output power	-	-	CH5. 14 CH9. 14.5	dBm
RF Sensitivity	6.8 Mbps data rate	-	-99	-97	dBm
Current Consumption	TX 14 dBm - Radar	-	26		mA
	TX 14 dBm - Ranging		28		mA
	Sleep Mode	-	1	-	mA

Table 4. RF Characteristics

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5. Module Package

5.1 Pinout Description

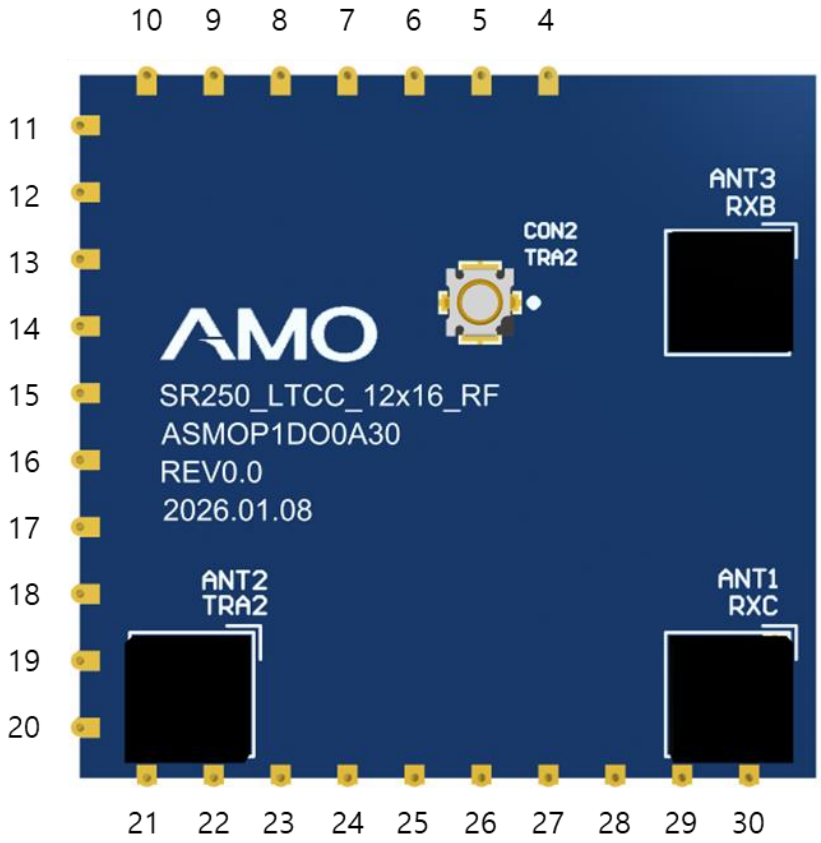

Figure 2 : Pinout Description

5.2 Pin Description Box

PIN	PIN Name	PIN Type	Description
4	NC		
5	GND	G	Ground supply
6	VDD_3V3	P	3.3 V Power supply
7	VDD_3V3	P	3.3 V Power supply
8	GND	G	Ground supply
9	VDD_1V8	P	1.8 V Power supply
10	VDD_1V8	P	1.8 V Power supply
11	UWB_SPI_SCK	I/O	Host interface line 1 as SPI clock(SCK) line
12	UWB_SPI_MISO	I/O	Host interface line 4 as SPI I/O1 connection

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13	UWB_SPI_MOSI	I/O	Host interface line 3 as SPI I/O0 connection
14	UWB_SPI_CS	I/O	Host interface line 2 as SPI Target Select(SS) connection
15	UWB_WAKEUP	I/O	Host interface wakeup input
16	UWB_RSTN	I	Reset pin
17	UWB_HOST_IRQ	I/O	Host IRQ pin
18	NC		
19	NC		
20	NC		
21	NC		
22	NC		
23	GND	G	Ground supply
24	NC		
25	NC		
26	GND	G	Ground supply
27	NC		
28	NC		
29	NC		
30	NC		

Table 5. Pin Description

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5.3 Module Dimension or Footprint

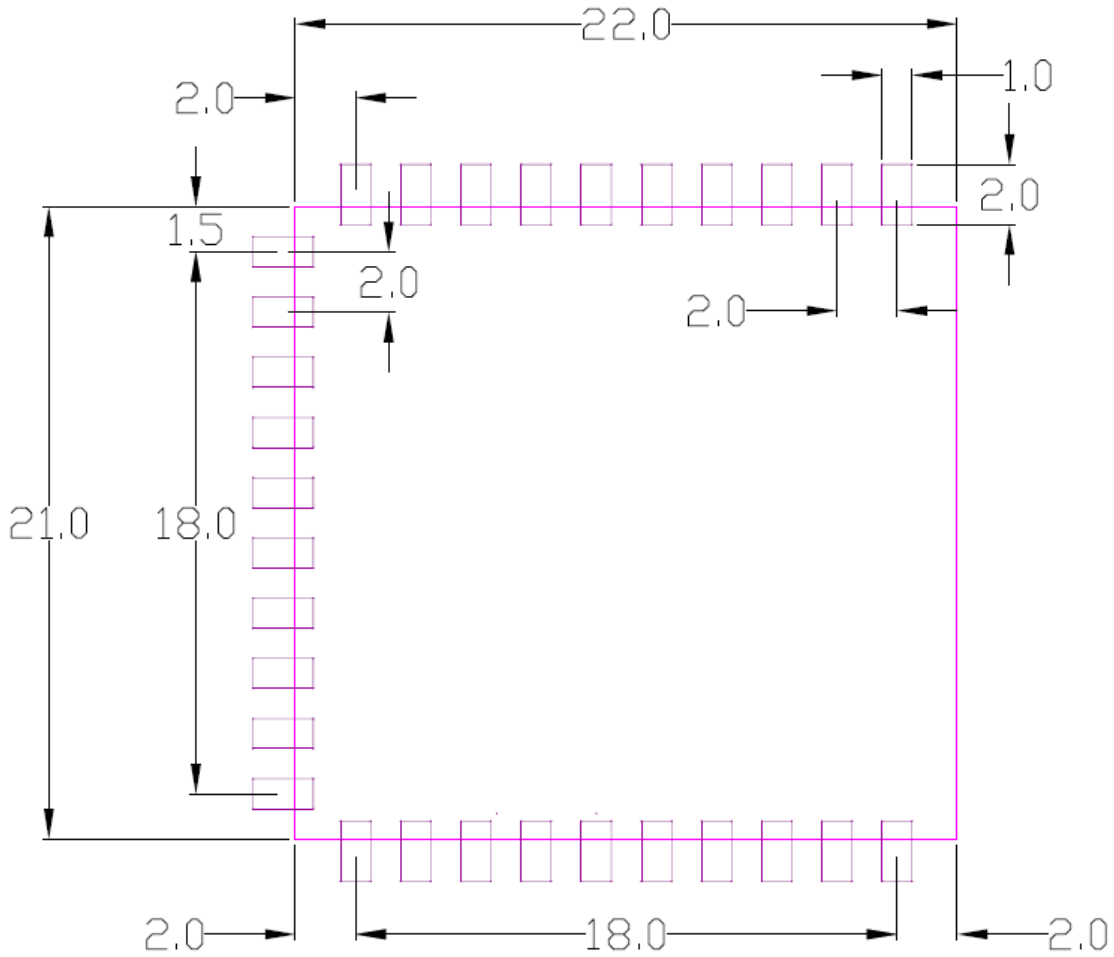

Figure 3. Pin Dimension or Footprint (TOP View)

6. Packing

TBD

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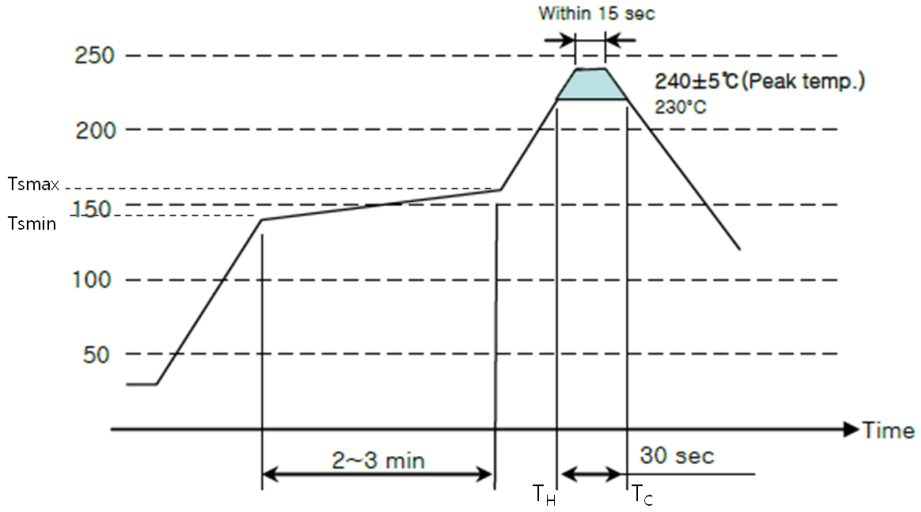
7. Soldering Condition

7.1 Manual Soldering – Pb Free

① Soldering Temperature: 360℃ ± 5℃, 5sec max.

(Solder : Sn /Ag /Cu : 96.5 /3.0 /0.5)

7.2 Recommended Reflow Condition – Pb Free



Profile Feature	Pb-Free Assembly
Preheat -Temperature Min (T_{smin}) -Temperature Typical ($T_{stypical}$) -Temperature Max (T_{smax}) -Time T_{smin} to T_{smax}	 -140˚C -150˚C -160˚C -2 ~ 3 min
Peak Temperature	240±5˚C
Time of actual peak temperature	Max. 15 seconds
Heating to Cool -Temperature Heating (T_H) -Temperature Cool (T_C) -Time T_H to T_C	 -230˚C -230˚C -30 seconds

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