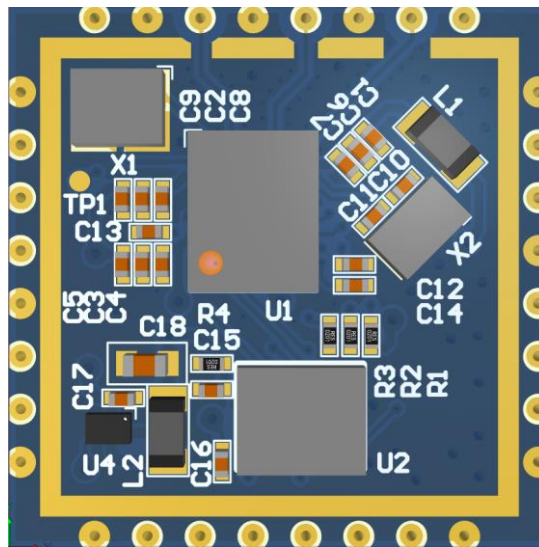


AMO UWB Module(SR150)

Rev 0.1
(ASMOP1BO0N1)



Revision	Contents	Date
0.0	New	26th, October, 2020.

26th, October, 2020

AMOSENSE Co., LTD.

Notes

The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

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1. Introduction

The UWB module is based on NXP's SR150 Ultra Wideband (UWB) transceiver IC. It integrates all RF circuitry, power management and clock circuitry in one module compliant to IEEE 802.15.4 HRP UWB PHY.

It can be used for 2-way ranging measurement and TDoA based one way ranging. Embedded PHY and MAC are compatible with FiRa consortium specification.

1.1 Key Features

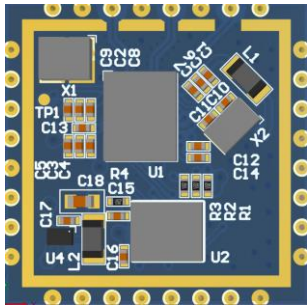
AMO UWB SR150 Module	
	
ANT Type	• External Antenna
Size	• 13mm x 13 mm x 2.1mm
Interface	• Host interface is SPI, Secure element interface is I2C
Main ICs	• SR150, ARM® Cortex-M33 32 Bit processor (SR150 is not customer programmable so these flash and RAM/ROM are not available to end customer.)
Reference Clocks	• 38.4MHz clock • 32.768KHz clock
Frequency Band	• 6.24 GHz ~ 8.24 GHz
Supply Voltage	• 3.0 to 3.6 (Typ. 3.3) V
Output Power	• MAX +12 dBm
Package	• Metal shield can

Table 1. Key Features

* Module and shield can size : 13mm x 13mm x 2.4mm

1.2 Applications

- ① IOT applications
- ② Consumer devices
- ③ Smart home devices
- ④ RTLS anchor etc.

2. Part Numbering

[Example]

Device Family

AS MO P 1B O 0 N 1

Company name

AS = AMOSENSE

Device type

MO = Module, DT = Tag, DA = Anchor

Type

P = PCB, F = FPCB, K = Package

Chipset

1B = SR150, 1C = SR040

Configuration

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

MCU Part number

0 = UWB Only, 1 = QN9090

Antenna

N = Non, A = Antenna, R = Receptacle, S = SMA

Version

1

Note : Provisional designation

3. Module Block Diagram

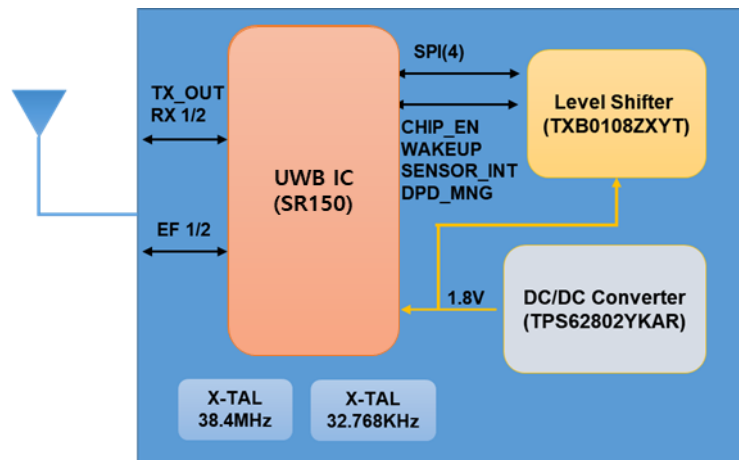


Figure 1. Block Diagram of AMO UWB Module

4. Electrical Characteristics

4.1 Absolute Maximum Ratings

Parameter	Min	Typ.	Max	Unit
Supply Voltage(VDD)	1.5	3.3	5.5	V
Operating Temperature		TBD		°C
RF Input Power	-	-	7	dBm

Table 2. Absolute Maximum Ratings

4.2 Transmitter Power Table

- T = 25°C, VDD = 3.3 V (typ.)

Power table	
Tx Power	Max. 12 dBm

Table 3. TX Power

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		12		dBm
RF Sensitivity	6.8 Mbps Data rate		-93		dBm
Current Consumption	Single RX	-	125		mA
	TX 12dBm	-	120		mA
	Sleep Mode	-	50	-	uA

Table 4. RF Characteristics

5. Module Package

5.1 Pinout Description



Figure 2 : Pinout Description

5.2 Pin Description Box

PIN	PIN Name	PIN Type	Description
P1	EF_2	I/O	External front-end Control 2
P2	GND	G	Ground supply
P3	RX1_HELIOS	I	RX1 IN
P4	GND	G	Ground supply
P5	RX2_HELIOS	RX	RX2 IN
P6	GND	G	Ground supply
P7	TX_OUT	O	TX OUT
P8	EF_1	I/O	External front-end Control 1
P9	GND	G	Ground supply
P10	SE_1	I/O	clock for the secure element I2C interface

P11	SE_2	I/O	SDA connection for secure element I2C interface
P12	GND	G	Ground supply
P13	GPIO8	I/O	GPIO8
P14	GPIO03_WAKEUP_OUT	I/O	Host wakeup
P15	GPIO05_SENSORINT_OUT	I/O	GPIO05
P16	GND	G	Ground supply
P17	GND	G	Ground supply
P18	DPD_MNG_OUT	I/O	Deep Power Down control
P19	CHIP_EN_OUT	I/O	connection for disabling/ enabling the chip
P20	HOST_4_OUT	I/O	MISO connection for the SPI host interface
P21	HOST_3_OUT	I/O	MOSI connection for the SPI host interface
P22	HOST_2_OUT	I/O	Slave select connection for the SPI host interface
P23	HOST_1_OUT	I/O	clock for the SPI host interface
P24	GND	G	Ground supply
P25	GND	G	Ground supply
P26	1V8_UWB	P	1.8V Power supply
P27	DCDC_EN	I/O	DC/DC Enable control
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 5. Pin Description

5.3 Module Dimension or Footprint

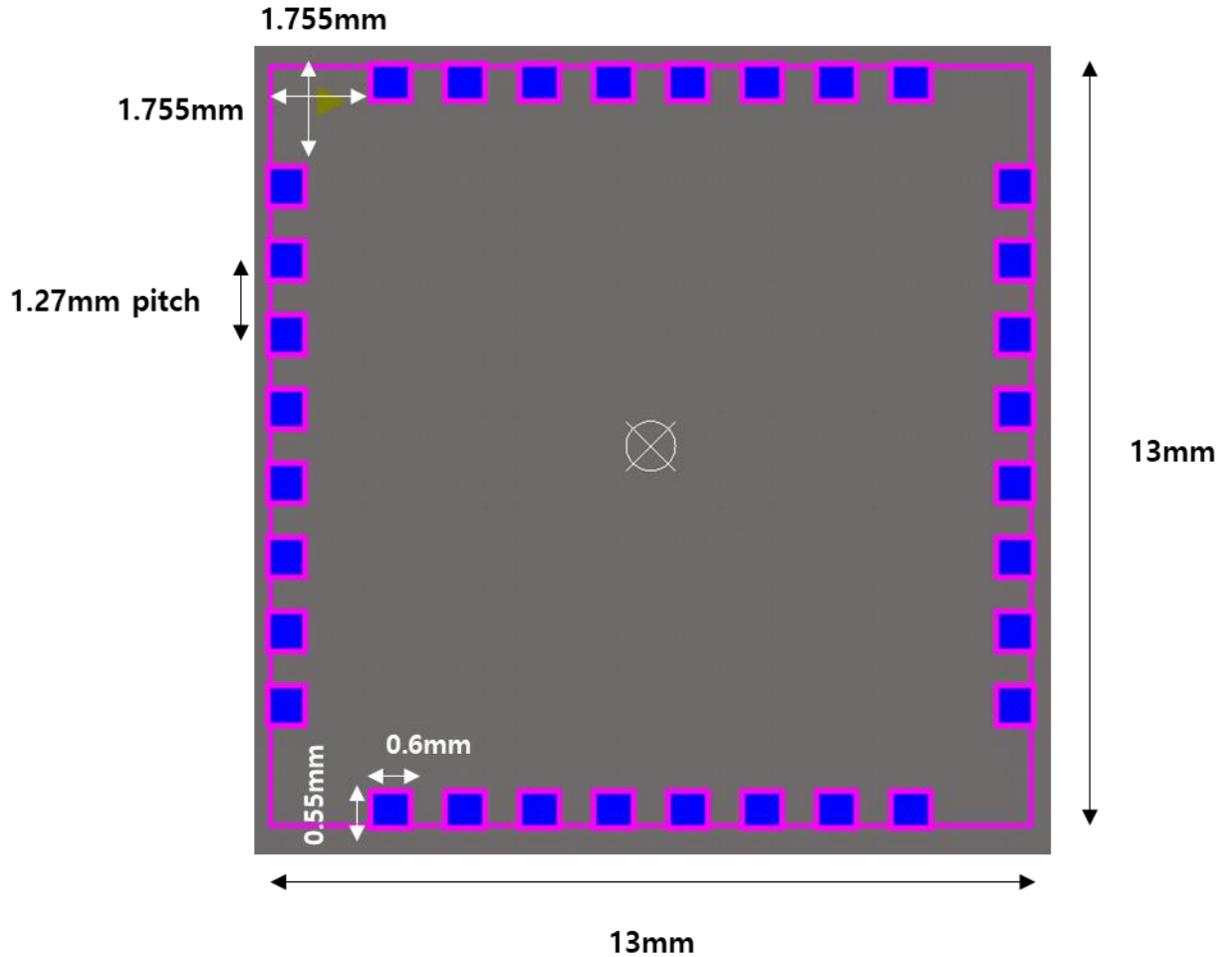


Figure 3. Pin Dimension or Footprint (TOP View)

6. Packing

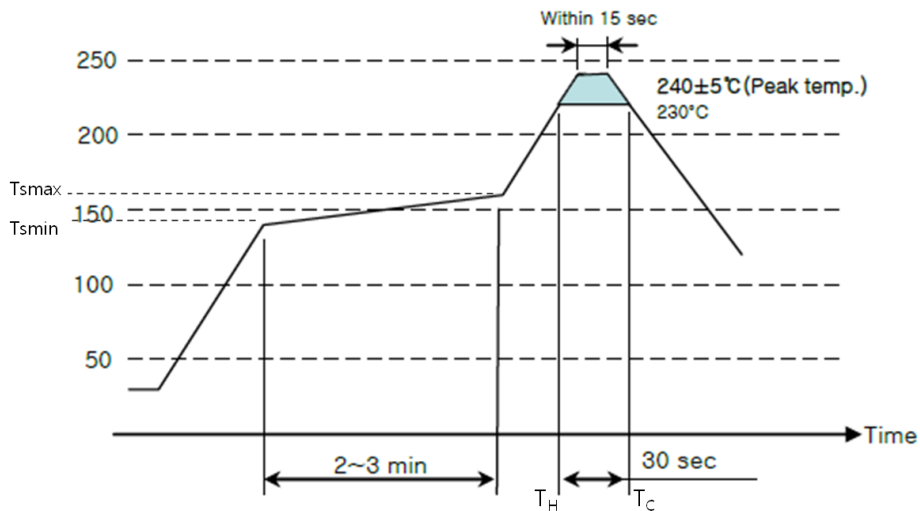
T.B.D

7. Soldering Condition

7.1 Manual Soldering – Pb Free

- ① Soldering Temperature: 360°C ± 5°C, 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})	-140°C
-Temperature Typical (T _{stypical})	-150°C
-Temperature Max (T _{smax})	-160°C
-Time T _{smin} to T _{smax}	-2 ~ 3 min
Peak Temperature	240±5°C
Time of actual peak temperature	Max. 15 seconds
Heating to Cool	
-Temperature Heating (T _H)	-230°C
-Temperature Cool (T _C)	-230°C
-Time T _H to T _C	-30 seconds