

# RYL900

**868/915 MHz 22dBm Output**  
**Low Power Long Range**  
**Transceiver Module**

**Datasheet**



11mm\*8.3mm\*2.2mm



## PRODUCT DESCRIPTION

The RYLR900 transceiver module features the LoRa long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption.

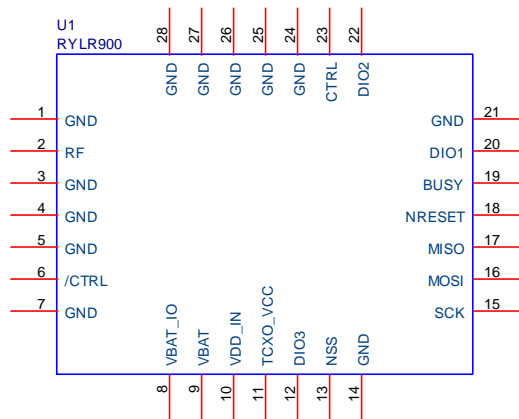
## FEATURES

- Semtech SX1262 Engine
- Highly efficient integrated power amplifier
- Excellent blocking immunity
- Low Receive current
- High sensitivity

## APPLICATIONS

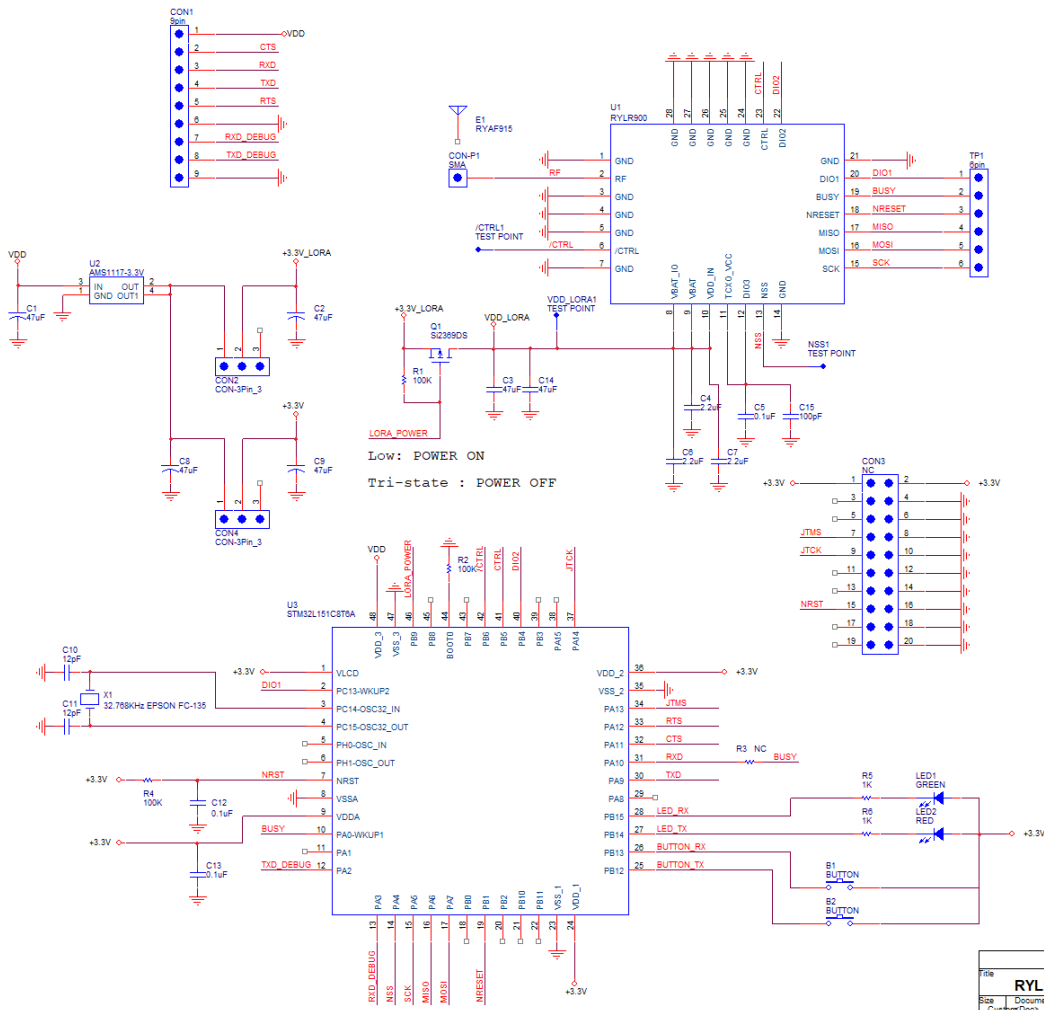
- IoT Applications
- Mobile Equipment
- Home Security
- Industrial Monitoring and Control Equipment
- Car Alarm

## PIN DESCRIPTION



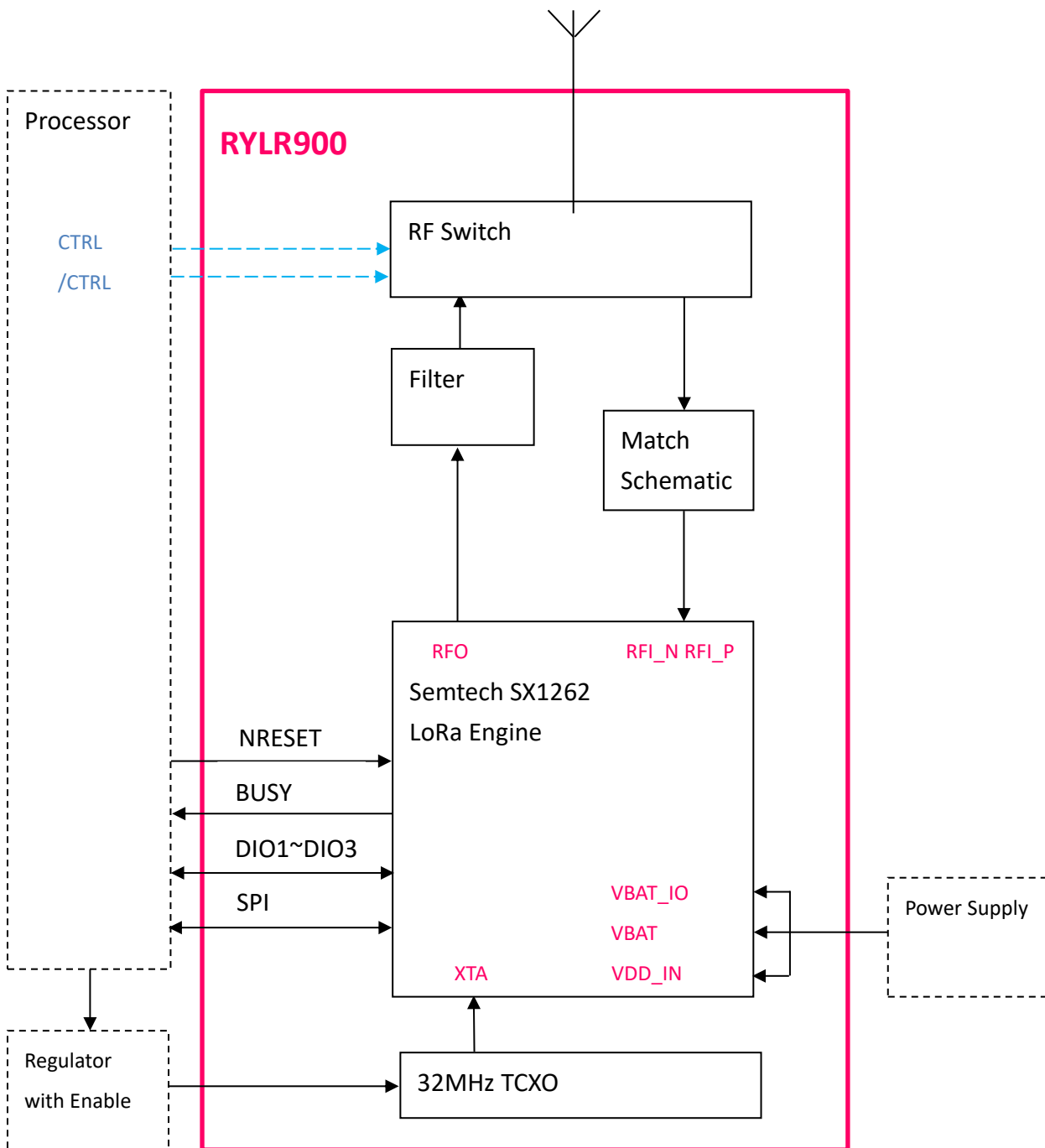
Pin	Name	I/O	Condition
1,3,4,5,7,14, 21,24~28	GND	-	Ground
2	RF	I/O	RF Input/Output
6	/CTRL	I	RF Switch control input
8	VBAT_IO	I	Supply for the Digital I/O interface pins (except DIO3)
9	VBAT	I	Supply for the RFIC
10	VDD_IN	I	Input voltage for power amplifier regulator, Connected to pin9 VBAT
11	TCXO_VCC	I	TCXO Power Supply
12	DIO3	I/O	Multipurpose digital I/O - external TCXO supply voltage
13	NSS	I	SPI Slave Select
15	SCK	I	SPI Clock
16	MOSI	I	SPI slave input
17	MISO	O	SPI slave output
18	NRESET	I/O	Reset signal, active low
19	BUSY	I/O	Busy indicator
20	DIO1	I/O	Multipurpose digital IO
22	DIO2	I/O	Multipurpose digital I/O / RF Switch control
23	CTRL	I	RF Switch control input

# APPLICATION SCHEMATIC



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# BLOCK DIAGRAM



## RF SWITCH CONTROL LOGIC

Mode	CTRL	/CTRL
RF Transmit	1	0
RF Receive	0	1

## SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
VBAT_IO Power Supply	1.8	3.3	3.7	V	
VBAT Power Supply	1.8	3.3	3.7	V	
VDD_IN Power Supply	1.8	3.3	3.7	V	
TCXO_VCC	1.7	1.8	3.6	V	
TCXO Accuracy		±2		ppm	
TCXO Long-term Frequency Stability		±1		ppm/Year	
TCXO Current		2.5		mA	
TCXO Rise time		3		ms	
RF Output Power Range			22	dBm	SX262 RFO
Filter insertion loss	1	2	3	dB	
RF sensitivity	-148			dBm	
RF Input Level			10	dBm	
Frequency Range	820		960	MHz	
RF Transmit Current		118		mA	RFOP = +22dBm
RF Receive Current		5.3		mA	DC-DC mode
OFF mode Current		0.16		uA	
RF Switch Current		10		uA	
Communication Range				KM	Open Space 125KHz
Digital input level high	0.7*VBAT_IO		VBAT_IO+0.3	V	VIH
Digital input level low	-0.3	0	0.3*VBAT_IO	V	VIL
Digital output level high	0.9*VBAT_IO		VBAT_IO	V	VOH I <sub>max</sub> = -2.5 mA
Digital output level low	0		0.1*VBAT_IO	V	VOL I <sub>max</sub> = 2.5mA
Operating Temperature	-40	25	+85	°C	
Dimensions					11mm*8.3mm*2.2mm
Weight		1		g	

## REFLOW SOLDERING

Consider the "IPC-7530 Guidelines for temperature profiling for mass soldering (reflow and wave) processes, published 2001.

### Preheat phase

Initial heating of component leads and balls. Residual humidity will be dried out. Please note that this preheat phase will not replace prior baking procedures.

- Temperature rise rate: max. 3 °C/s If the temperature rise is too rapid in the preheat phase it may cause excessive slumping.
- Time: 60 - 120 s If the preheat is insufficient, rather large solder balls tend to be generated. Conversely, if performed excessively, fine balls and large balls will be generated in clusters.
- End Temperature: 150 - 200 °C If the temperature is too low, non-melting tends to be caused in areas containing large heat capacity.

### Heating/ Reflow phase

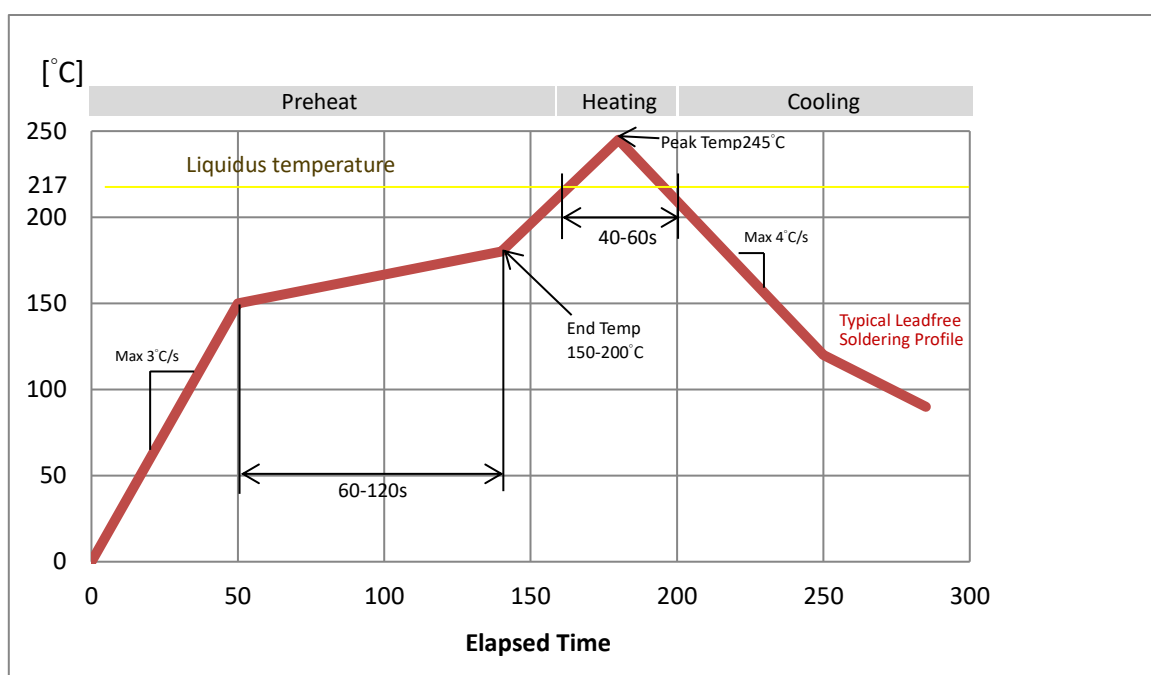
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- Limit time above 217 °C liquidus temperature: 40 - 60 s
- Peak reflow temperature: 245 °C

### Cooling phase

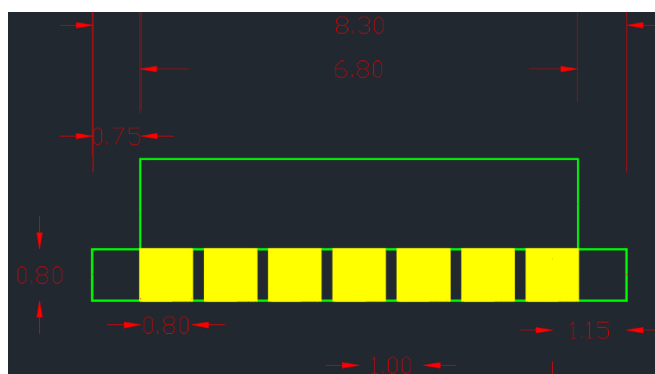
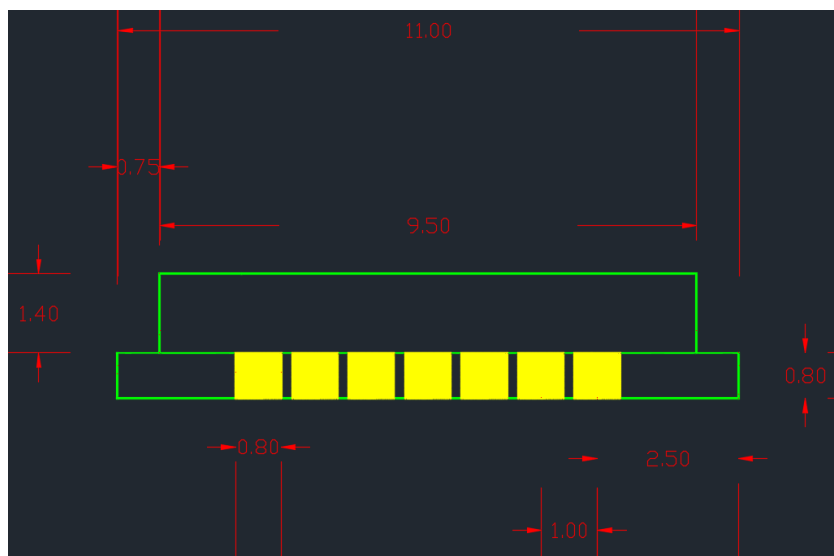
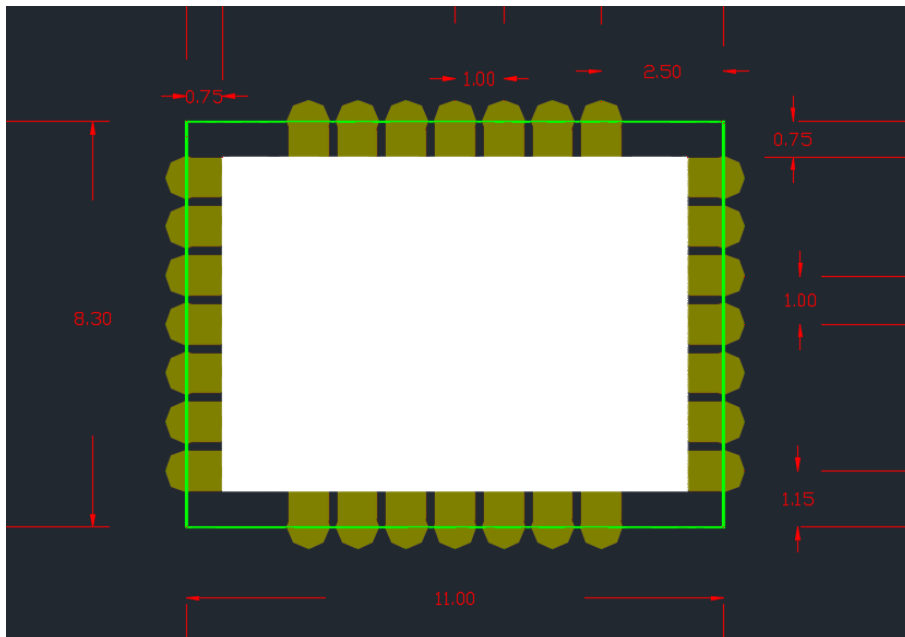
A controlled cooling avoids negative metallurgical effects (solder becomes more brittle) of the solder and possible mechanical tensions in the products. Controlled cooling helps to achieve bright solder fillets with a good shape and low contact angle.

- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX RYB070I module should be placed on the topside of the motherboard during soldering.



Recommended soldering profile

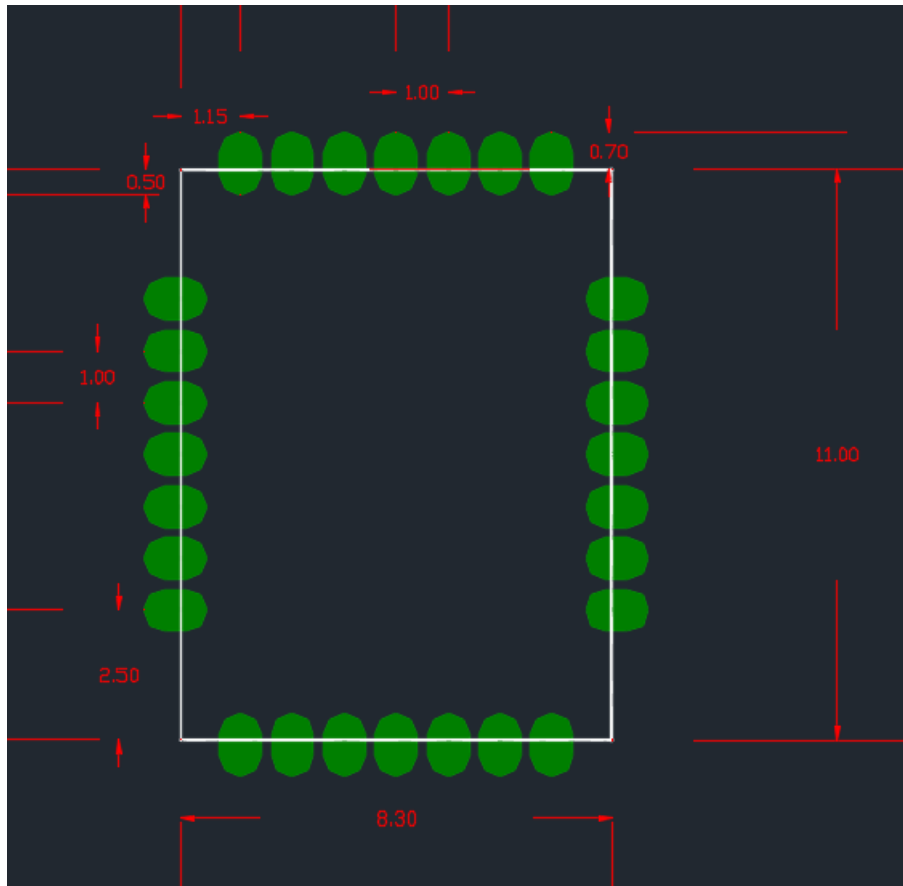
## DIMENSIONS



Unit : mm



## LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

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