

RYLR890

868/915MHz LoRa®
Low Power Long Range
Transceiver Module

Datasheet



13mm*11mm*2.2mm



PRODUCT DESCRIPTION

The RYLR890 transceiver module feature the LoRa long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption.

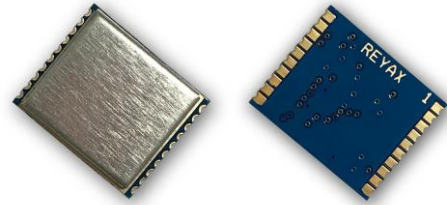
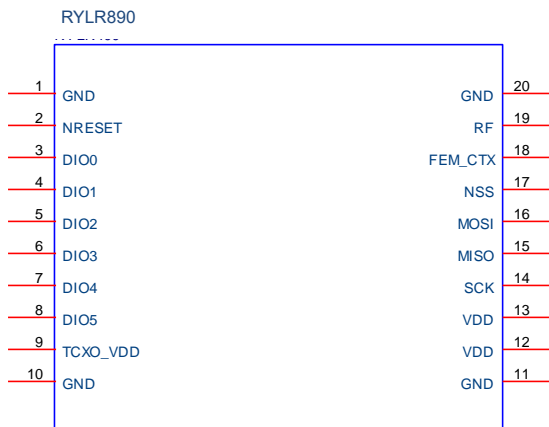
FEATURES

- Semtech SX1276 Engine
- High efficiency Power Amplifier
- Excellent blocking immunity
- Low Receive current
- High sensitivity
- 127 dB Dynamic Range RSSI

APPLICATIONS

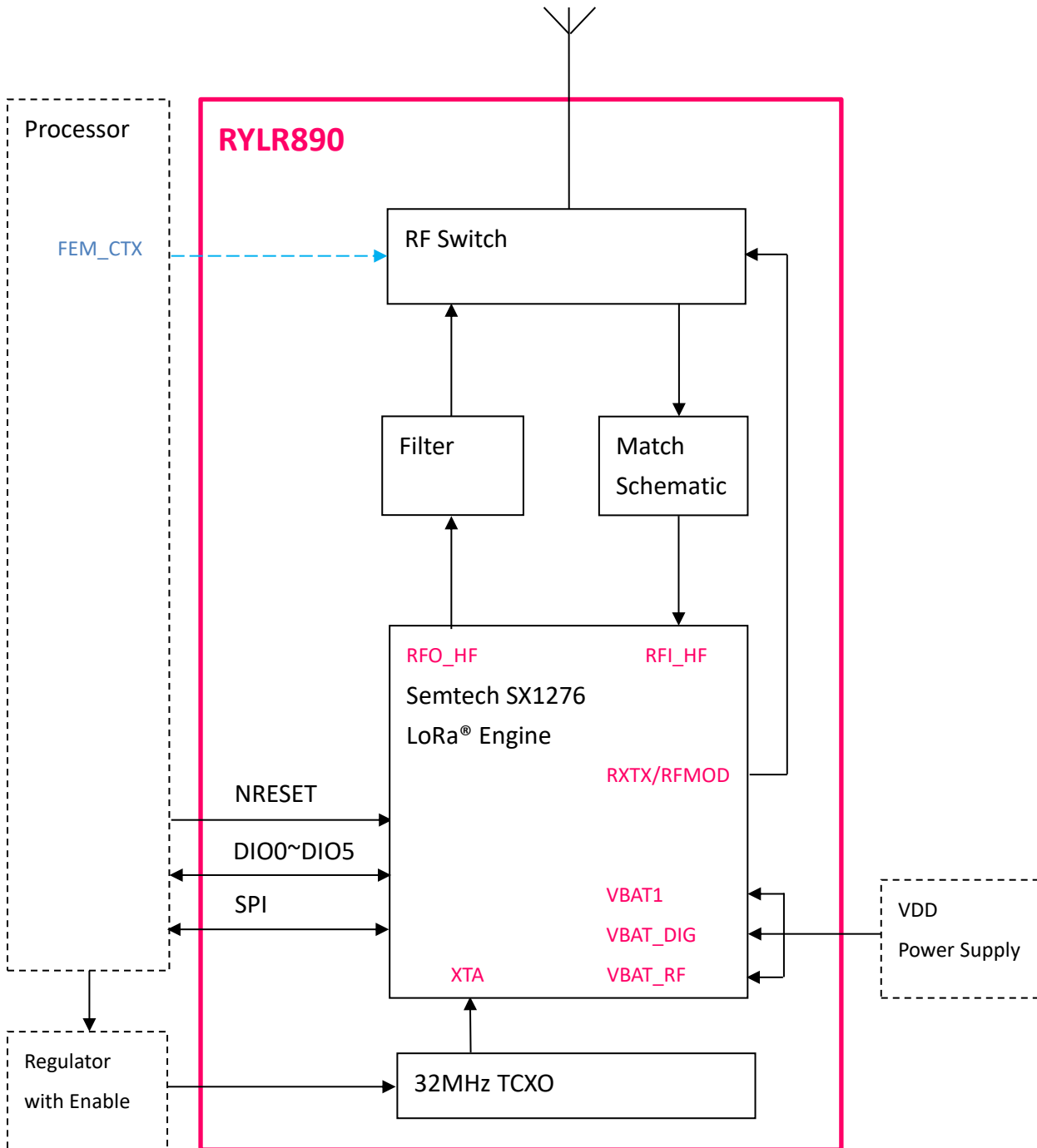
- IoT Applications
- Mobile Equipment
- Home Security
- Industrial Monitoring and Control Equipment
- Car Alarm

PIN DESCRIPTION



Pin	Name	I/O	Condition
1	GND	-	Ground
2	NRESET	I/O	Reset trigger input
3	DIO0	I/O	Digital I/O, software configured
4	DIO1	I/O	Digital I/O, software configured
5	DIO2	I/O	Digital I/O, software configured
6	DIO3	I/O	Digital I/O, software configured
7	DIO4	I/O	Digital I/O, software configured
8	DIO5	I/O	Digital I/O, software configured
9	TCXO_VDD	I	TCXO Power Supply
10	GND	-	Ground
11	GND	-	Ground
12	VDD	I	Power Supply
13	VDD	I	Power Supply
14	SCK	I	SPI Clock input
15	MISO	O	SPI Data output
16	MOSI	I	SPI Data input
17	NSS	I	SPI Chip select input
18	FEM_CTX	I	Optional RF Switch control Leave Unconnected.
19	RF	I/O	RF Input/Output
20	GND	-	Ground

BLOCK DIAGRAM



SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
VDD Power Supply	1.8	3.3	3.6	V	
TCXO Power Supply	1.7		3.3	V	
TCXO Accuracy		±2		ppm	
TCXO Long-term Frequency Stability		±1		ppm /Year	
TCXO Rise time		3		ms	
RF Output Power Range	-4		15	dBm	
Filter insertion loss	1	2	3	dB	
Harmonic			-36	dBm	
RF sensitivity	-148			dBm	
RF Input Level			10	dBm	
Frequency Range	862	868/915	1020	MHz	
SX1276 Transmit Current		29		mA	RFOP = +13 dBm
SX1276 Receive Current		11.5		mA	LNA Boost On
Sleep Current		0.2		uA	
RF Switch Current		10		uA	
TCXO Current		2.5		mA	
Communication Range		4		KM	Open Space 125KHz
Digital input level high	0.8		VDD	V	VIH
Digital input level low			0.2	V	VIL
Digital output level high	0.9			V	VOH I _{max} = 1 mA
Digital output level low			0.1	V	VOL I _{max} = -1 mA
Operating Temperature	-40	25	+85	°C	
Dimensions					13mm*11mm*2.2mm
Weight		1		g	

REFLOW SOLDERING

Consider the "IPC-7530 Guidelines for temperature profiling for mass soldering (reflow and wave) processes, published 2001. **Only single reflow soldering processes are recommended for REYAX modules. Repeated reflow soldering processes and soldering the module upside down are not recommended.**

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

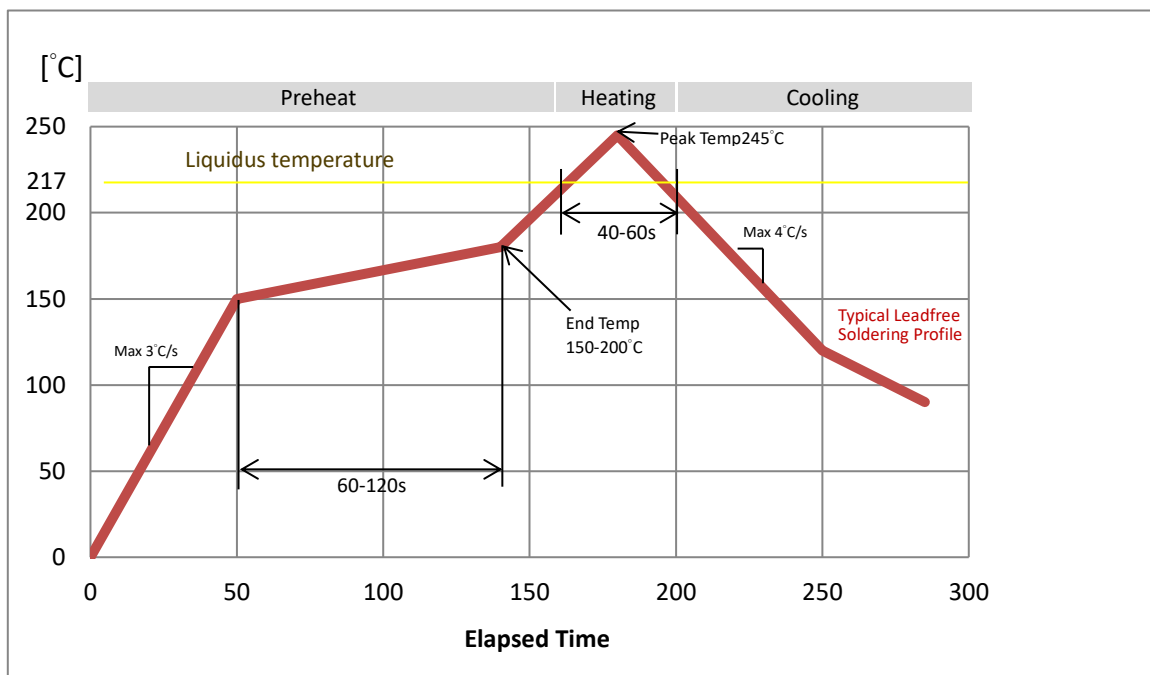
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

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

Cooling phase

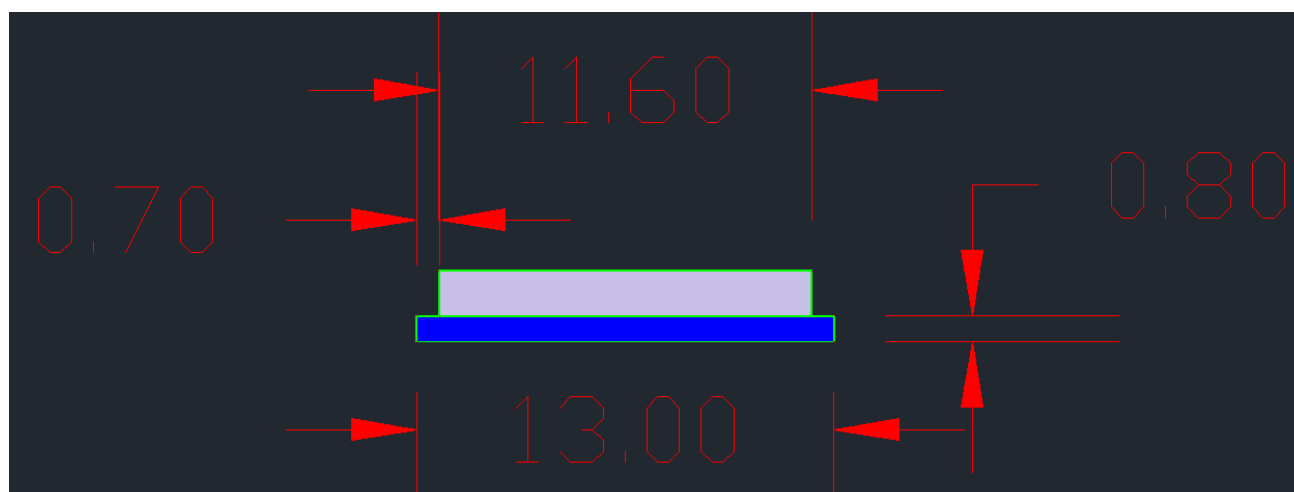
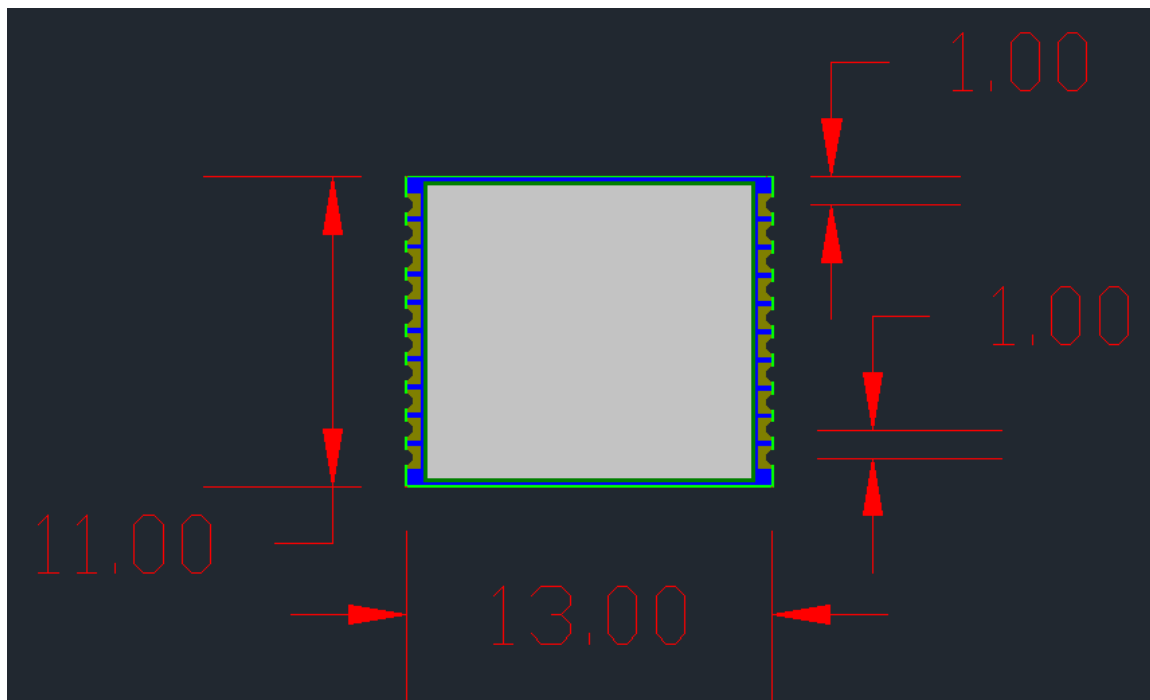
A controlled cooling avoids negative metallurgical effects (solder becomes more brittle) of the solder and possible mechanical tensions in the products. Controlled cooling helps to achieve bright solder fillets with a good shape and low contact angle.

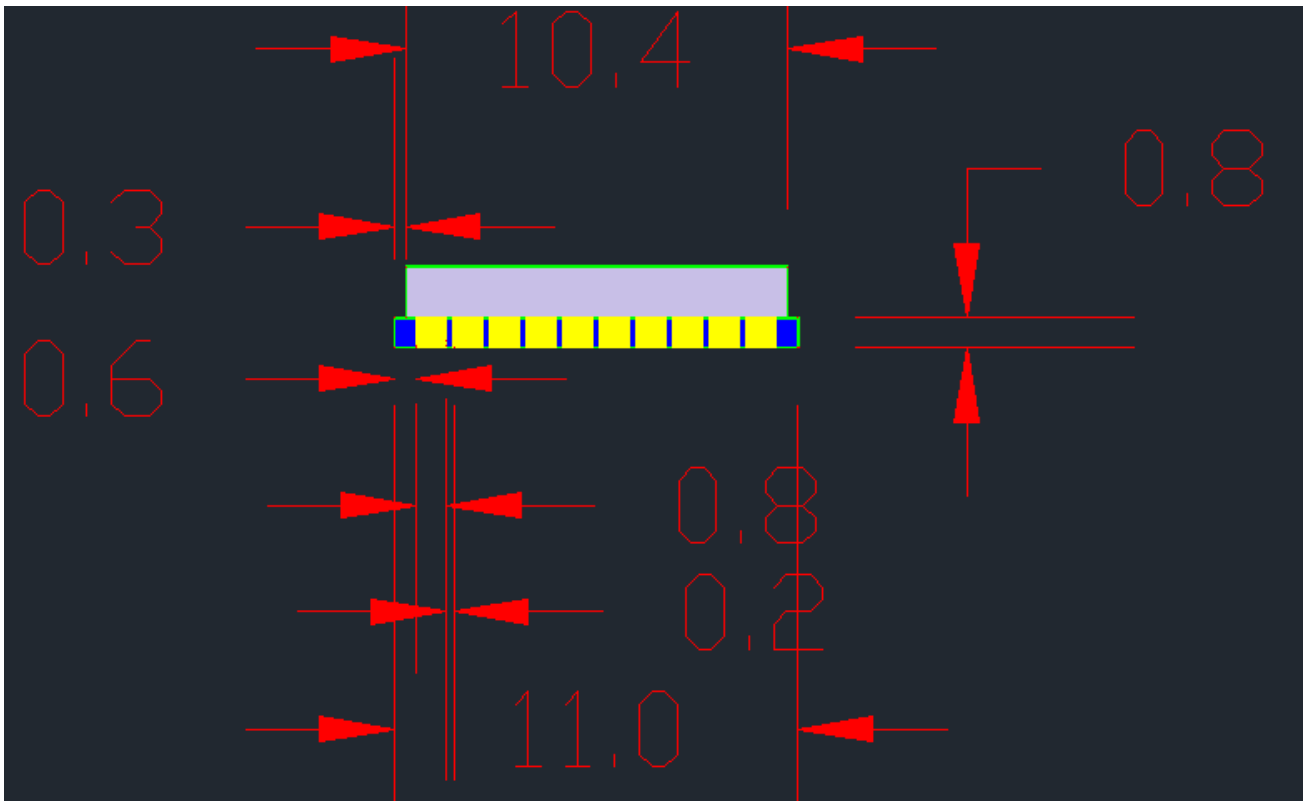
- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX module should be placed on the topside of the motherboard during soldering.



Recommended soldering profile

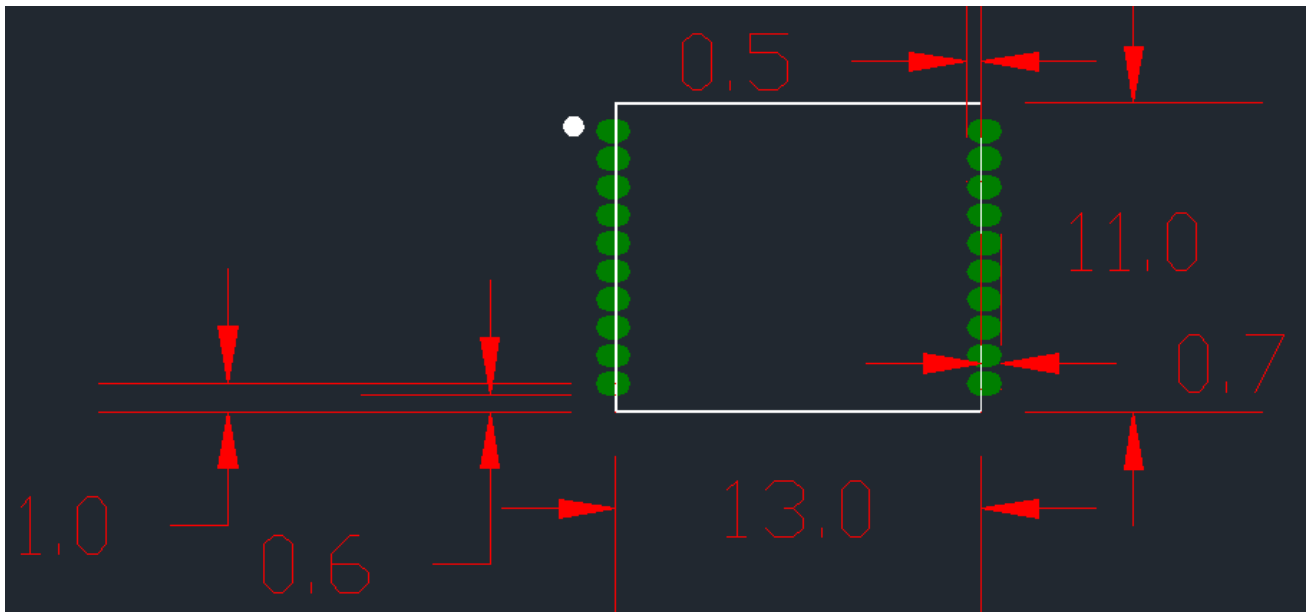
DIMENSIONS





Unit : mm

LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

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