REYAX
TECHNOLOGY CORPORATION, LTD

11-MAR-2020 56312e33

RYLR490

426/433/490 MHz 22dBm Output

Low Power Long Range

Transceiver Module

Datasheet



11mm*8.3mm*2.2mm

Represented by:

first FC components

FIRST Components srl Via Cavour 69, 21020 Buguggiate (VA)

T. +39 0332 1888005 web: www.first-components.com

PRODUCT DESCRIPTION

The RYLR490 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

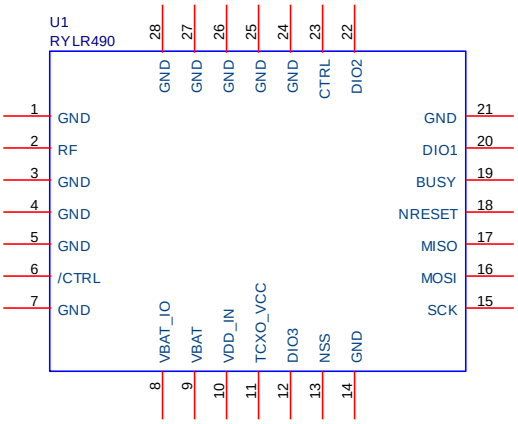
- Semtech SX1262 Engine
- Highly efficient integrated power amplifier
- Excellent blocking immunity
- Low Receive current
- High sensitivity

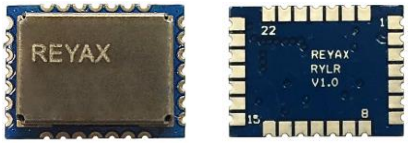
APPLICATIONS

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

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PIN DESCRIPTION

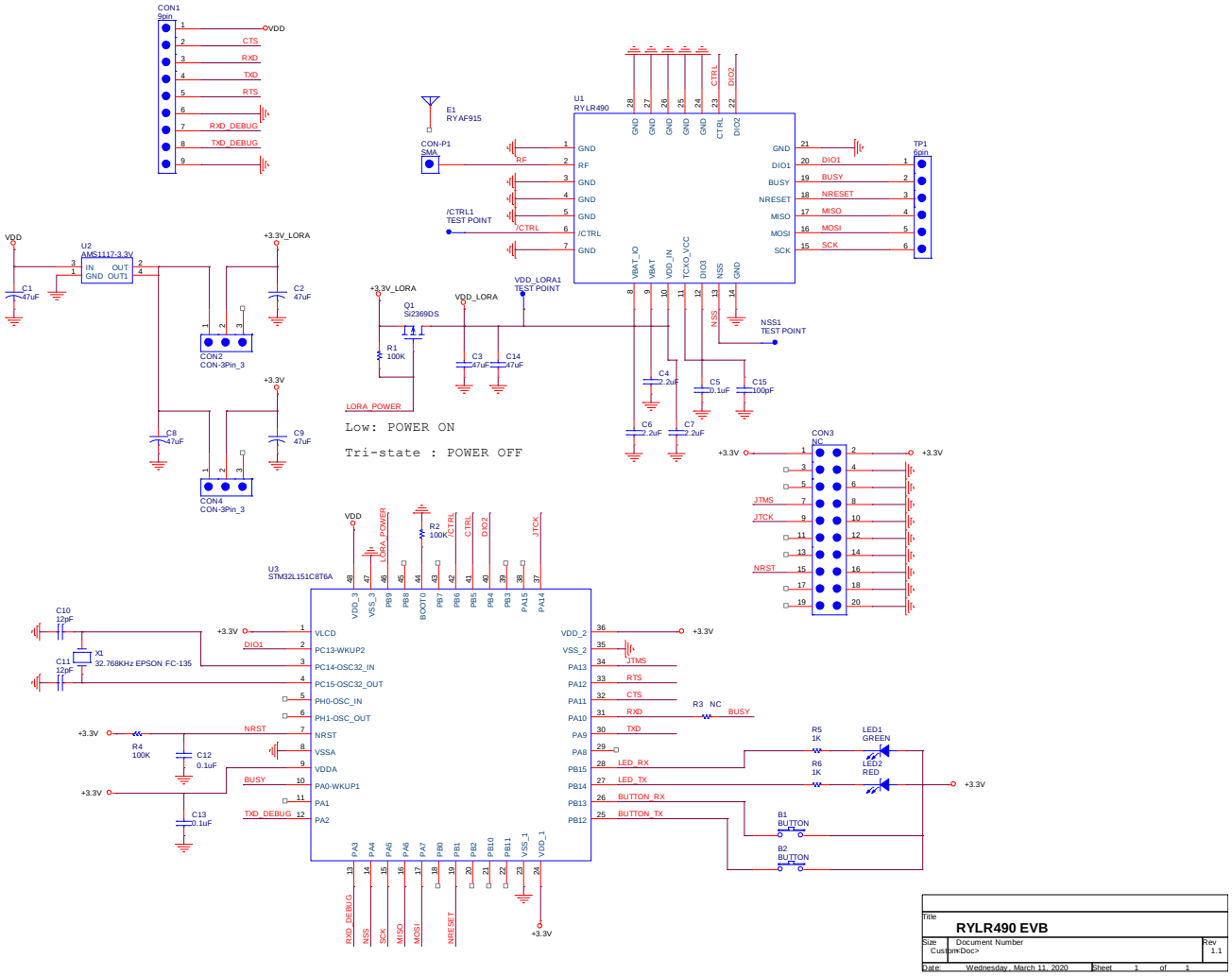




Pin	Name	I/O	Condition
1,3,4,5,7,14, 21,24~28	GND	-	Ground
2	RF	I/O	RF Input/Output
6	/CTRL	I	RF Switch control input
8	VBAT_IO	I	Supply for the Digital I/O interface pins (except DIO3)
9	VBAT	I	Supply for the RFIC
10	VDD_IN	I	Input voltage for power amplifier regulator, Connected to pin9 VBAT
11	TCXO_VCC	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

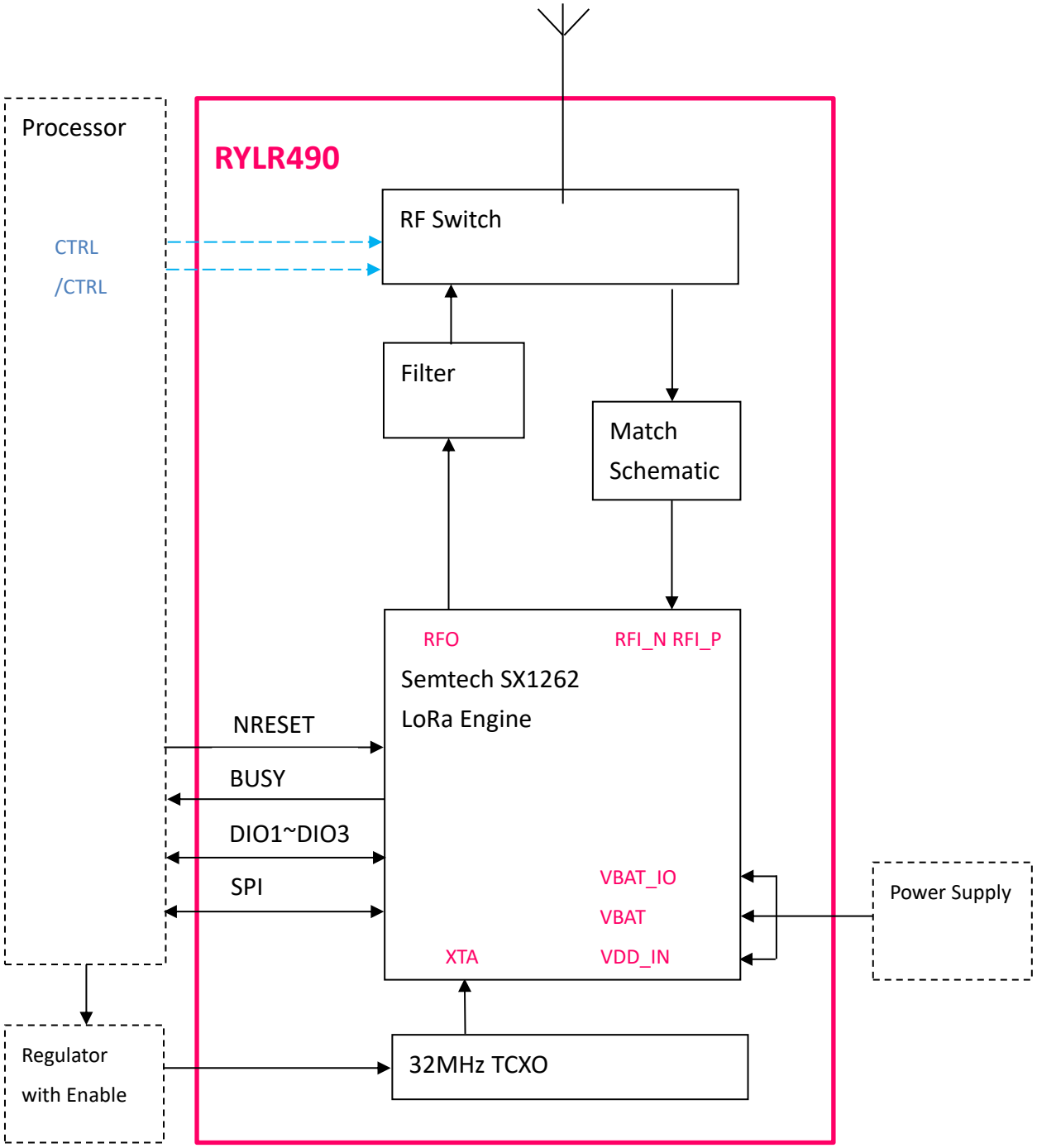
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APPLICATION SCHEMATIC



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BLOCK DIAGRAM



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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	410	490	525	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 Imax = -2.5 mA
Digital output level low	0		0.1*VBAT_IO	V	VOL Imax = 2.5mA
Operating Temperature	-40	25	+85	˚C	
Dimensions					11mm*8.3mm*2.2mm
Weight		1		g	

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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

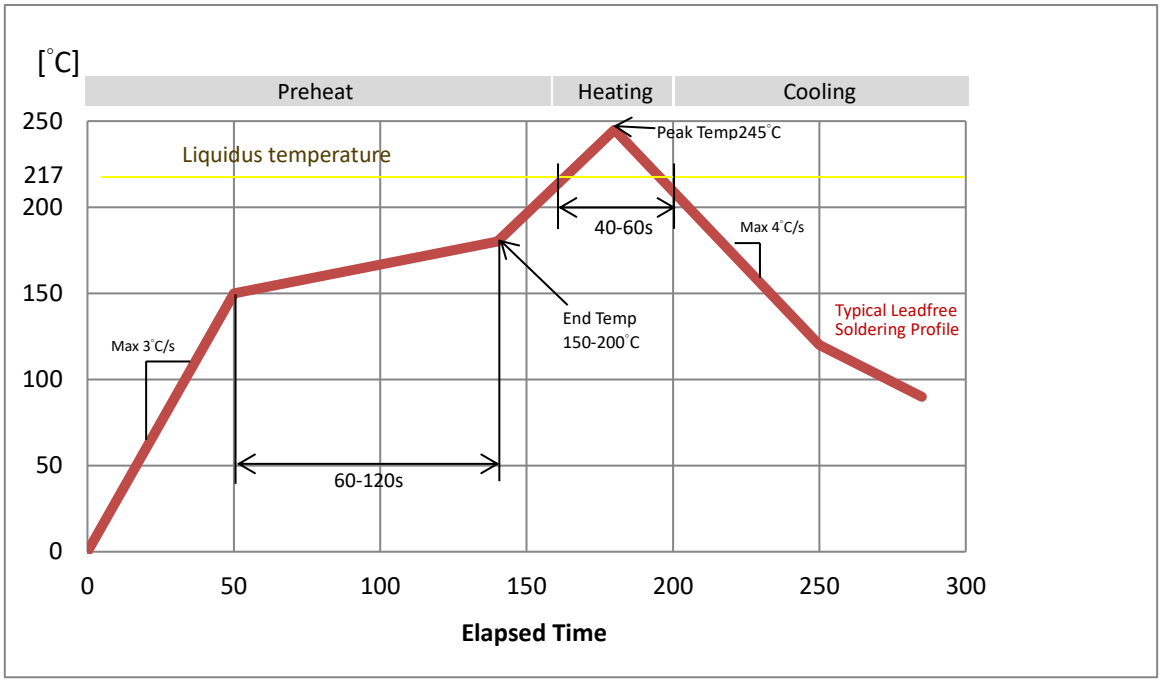
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- 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.

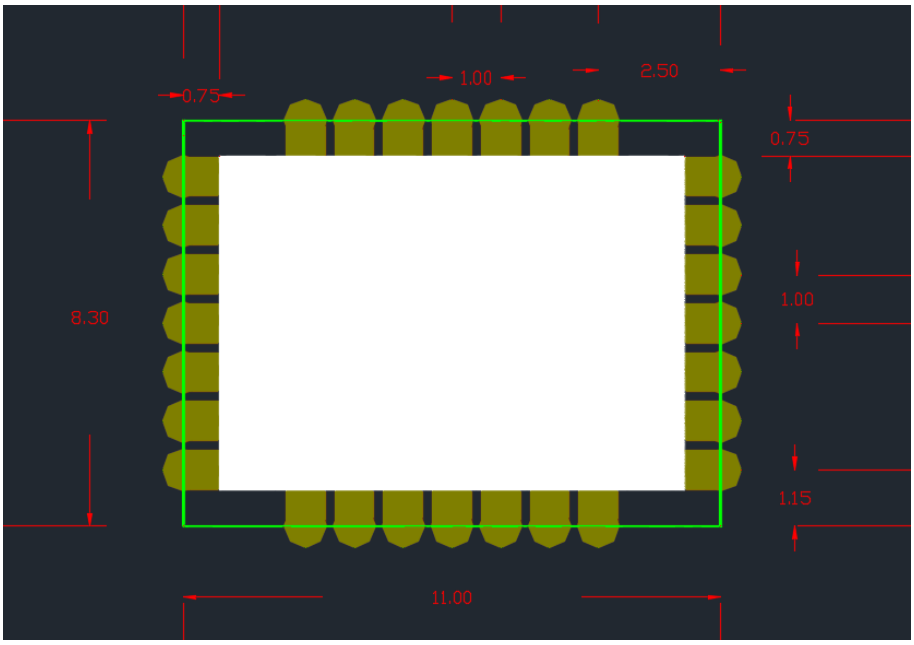
- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX RYB070I module should be placed on the topside of the motherboard during soldering.

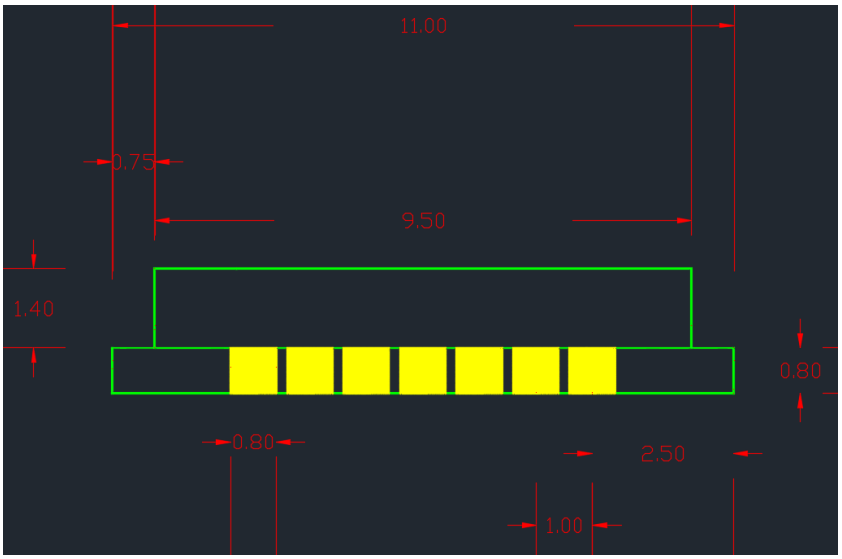


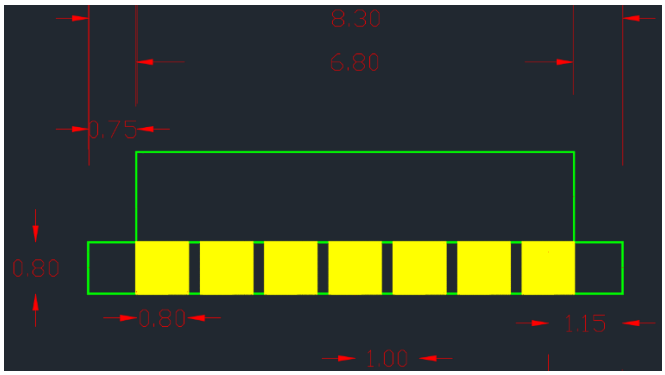
Recommended soldering profile

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DIMENSIONS



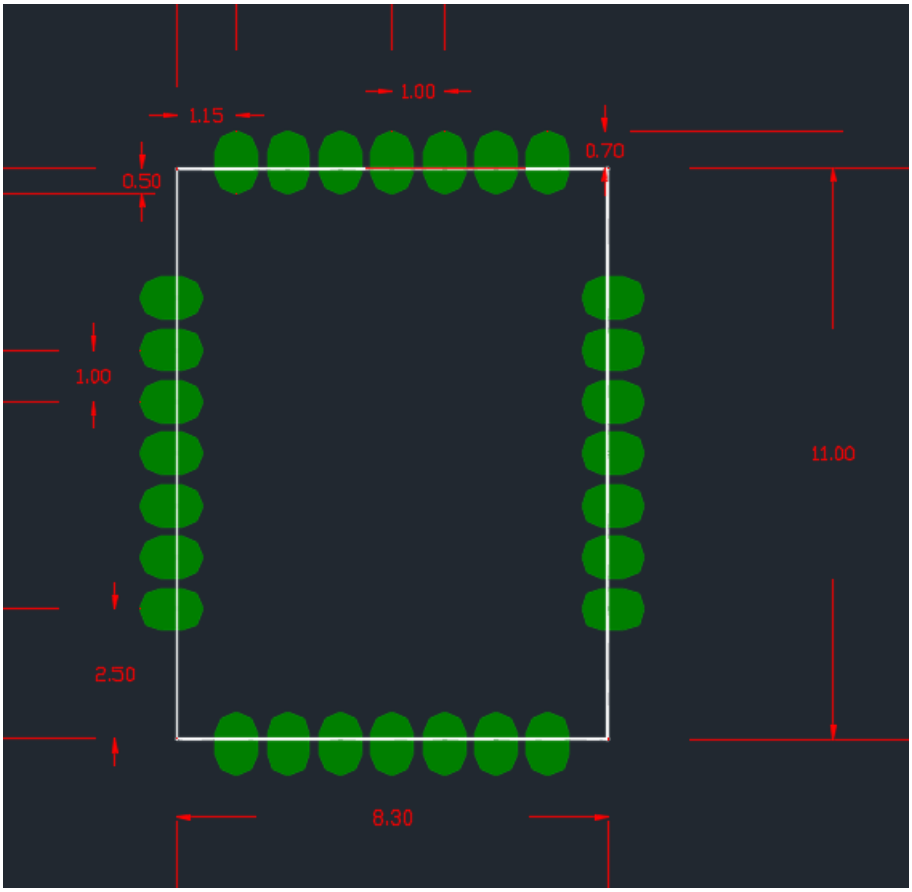




Unit : mm

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LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

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