REYAX
TECHNOLOGY CORPORATION, LTD

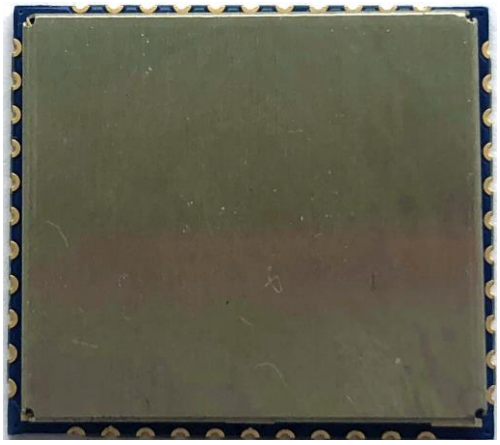
RYRR50S

Multiprotocol Fully

Integrated 13.56MHz

RFID & NFC Module

Datasheet





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 RYRR50S module is a 13.56MHz RFID and Near Field Communication (NFC) system. Built-in programming options make the device suitable for a wide range of applications for proximity and vicinity identification systems.

FEATURES

- ISO/IEC 14443-A and B, MIFARE DESFIRE, Classic, Plus card support.
- ISO/IEC 14443- type A card emulation
- NFC protocols - tag reader/writer, P2P (Optional)
- SO/IEC 15693, ICODE, ISO/IEC 18000-3 mode 3
- JIS X 6319-4 (Comparable with FeliCa scheme)
- ISO/IEC 7816 compliant (Optional)
- NXP NFC/RFID Engine.
- Operation Temperature range: -40 to +85°C.

APPLICATIONS

- RFID cards Reader
- EV charger
- Secure Pairing
- Public Transport
- Event Ticketing
- Electronic door lock
- Smart card reader

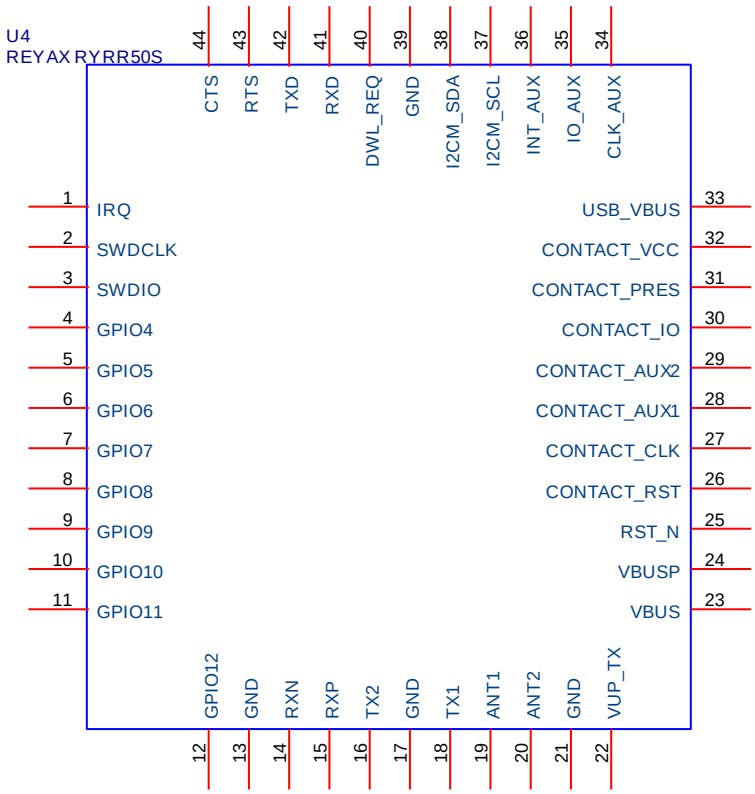
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SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
Operation Voltage	4.5	5	5.5	V	VUP_TX, VBUS, VBUSP
Logic V_{OH}	2.5	3	3.3	V	TXD High-level output voltage
Logic V_{OL}	0	0.3	0.7	V	TXD Low-level output voltage
Logic V_{IH}	2.5	3.3	3.3	V	RXD High-level input voltage
Logic V_{IL}	0	0	0.7	V	RXD Low-level input voltage
RF Output Power		20	23	dBm	
RF transmit current		90	250	mA	
Communication Range		5		cm	Standard card
Reset Time	50	60	70	ms	
Baud Rate		115200		bps	8,N,1
RF Frequency Range	13.553	13.56	13.567	MHz	
Operating Temperature	-40	25	+85	˚C	
Flash endurance		200		Cycles	
Antenna					External
Dimensions					21mm*19mm*2.4mm
Weight		5		g	

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PIN DESCRIPTION



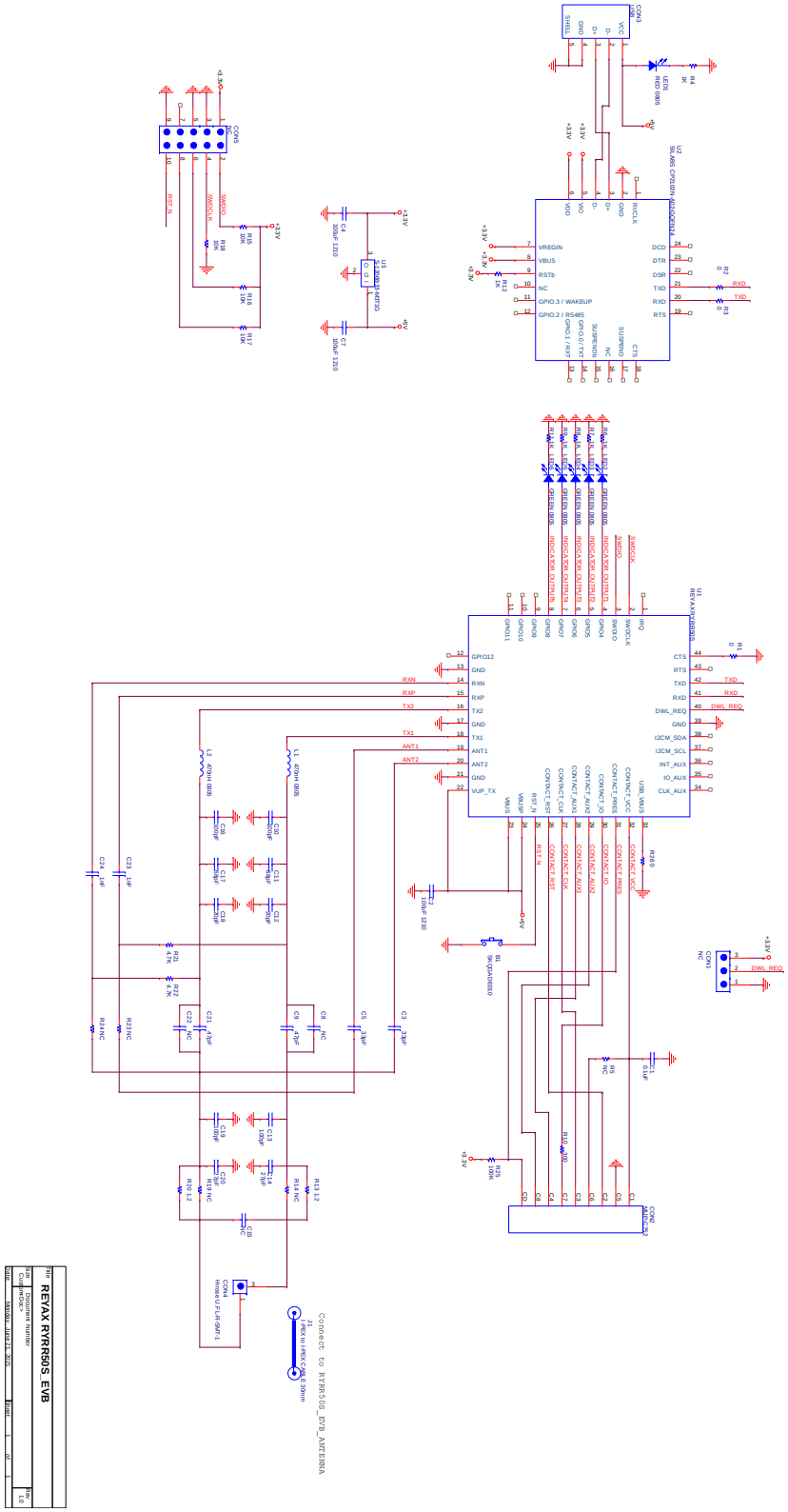
Pin	Name	I/O	Condition
1	IRQ	-	Leave Unconnected.
2	SWDCLK	I	SW serial debug line clock
3	SWDIO	I/O	SW serial debug line input/output
4	GPIO4	I/O	Reserved, Leave Unconnected.
5	GPIO5	I/O	Reserved, Leave Unconnected.
6	GPIO6	I/O	Reserved, Leave Unconnected.
7	GPIO7	I/O	Reserved, Leave Unconnected.
8	GPIO8	I/O	Reserved, Leave Unconnected.
9	GPIO9	I/O	Reserved, Leave Unconnected.
10	GPIO10	I/O	Reserved, Leave Unconnected.
11	GPIO11	I/O	Reserved, Leave Unconnected.
12	GPIO12	I/O	Reserved, Leave Unconnected.
13	GND	-	Ground
14	RXN	I	Receiver input
15	RXP	I	Receiver input
16	TX2	O	Antenna driver output

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17	GND	-	Ground
18	TX1	O	Antenna driver output
19	ANT1	I/O	Antenna connection for load modulation in card emulation and P2P passive target modes
20	ANT2	I/O	antenna connection for load modulation in card emulation and P2P passive target modes
21	GND	-	Ground
22	VUP_TX	I	Supply of the contactless TX_LDO
23	VBUS	I	Main supply voltage input of microcontroller
24	VBUSP	I	Main supply for the contact interface
25	RST_N	I	Low reset pin.
26	CONTACT_RST	-	Reserved, Leave Unconnected.
27	CONTACT_CLK	-	Reserved, Leave Unconnected.
28	CONTACT_AUX1	-	Reserved, Leave Unconnected.
29	CONTACT_AUX2	-	Reserved, Leave Unconnected.
30	CONTACT_IO	-	Reserved, Leave Unconnected.
31	CONTACT_PRES	-	Reserved, Leave Unconnected.
32	CONTACT_VCC	-	Reserved, Leave Unconnected.
33	USB_VBUS	-	Reserved, Leave Unconnected.
34	CLK_AUX	-	Reserved, Leave Unconnected.
35	IO_AUX	-	Reserved, Leave Unconnected.
36	INT_AUX	-	Reserved, Leave Unconnected.
37	I2CM_SCL	-	Reserved, Leave Unconnected.
38	I2CM_SDA	-	Reserved, Leave Unconnected.
39	GND	-	Ground
40	DWL_REQ	I	Leave Unconnected.
41	RXD	I	UART Data Input
42	TXD	O	UART Data Output
43	ATX_C	-	Reserved, Leave Unconnected.
44	ATX_D	-	Reserved, Leave Unconnected.

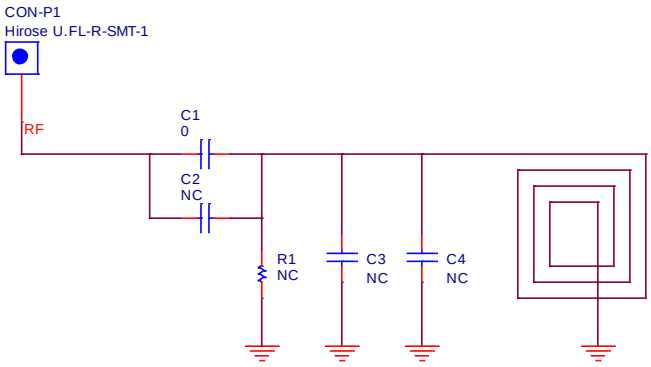
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EVB APPLICATION SCHEMATIC



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EVB ANTENNA APPLICATION SCHEMATIC



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Date: Sunday, June 20, 2021	Sheet 1 of 1	

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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

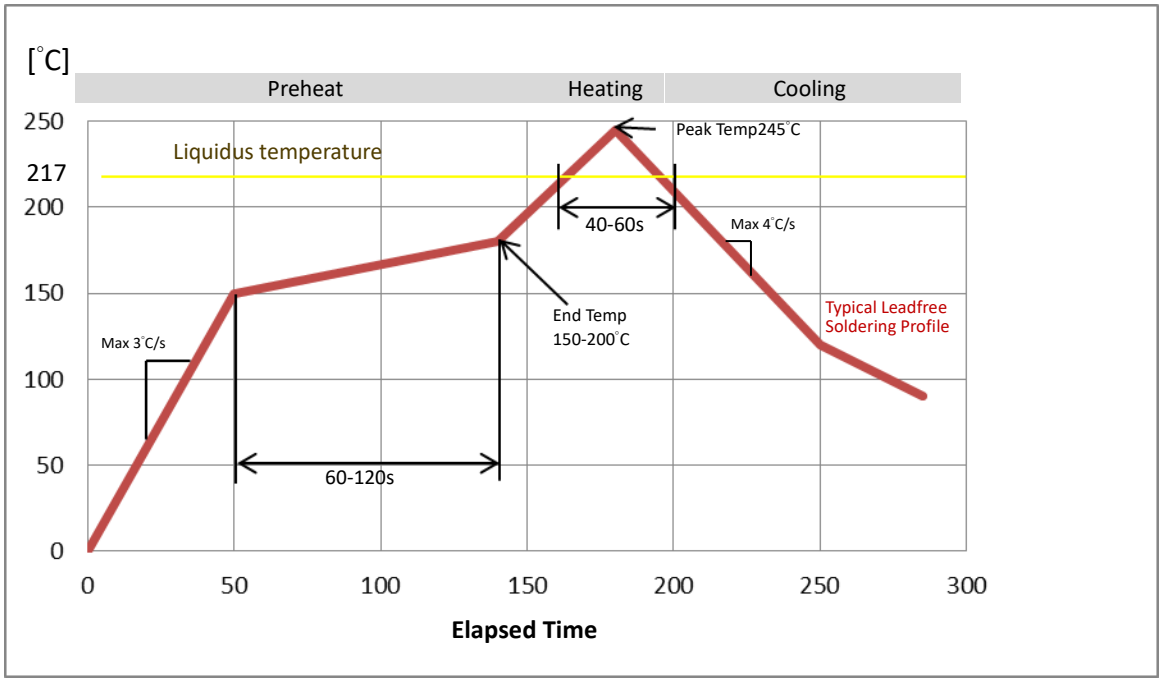
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- 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.

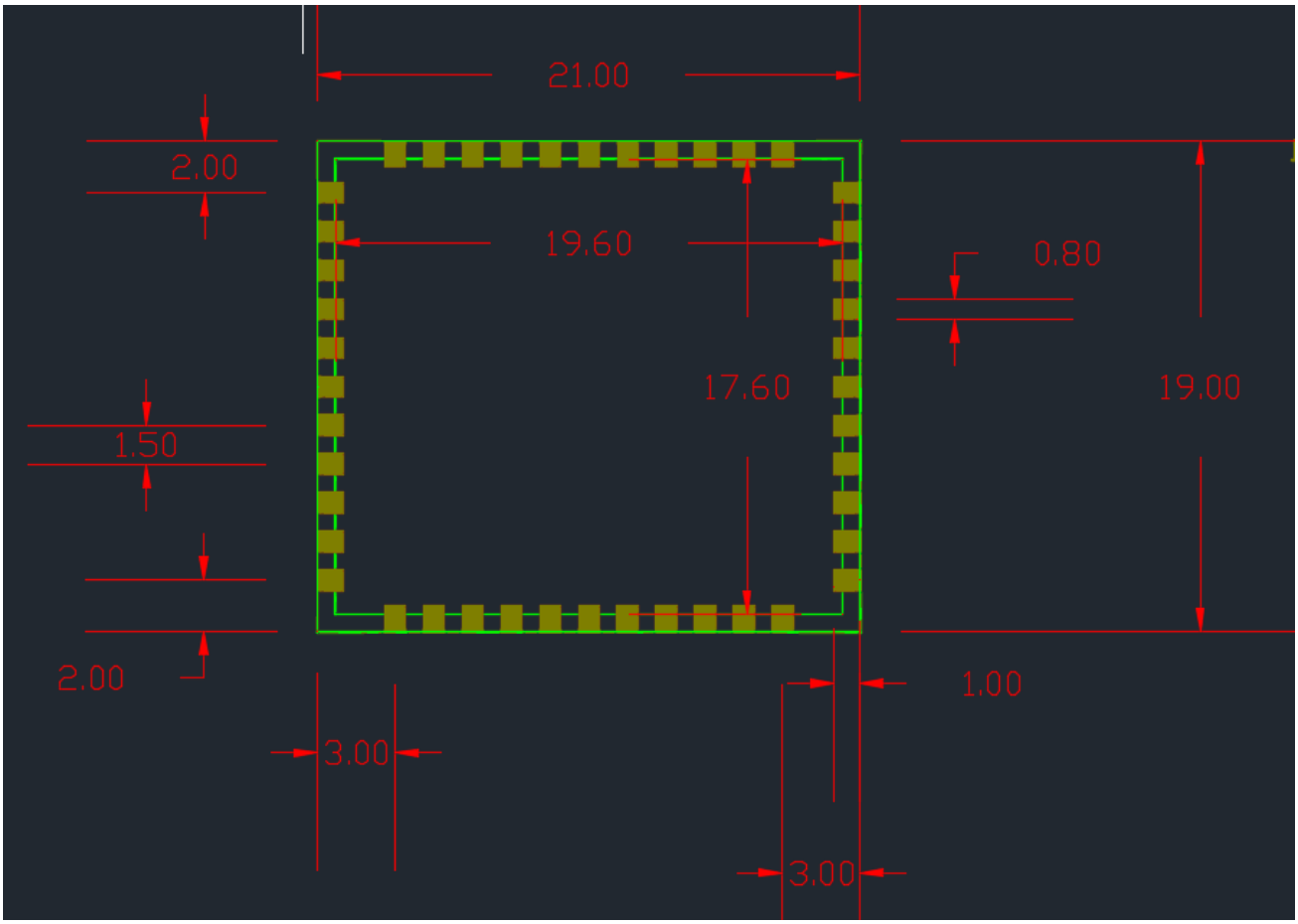
- Temperature fall rate: max 4 °C/s. To avoid falling off, the REYAX RYRR20I module should be placed on the topside of the motherboard during soldering.

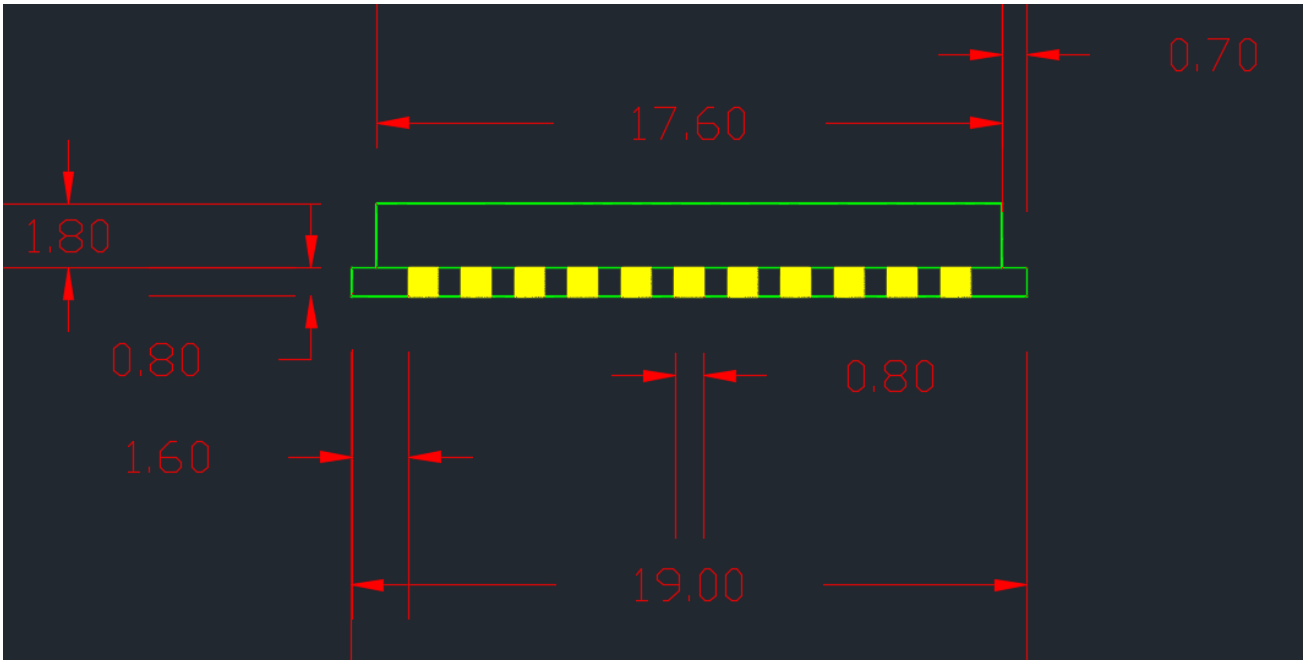


Recommended soldering profile

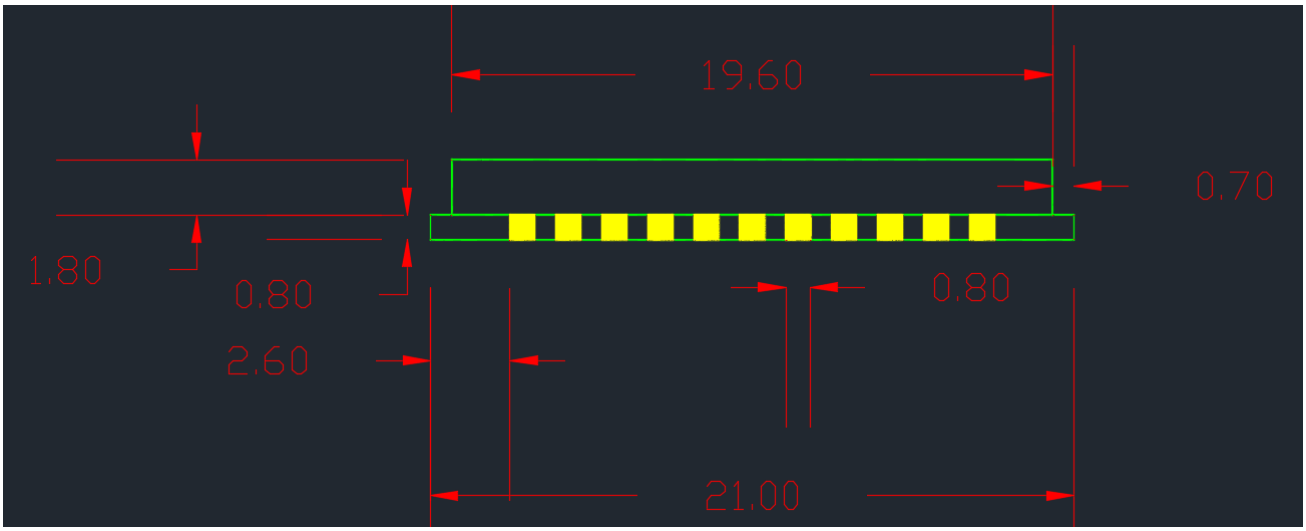
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DIMENSIONS





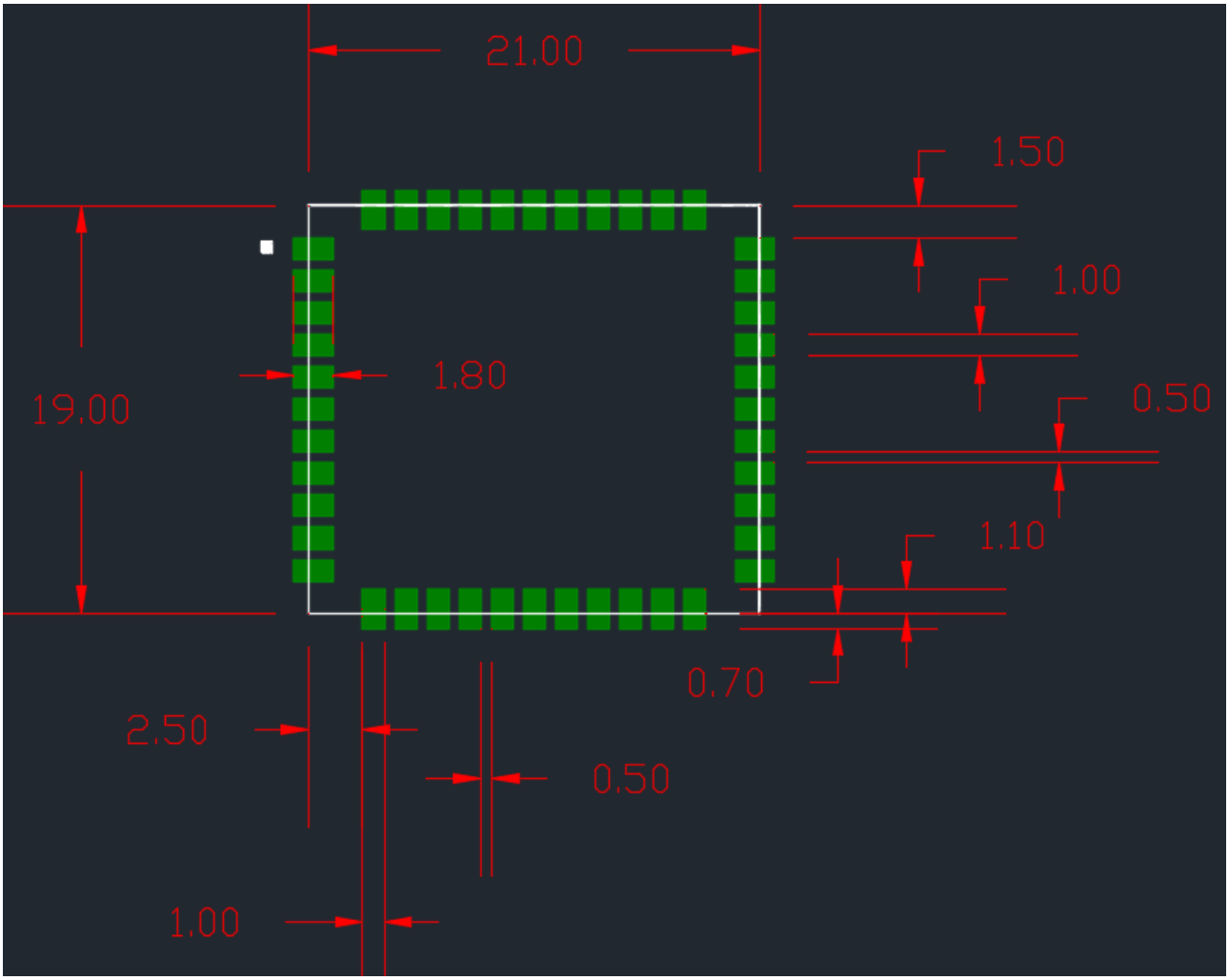
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unit : mm

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Taiwan: sales@reyax.com
China: sales@reyax.com.cn
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