REYAX
TECHNOLOGY CORPORATION, LTD

05-DEC-2019 56312E33

RYRR30I

Multiprotocol Fully

Integrated 13.56MHz

RFID & NFC Module

Datasheet



Represented by:

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PRODUCT DESCRIPTION

The RYRR30I module is a 13.56-MHz 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

- Supports Near Field Communication (NFC) Standards NFCIP-1 (ISO/IEC 18092) Active P2P.
- Completely Integrated Protocol Handling for ISO15693, ISO14443A, ISO14443B and FeliCa.
- Capacitive sensing - Wake-up
- ST ST25R3911B NFC/RFID Engine.
- Firmware upgrade via UART Interface.
- Operation Temperature range: -40 to +85°C.

APPLICATIONS

- RFID cards Reader
- EV charger
- Mobile Devices Near Field Communication

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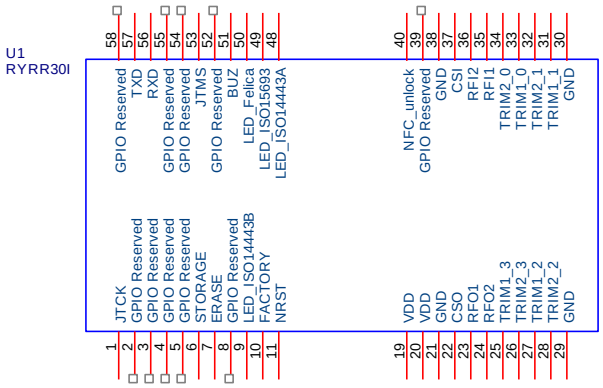
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SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
Operation Voltage	3	3.3	3.6	V	VDD
V_{OH}	0.9*VDD	VDD	VDD	V	TXD High-level output voltage
V_{OL}	0	0	0.1*VDD	V	TXD Low-level output voltage
V_{IH}	0.7*VDD	3.3	VDD	V	RXD High-level input voltage
V_{IL}	0	0	0.3*VDD	V	RXD Low-level input voltage
RF Output Power			30	dBm	
RF Transmit Peak current		550		mA	
Average Current		150		mA	
Communication Range		5		cm	Standard card
Reset Time		100		ms	
Baud Rate		115200		bps	8,N,1
RF Frequency Range	13.553	13.56	13.567	MHz	
Operating Temperature	-40	25	+85	˚C	
Antenna					External
Dimensions					30mm*17mm*3mm
Weight		2		g	

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PIN DESCRIPTION



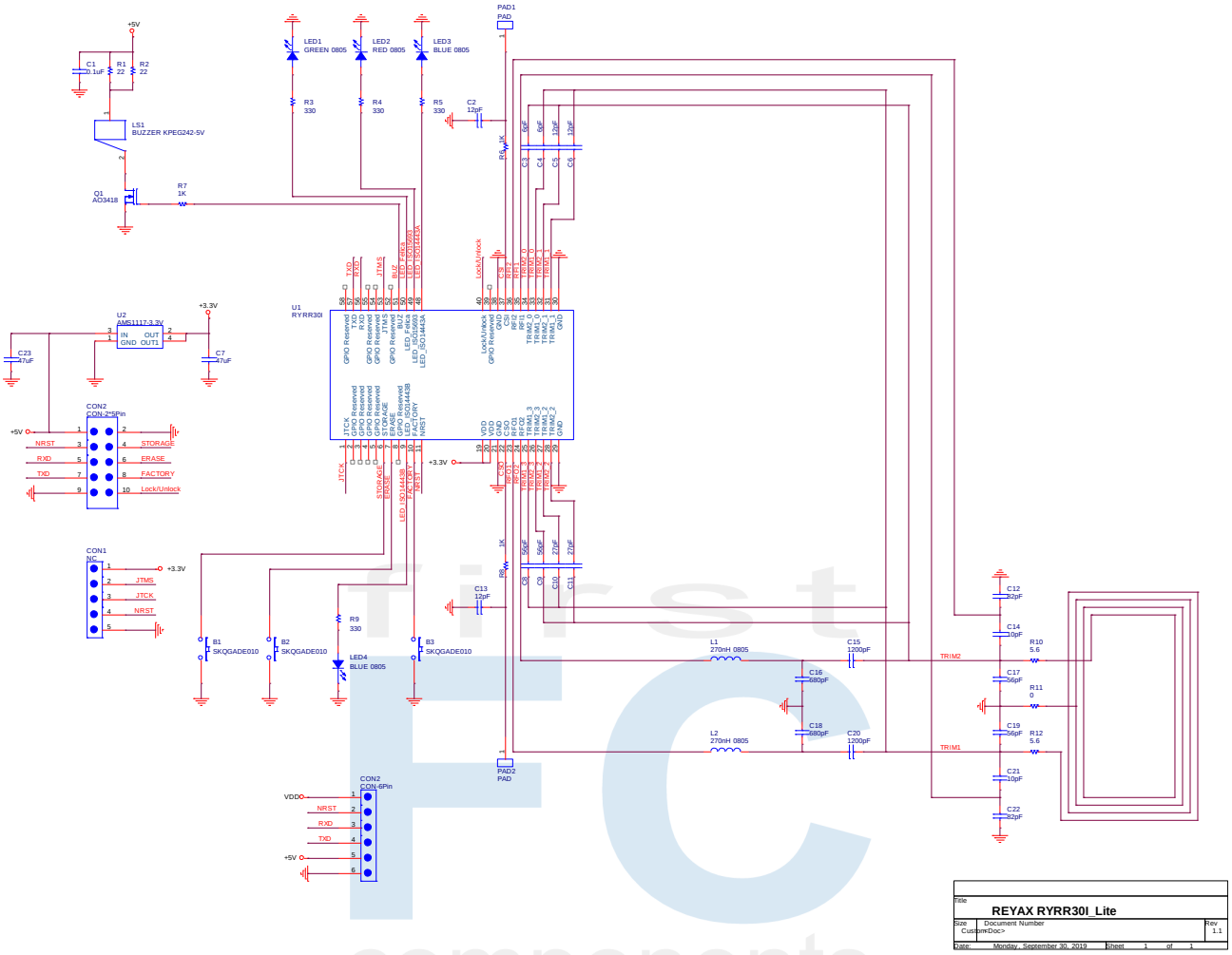
Pin	Name	I/O	Condition
1	JTCK	I/O	JTCK-SWCLK, EVENTOUT
2	GPIO Reserved	-	Leave Unconnected.
3	GPIO Reserved	-	Leave Unconnected.
4	GPIO Reserved	-	Leave Unconnected.
5	GPIO Reserved	-	Leave Unconnected.
6	STORAGE	I	Standalone mode : Storage function input.
7	ERASE	I	Standalone mode : Erase function input.
8	GPIO Reserved	-	Leave Unconnected.
9	LED_ISO14443B	O	LED_ISO14443B Indicator If this pin is unused, keep open.
10	FACTORY	I	Set to factory default after low 1 Sec.
11	NRST	I	Low reset If this pin is unused, keep open.
19	VDD	I	Power Supply
20	VDD	I	Power Supply
21	GND	-	Ground
22	CSO	O	Capacitor sensor output, If this pin is unused, keep open.
23	RFO1	O	Antenna driver output
24	RFO2	O	Antenna driver output
25	TRIM1_3	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
26	TRIM2_3	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
27	TRIM1_2	I/O	Input to trim antenna resonant circuit

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			If this pin is unused, keep open.
28	TRIM2_2	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
29	GND	-	Ground
30	GND	-	Ground
31	TRIM1_1	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
32	TRIM2_1	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
33	TRIM1_0	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
34	TRIM2_0	I/O	Input to trim antenna resonant circuit If this pin is unused, keep open.
35	RFI1	I	RF Receiver input.
36	RFI2	I	RF Receiver input.
37	CSI	I	Capacitor sensor input. If this pin is unused, keep open.
38	GND	-	Ground
39	GPIO Reserved	-	Leave Unconnected.
40	Lock/Unlock	O	Lock/Unlock Indicator
48	LED_ISO14443A	O	LED_ISO14443A Indicator If this pin is unused, keep open.
49	LED_ISO15693	O	LED_ISO15693 Indicator If this pin is unused, keep open.
50	LED_Felica	O	LED_Felica Indicator If this pin is unused, keep open.
51	BUZ	O	BUZZER Indicator If this pin is unused, keep open.
52	GPIO Reserved	-	Leave Unconnected.
53	JTMS	I/O	JTMS-SWDIO, EVENTOUT
54	GPIO Reserved	-	Leave Unconnected.
55	GPIO Reserved	-	Leave Unconnected.
56	RXD	I	UART Data Input
57	TXD	O	UART Data Output
58	GPIO Reserved	-	Leave Unconnected.

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APPLICATION SCHEMATIC



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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

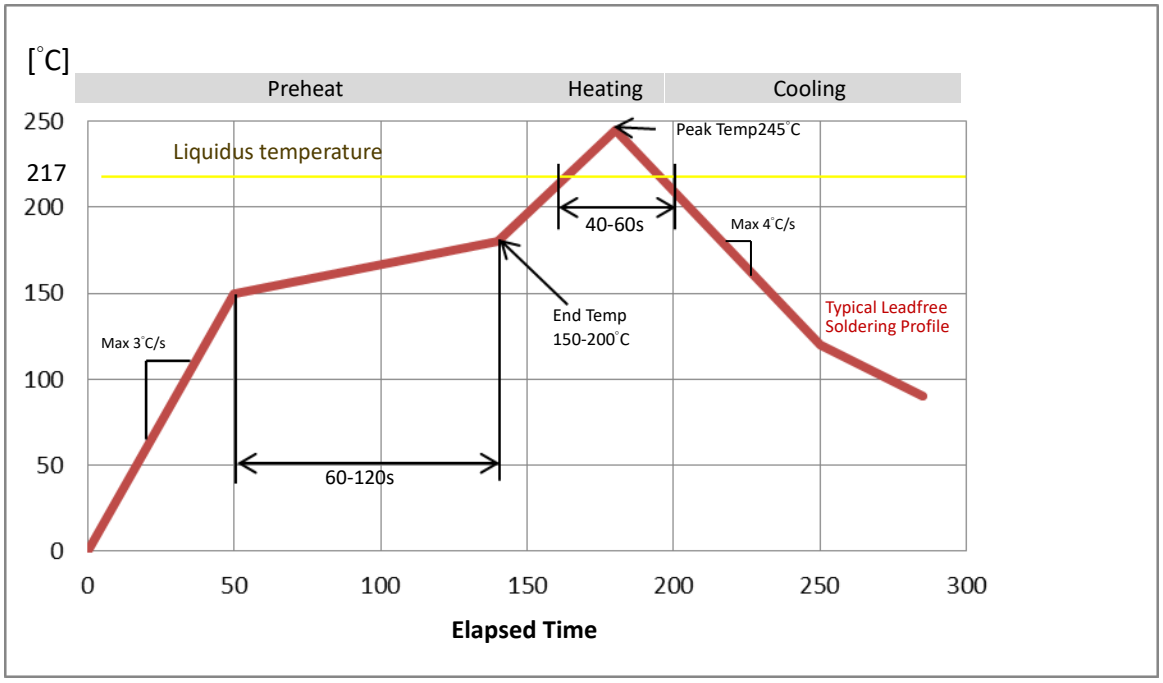
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- 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.

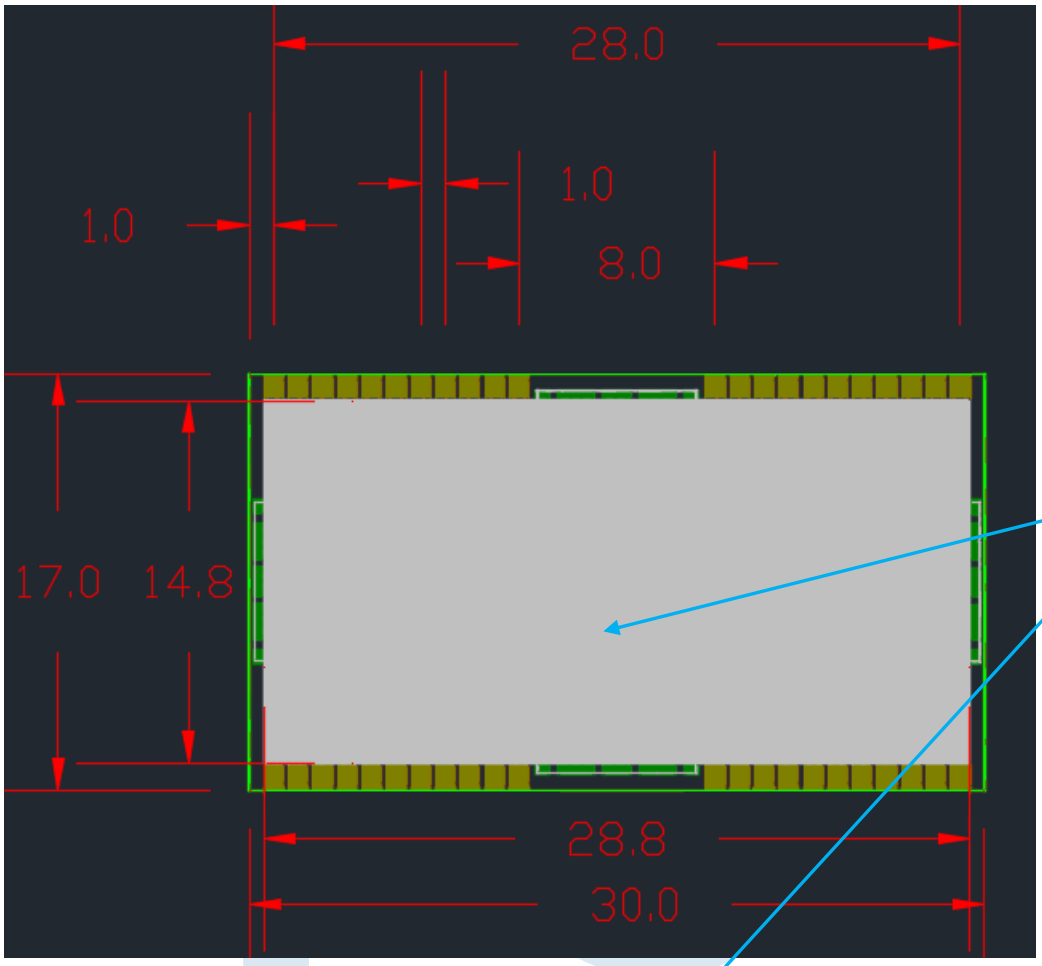
- Temperature fall rate: max 4 °C/s. To avoid falling off, the REYAX RYRR30I module should be placed on the topside of the motherboard during soldering.

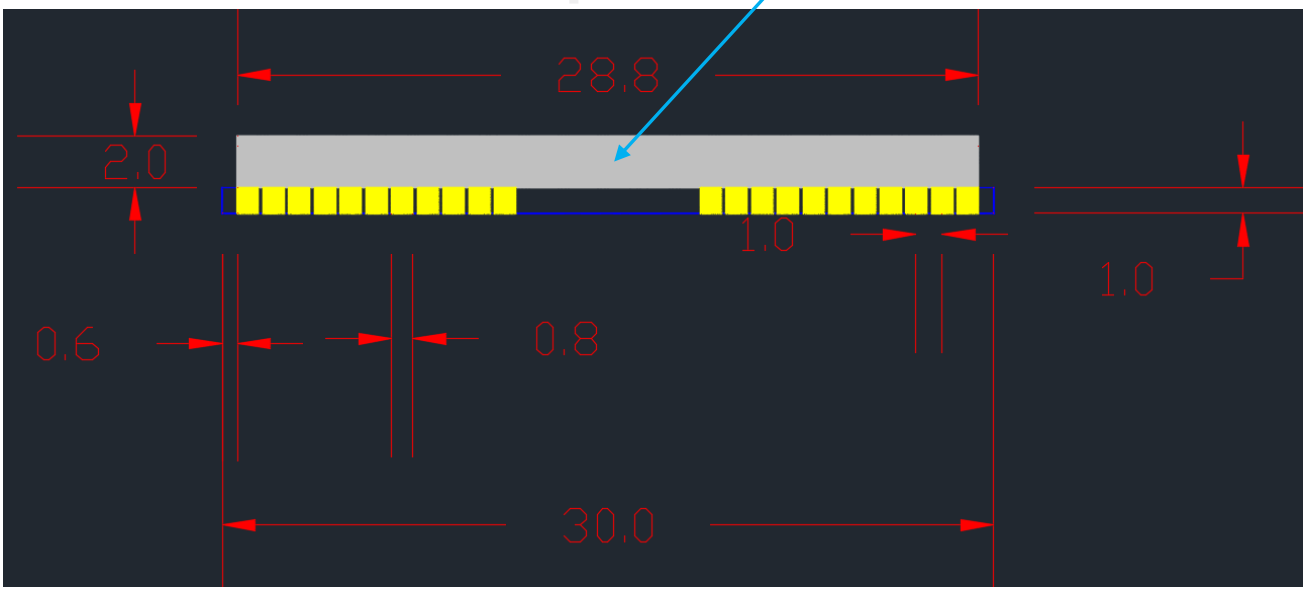


Recommended soldering profile

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DIMENSIONS

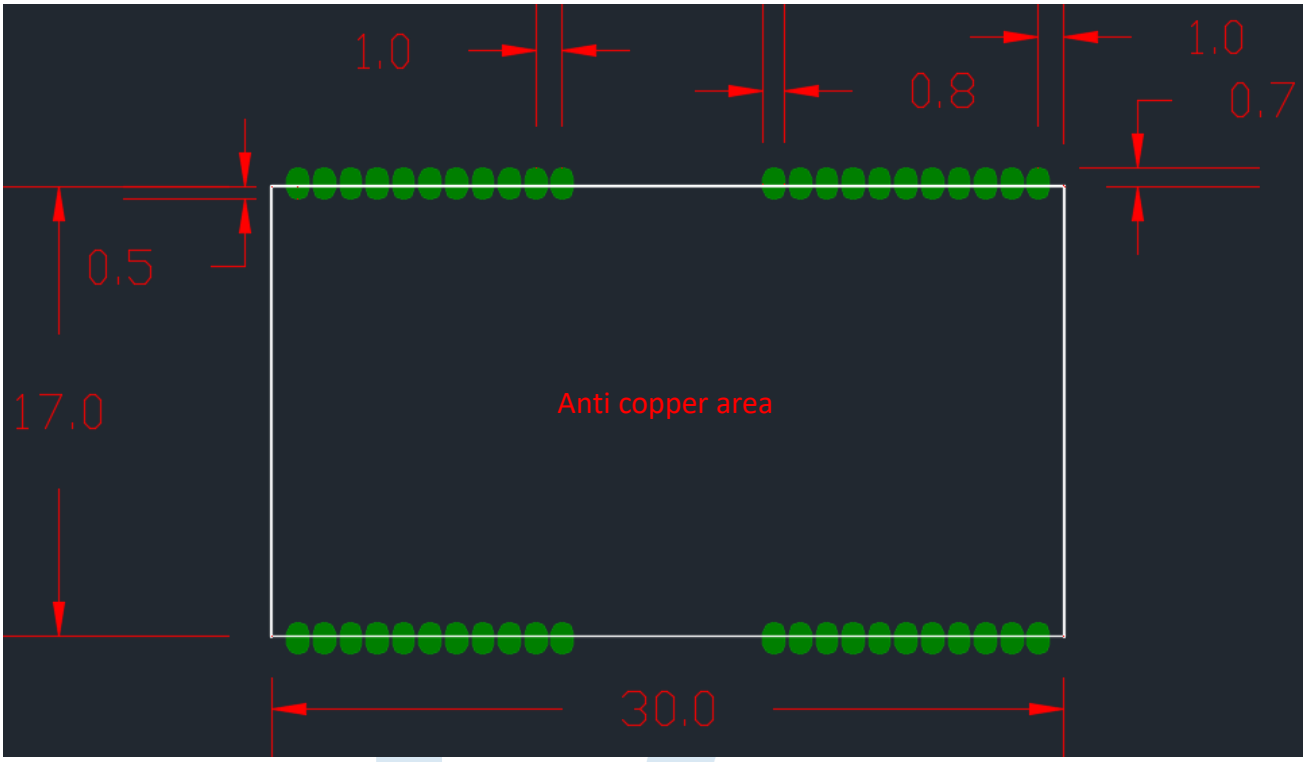




unit : mm

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LAYOUT FOOTPRINT RECOMMENDATIONS



unit : mm

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