REYAX
TECHNOLOGY CORPORATION, LTD

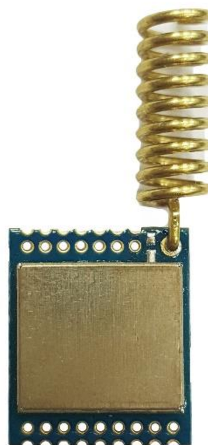
13-DEC-2018 56312E31

RYFA689

868/915MHz Ultra Low Power

RF Transceiver Module with Internal Antenna

Datasheet



PRODUCT DESCRIPTION

The REYAX RYFA689 is based on Amiccom A7129 chip. It is a monolithic low-IF architecture CMOS FSK/GFSK TRX for wireless applications in the ISM bands. This device is especially suitable for battery-powered application.

FEATURES

- FSK and GFSK modulation.
- Ultra Low RX Current Consumption : 4.5mA.
- High RX sensitivity, -117dBm at 2Kbps on-air data rate.
- Programmable data rate from 2Kbps to 150Kbps.
- Support 3-wire or 4-wire SPI.
- Designed with internal antenna.
- Metal cover against EMI interference

APPLICATIONS

- Wireless Sensor Networking
- Wireless Remote Controller
- Home Security
- AMR (Auto Metering Reading)

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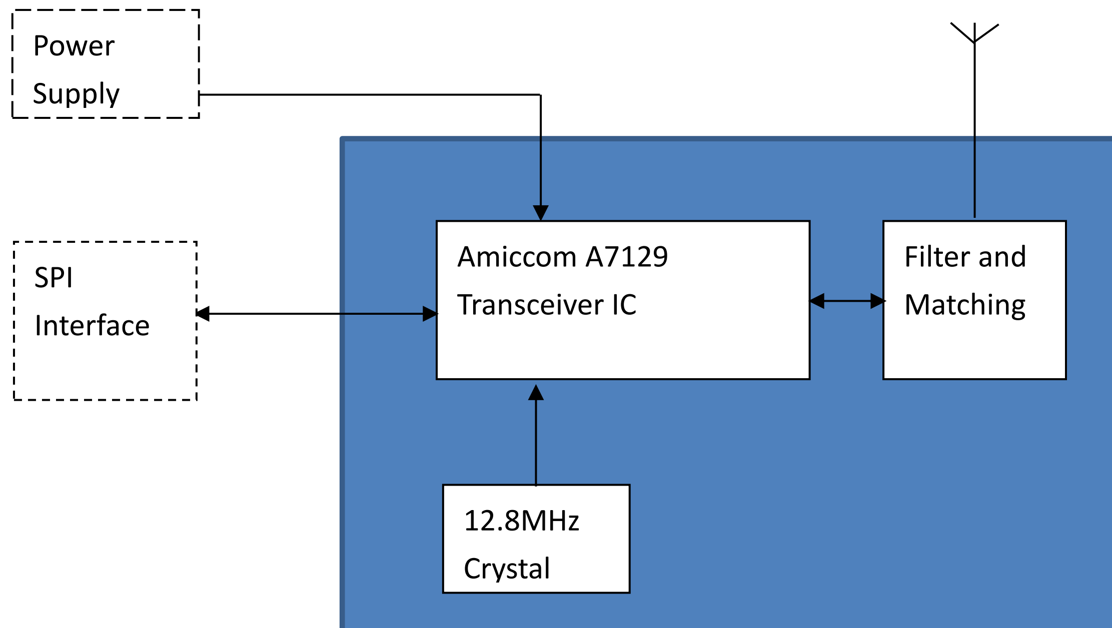
BLOCK DIAGRAM



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SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
Supply Voltage	2.2	3.3	3.6	V	VDD
Current Consumption		0.3		uA	Deep Sleep Mode (no register retention)
Transmit Mode current		36		mA	
Receive Mode current		4.5		mA	
Frequency range	808	868/915	928	MHz	
RF Output power			11	dBm	
RF Power Control Range		51		dB	
RF Frequency Accuracy		10		ppm	
RX Sensitivity		-117		dBm	@BER=0.1% high gain mode 2kbps (IFBW=50KHz)
Data rate	2		150	Kbps	
High Level Input Voltage	0.8VDD		VDD	V	VIH
Low Level Input Voltage	0		0.2VDD	V	VIL
High Level Output Voltage	VDD-0.4		VDD	V	VOH
Low Level Output Voltage	0		0.4	V	VOL
Operating Temperature	-40	25	+85	˚C	VDD
Weight		6		g	

***For more detail, please refer to the Amiccom A7129 datasheet.**

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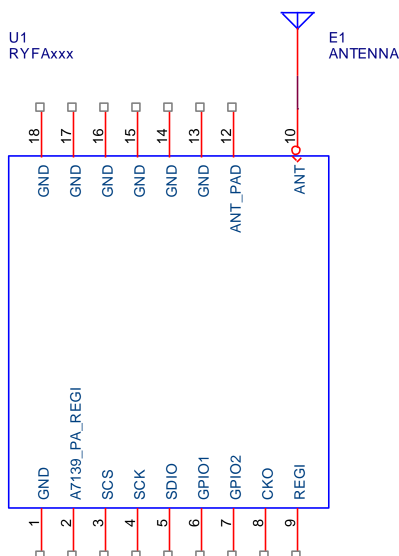
PIN DESCRIPTION



Pin	Name	I/O	Condition
1	GND	-	Ground
2	NC	-	Leave Unconnected.
3	SCS	I	SPI chip select input.
4	SCK	I	SPI clock input.
5	SDIO	I/O	SPI data IO.
6	GIO1	I/O	Multi-function IO 1 / SPI data output
7	GIO2	I/O	Multi-function IO 2 / SPI data output
8	CKO	O	Multi-function clock output.
9	REGI	I	Regulator input. Connect to VDD supply.
10	ANT	-	ANTENNA
12	ANT_PAD	-	External Antenna Version Used
13	GND	-	Ground
14	GND	-	Ground
15	GND	-	Ground
16	GND	-	Ground
17	GND	-	Ground
18	GND	-	Ground

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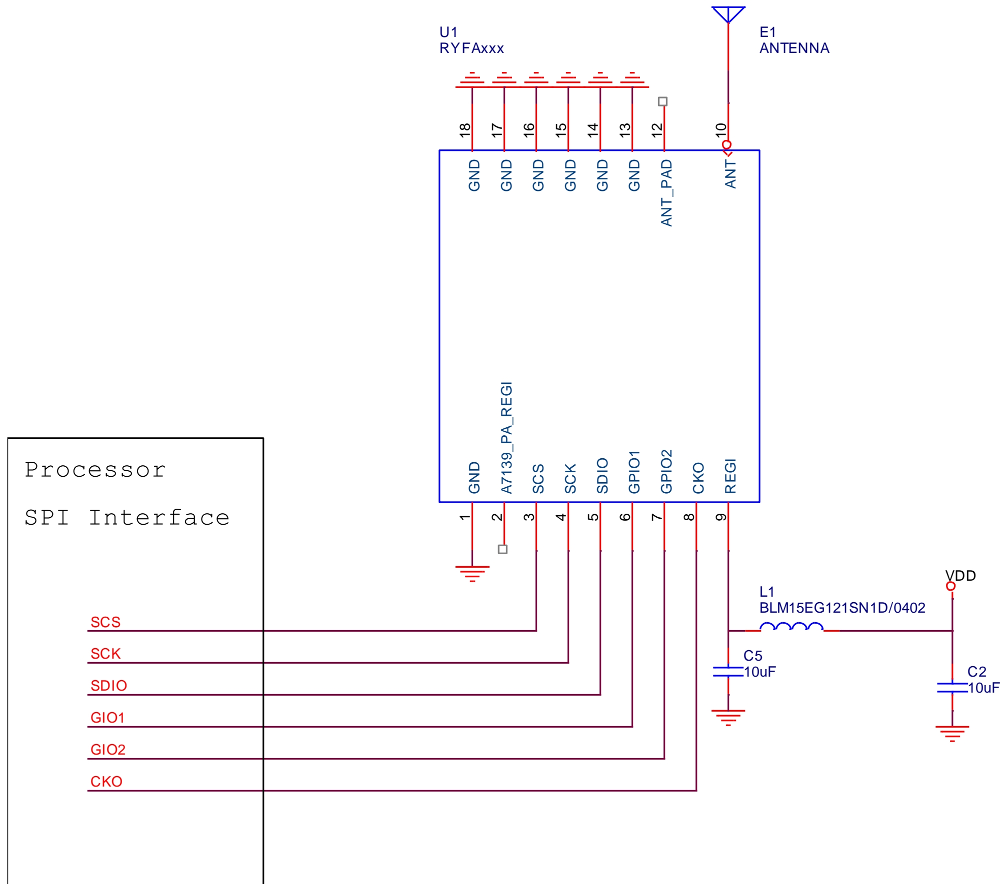
APPLICATION SCHEMATIC



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REFLOW SOLDERING

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

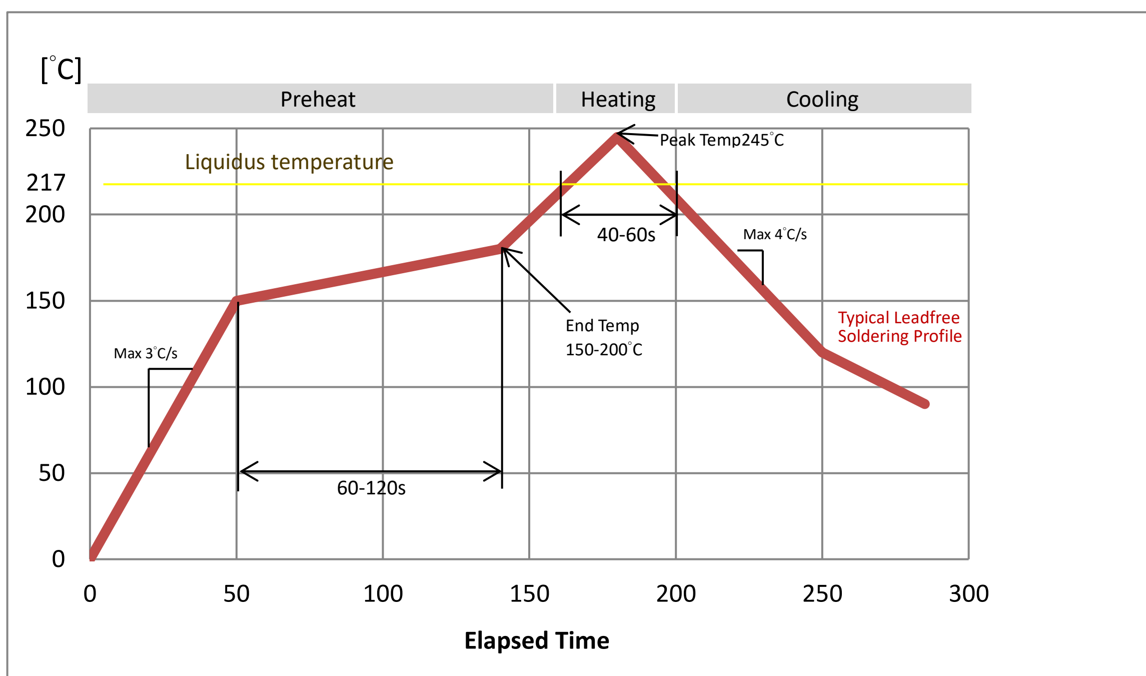
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- 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

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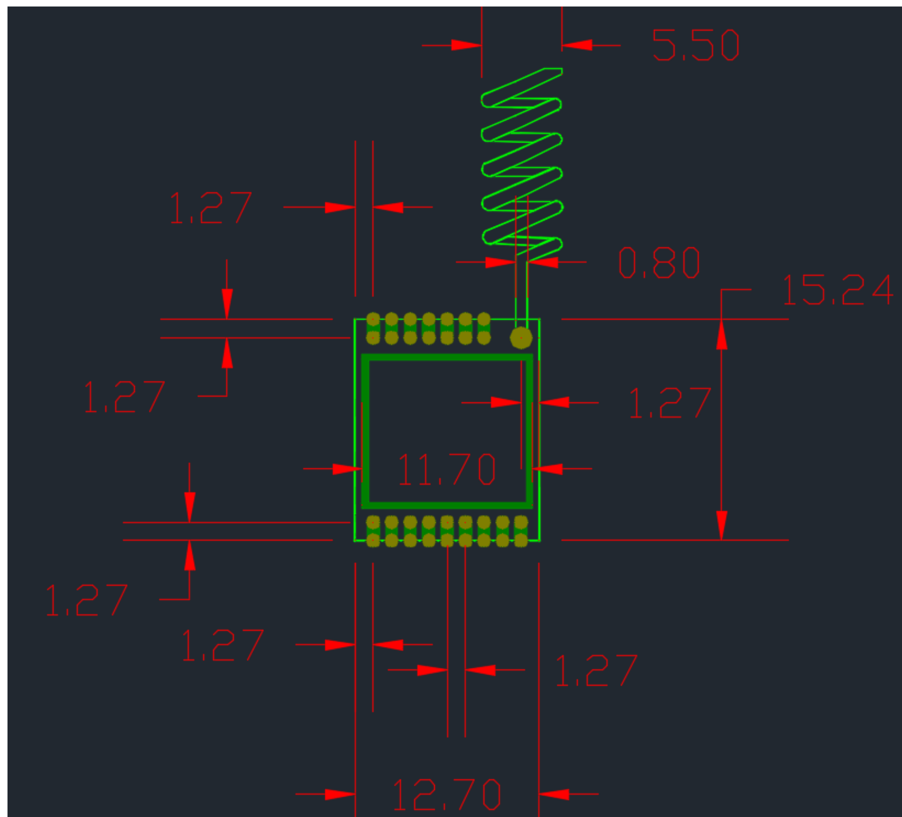
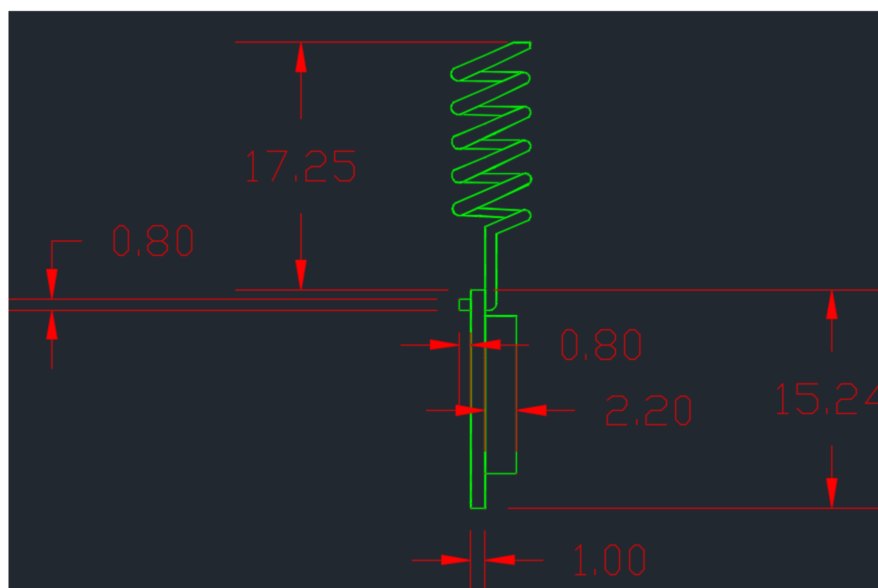
DIMENSIONS





Unit: mm

REYAX
TECHNOLOGY CORPORATION, LTD

E-mail: sales@reyax.com
Website: http://reyax.com

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