

RYLR400

426/433/470 MHz LoRa
Low Power Long Range
Transceiver Module

Datasheet



13mm*11mm*2.2mm



产品介绍

RYLR400 收发模块的特点在于采用 LoRa 长距离调制解调器,提供超长距离扩频通信和高抗干扰性,并同时最大限度地降低其电流消耗。

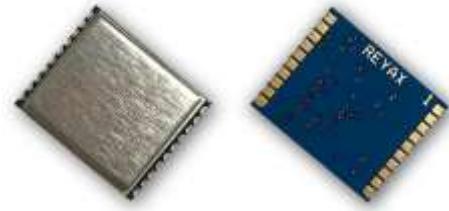
功能与特色

- Semtech SX1276 核心
- 高效能功率放大器
- 优异的隔绝干扰抑制
- 低接收电流
- 高灵敏度
- 127 dB RSSI 动态范围

应用范围

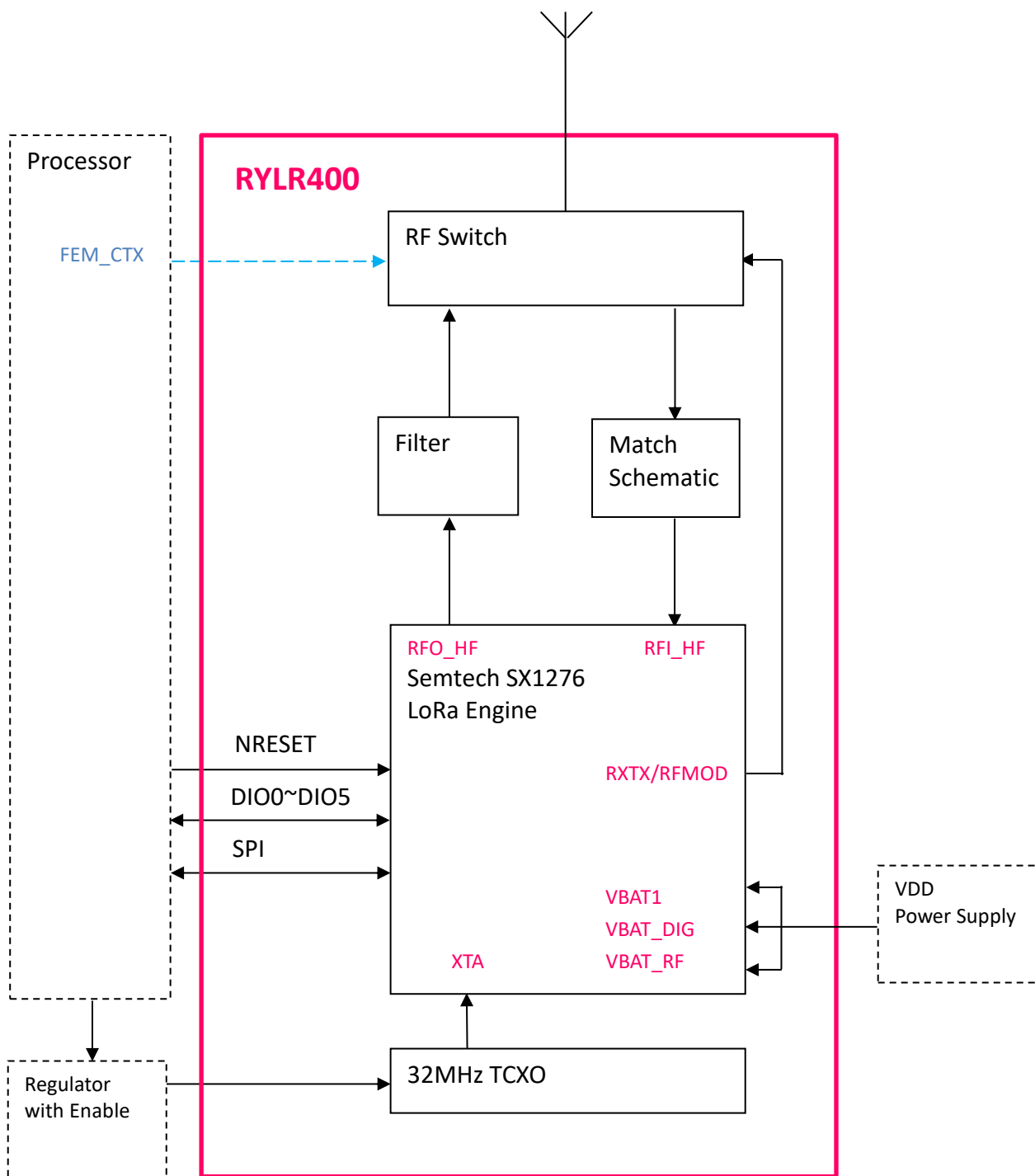
- 物联网应用
- 移动设备
- 家庭保全
- 工业监控和控制设备
- 汽车警报

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 | 2.8 | 3.3 | 3.6 | V | |
| TCXO Power Supply | 1.7 | | 3.3 | V | 1.7mA |
| TCXO Accuracy | | ±2.5 | | ppm | |
| TCXO Long-term Frequency Stability | | ±1 | | ppm /Year | |
| 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 | 410 | 433 | 525 | MHz | |
| Transmit Current | | 29 | | mA | RFOP = +13 dBm |
| Receive Current | | 11.5 | | mA | LNA Boost On |
| Standby Current | | 1.6 | | mA | Crystal oscillator enabled |
| Sleep Current | | 0.2 | | uA | |
| 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.

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

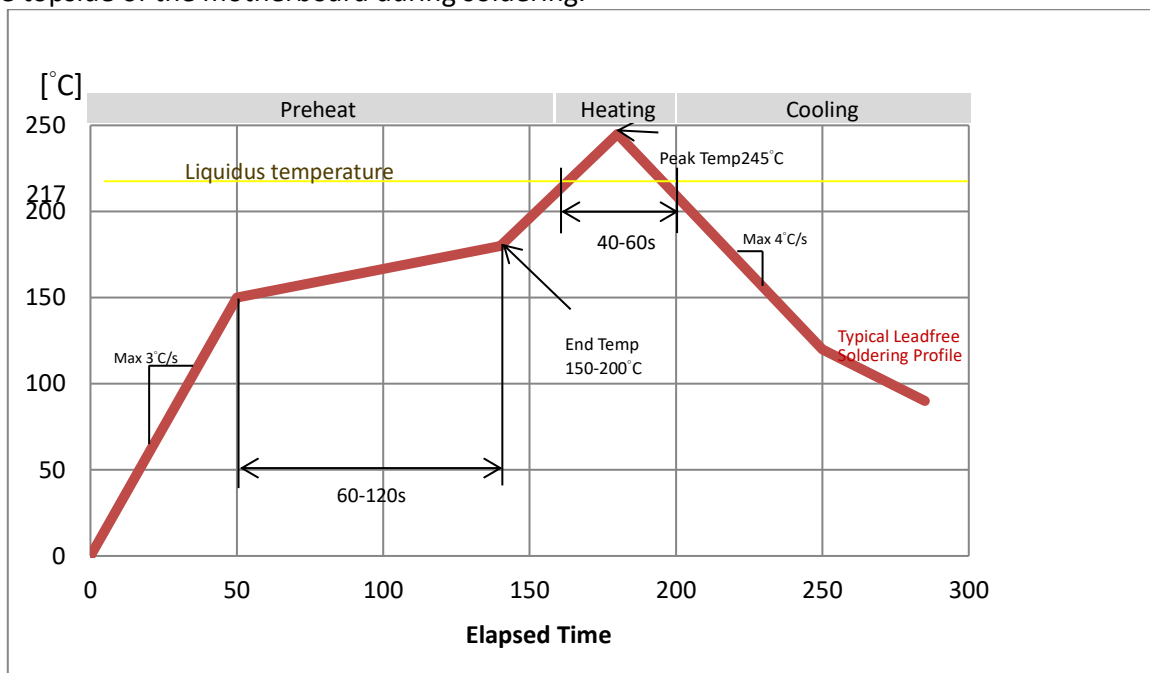
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

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

Cooling phase

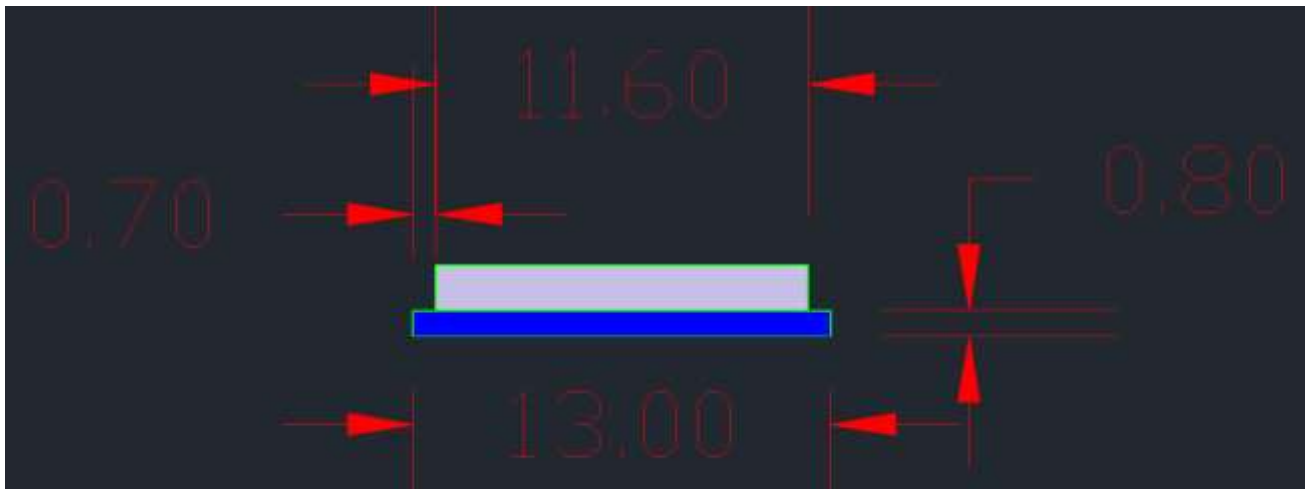
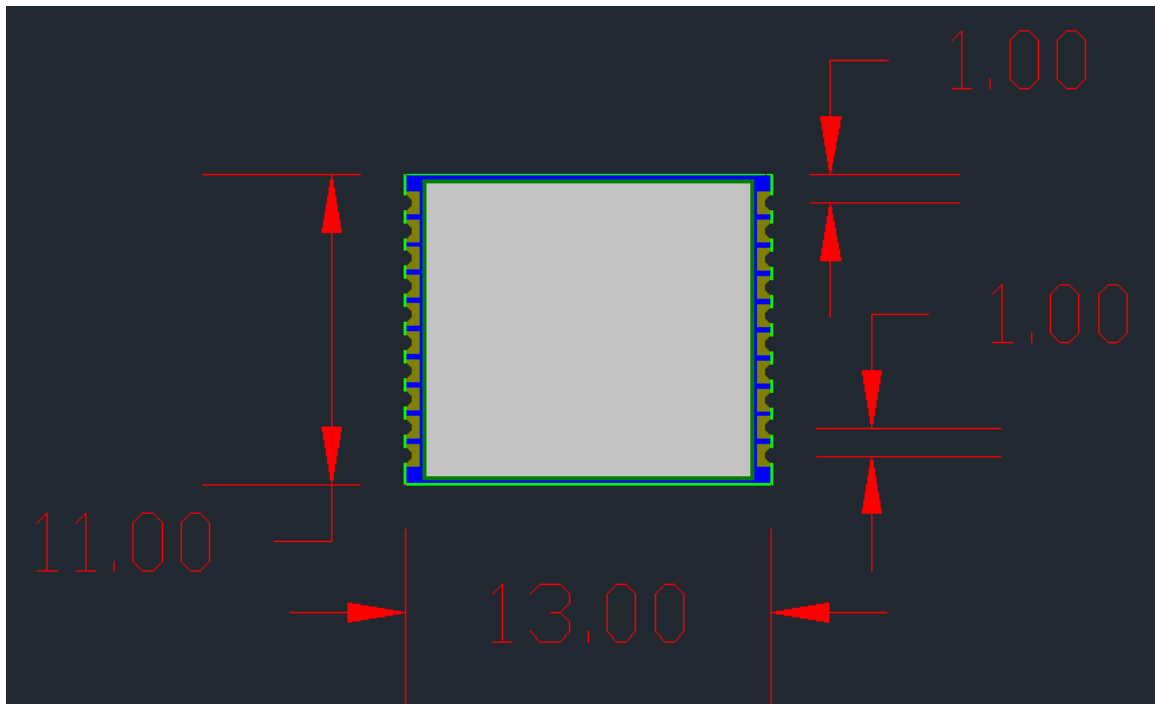
A controlled cooling avoids negative metallurgical effects (solder becomes more brittle) of the solder and possible mechanical tensions in the products. Controlled cooling helps to achieve bright solder fillets with a good shape and low contact angle.

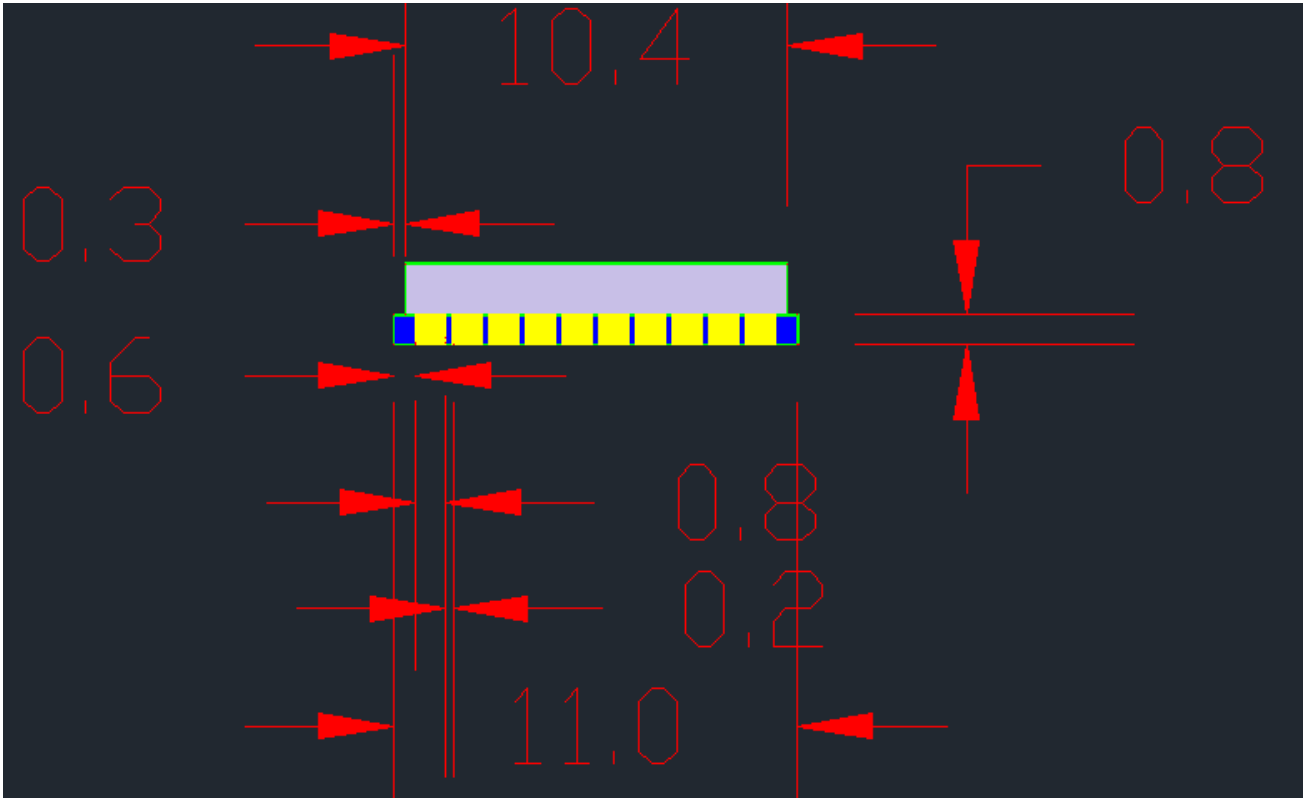
- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX RYB070I module should be placed on the topside of the motherboard during soldering.



Recommended soldering profile

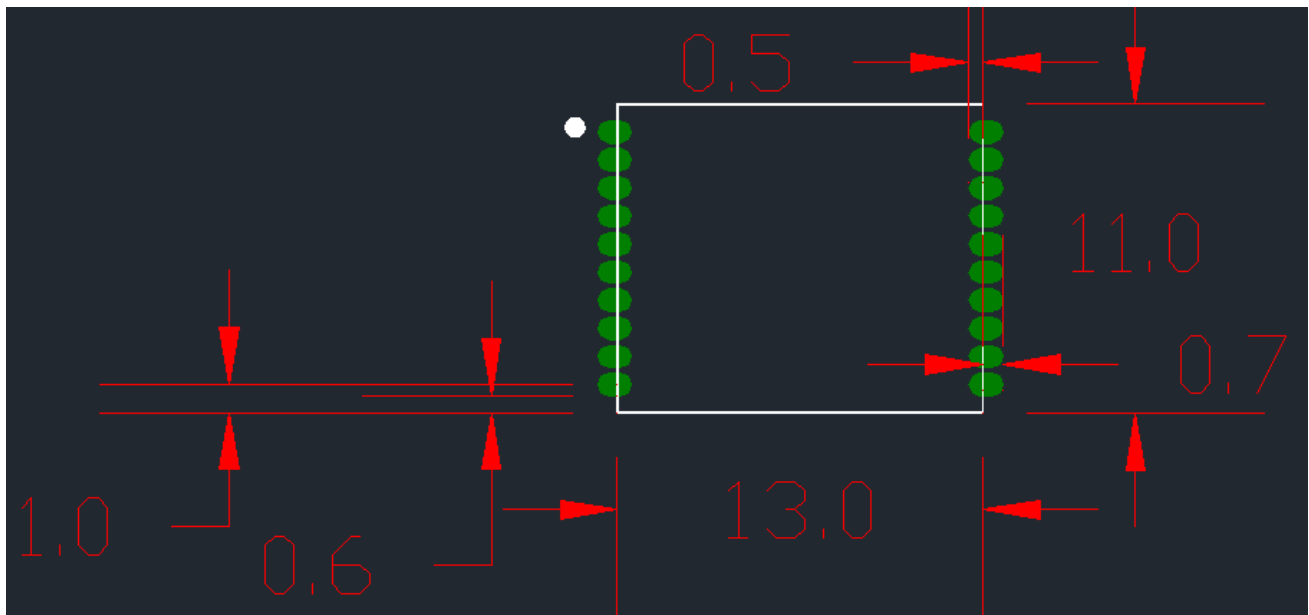
DIMENSIONS





Unit : mm

LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

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