



**LRW32BH-UA-C Module
Datasheet V1.0**

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History

Date	Version	Description	Draft	Approval
2022-6-27	V1.0	Release	WHF	Jessy

Module Name Information

LRW32 - B - H - UA - C - 470



Module Type:



A: TCXO
Crystal
B: Crystal



H: High
power
L:Low
power



Antenna Type:
UA: UFL
Connector
HA: Helical
wire antenna



PCB Version



Frequency:
470MHz
868MHz
920MHz

Features

- LoRa™ spread spectrum modulation technology
- Receive sensitivity as low as -141 dBm
- Excellent resistance to blocking
- Supports preamble detection
- Supports half-duplex SPI communication
- Programmable bit rate up to 300Kbps
- Supports FSK, GFSK, MSK, GMSK, LoRa™ and OOK modulation modes
- Supports automatic RF signal detection, CAD mode and ultra high speed AFC
- Packets with CRC, up to 256 bytes

Application

- Smart meters
- Supply chain and logistics
- Building automation
- Agricultural sensors
- Smart cities
- Retail store sensors
- Asset tracking
- Street lights
- Parking sensors
- Environmental sensors
- Healthcare
- Safety and security sensors
- Remote control applications

Description

The LRW32 long-range wireless and ultra-low-power devices embed a powerful and ultra-low-power radio compliant LPWAN radio solution: LoRa® (only available in STM32WLE5xx), (G)FSK, (G)MSK, and BPSK.

The devices embed high-speed memories (Flash memory up to 256 Kbytes, SRAM up to 64 Kbytes), and an extensive range of enhanced I/Os and peripherals.

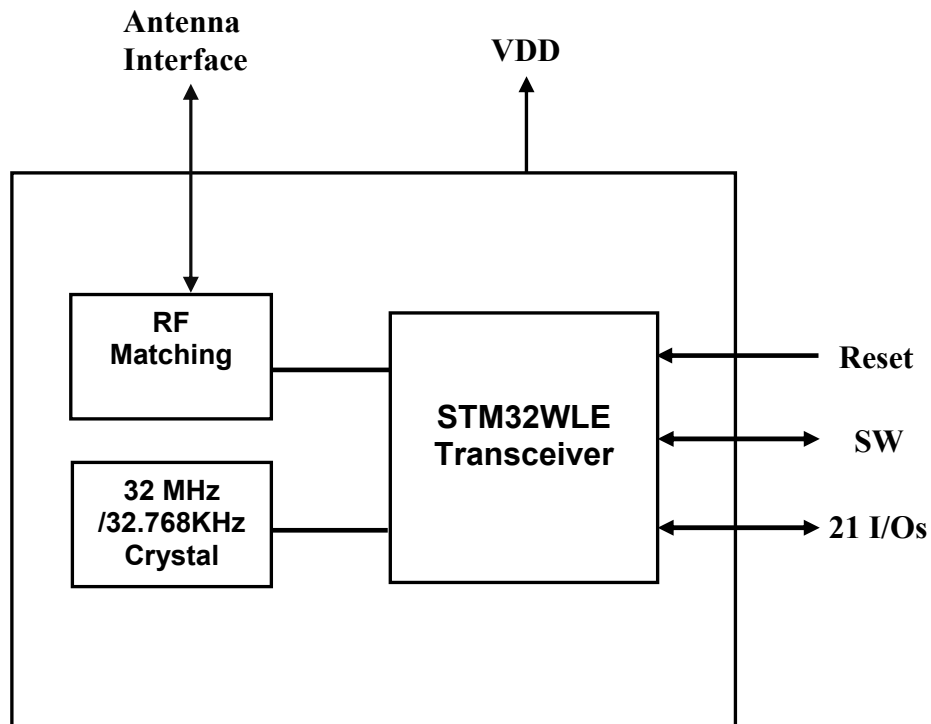
The devices also embed several protection mechanisms for embedded Flash memory and SRAM: readout protection, write protection and proprietary code readout protection.

These devices offer a 12-bit ADC, a 12-bit DAC low-power sample-and-hold, two ultra-low-power comparators associated with a high-accuracy reference voltage generator.

The devices embed a low-power RTC with a 32-bit sub-second wakeup counter, one 16-bit single-channel timer, two 16-bit four-channel timers (supporting motor control), one 32-bit four-channel timer and three 16-bit ultra-low-power timers.

These devices also embed two DMA controllers (7 channels each) allowing any transfer combination between memory (Flash memory, SRAM1 and SRAM2) and peripheral, using the DMAMUX1 for flexible DMA channel mapping.

Block Diagram



Specifications

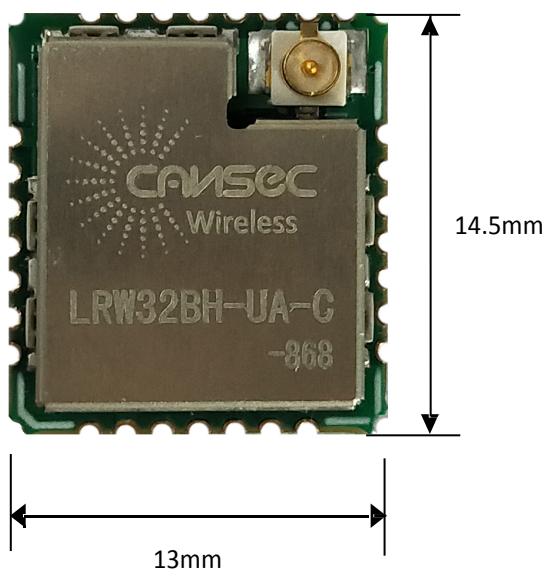
Parameter		Min	Typ	Max	Unit
Operating Voltage		2.5	3.3	3.7	V
Operating Temperature		-20	-	+70	℃
Current Consumption	Sleep Mode	-	2		uA
	Receive mode	-	5		mA
	Transmit Mode	-	120		mA
TX Power (-H)		-		18.5	dBm
RX Sensitivity			-140		dBm

Mechanical Drawing

LRW32BH-UA-C:

H=2.8 mm

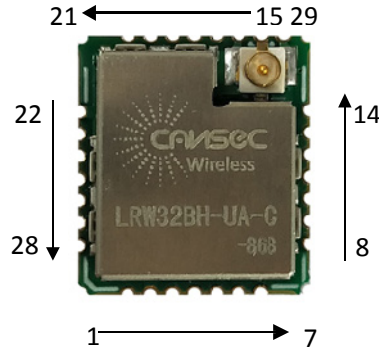
Tolerance: $\pm 0.5\text{mm}$



RF Switch Control

RF Switch Control	PC3	PC4	RF Mode
	1	0	TX
	0	1	RX

Terminal Description



Pad Number	Name	Pin Type	Description
1	+3V3	POWER	2.5V to 3.7V main chip supply, Typical 3.3V
2	GND	Ground	The ground
3	PA13	I/O	Input / output pin
4	PA14	I/O	Input / output pin
5	PB8	I/O	Input / output pin
6	PA15	I/O	Input / output pin
7	PB4	I/O	Input / output pin
8	PB3	I/O	Input / output pin
9	PB7	I/O	Input / output pin
10	PB6	I/O	Input / output pin
11	PB5	I/O	Input / output pin
12	PC1	I/O	Input / output pin
13	PC2	I/O	Input / output pin
14	GND	Ground	The ground
15	RF	Antenna	Antenna
16	GND	Ground	The ground
17	nRT	Reset	Reset trigger input
18	PA3	I/O USART2_RX	Input / output pin/firmware upgrade
19	PA2	I/O USART2_TX	Input / output pin/firmware upgrade
20	PA5	I/O	Input / output pin
21	PH3	I/O BOOT0	Startup mode selection
22	GND	Ground	The ground
23	PA0	I/O	Input / output pin
24	PB1	I/O	Input / output pin
25	PB2	I/O	Input / output pin
26	PA11	I/O	Input / output pin
27	PA10	I/O	Input / output pin
28	PA12	I/O	Input / output pin
29	GND	Ground	The ground

Recommended PCB Layout for Package

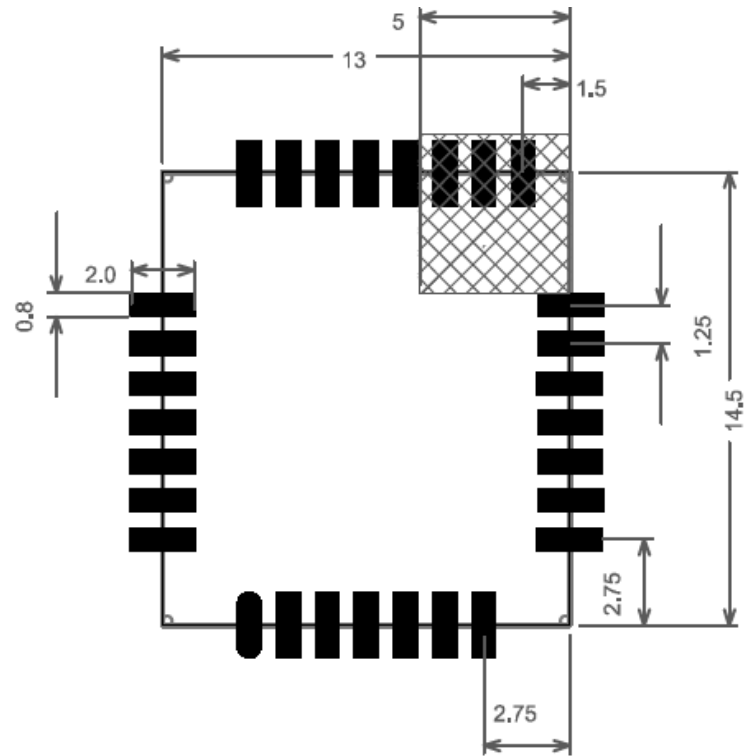
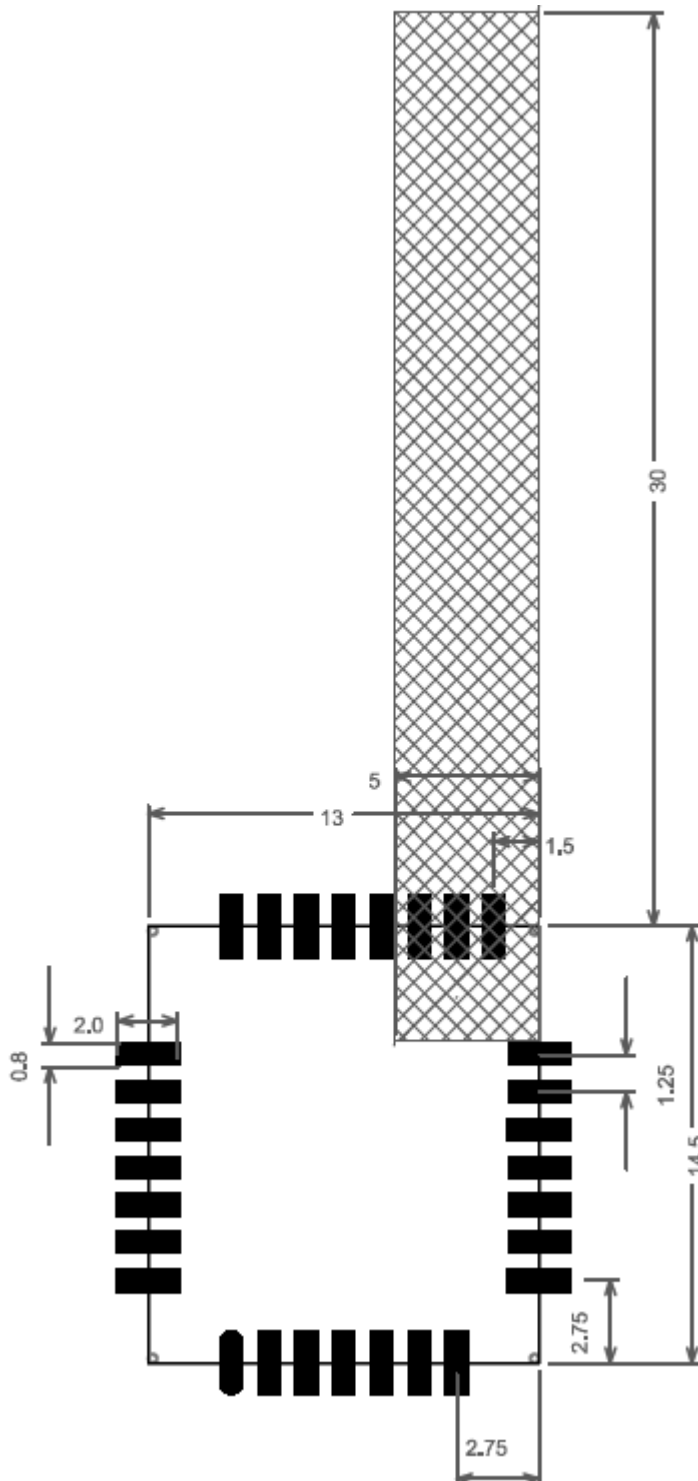
NOTE:

Make sure in the shadow area shall without any wiring or ground.

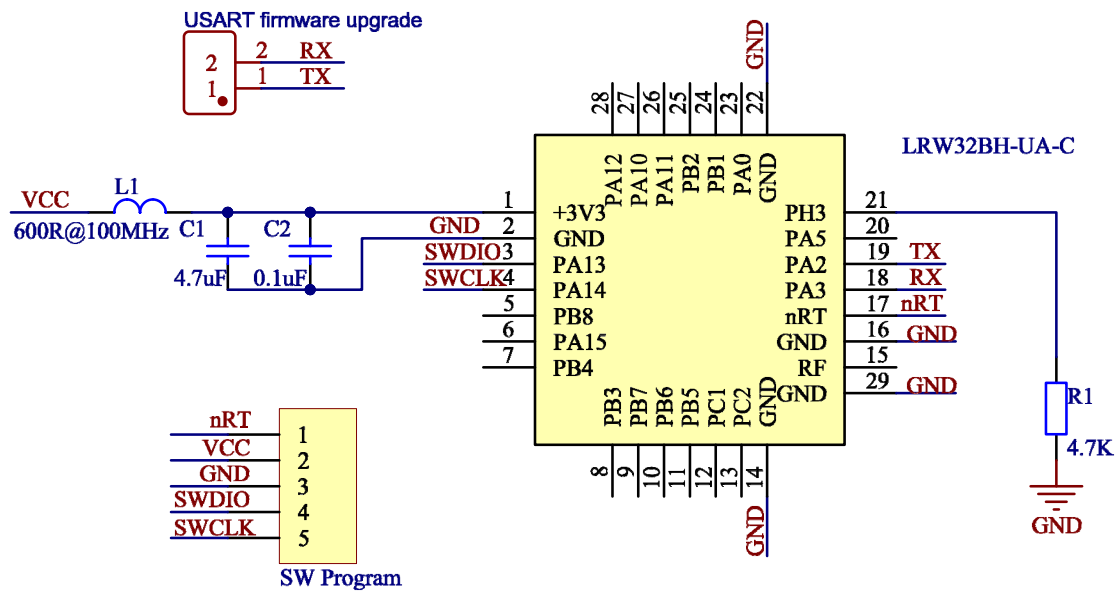
Proposed Module Layout on the edge of the Board, away from other devices.

LRW32BH-HA-C

LRW32BH-UA-C



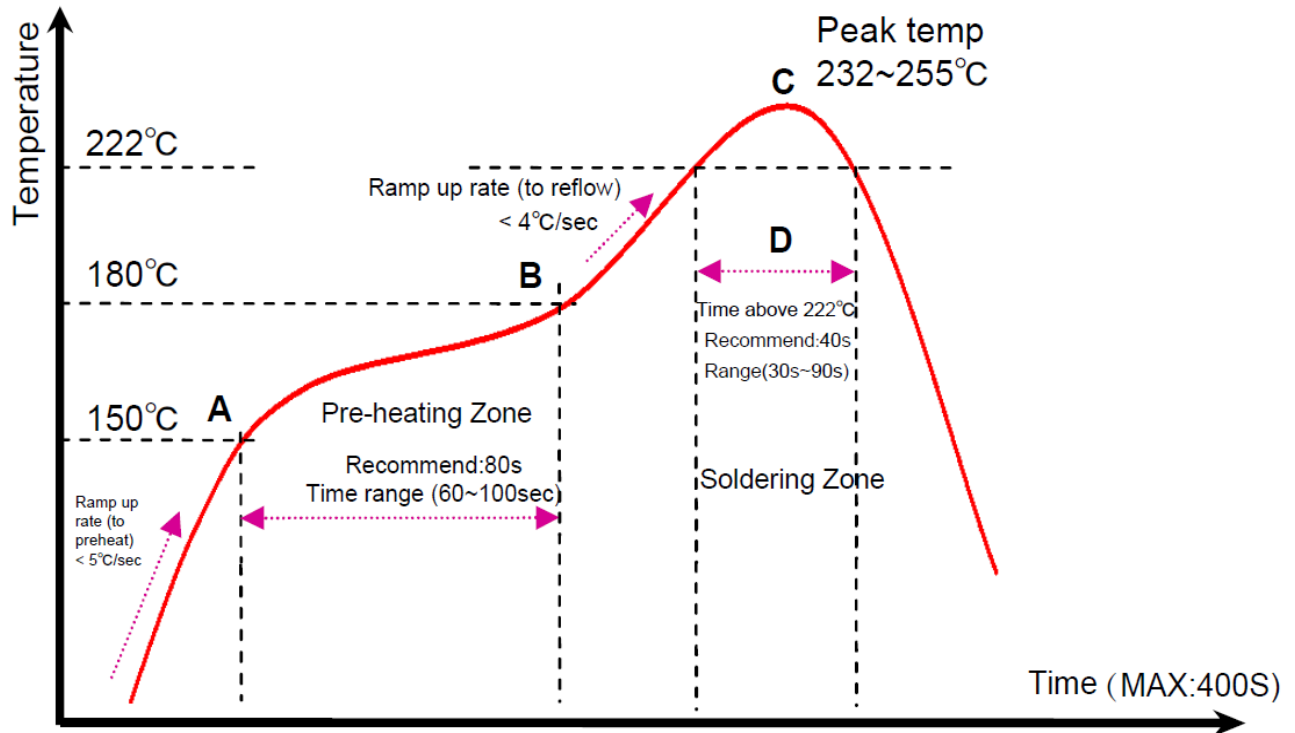
Reference Schematics



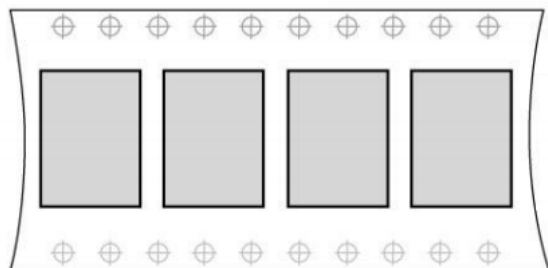
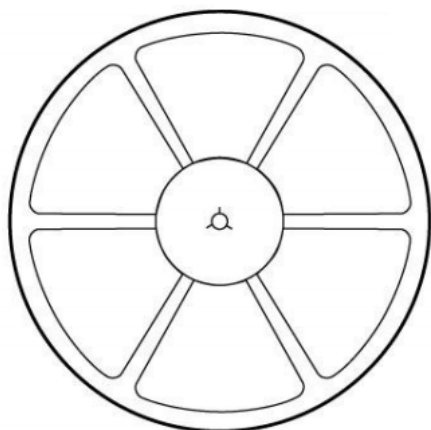
PH3 should connect to GND mostly.

PH3 need connect to VCC, when use USART firmware upgrade.

Recommended Reflow Profile for Lead Free Solder



Package



- Tape and Reel
- Helical antenna version Module exception
- Note: For package, we have three package types: Reel, Tray, Simple way for choosing, depend on customer's request or quantity request

Contact Details



CANSEC Catalog



CANSEC Taobao Website

Tel: +86-10-6888 9971

Email: sarolyn@rf-products.com
grace@rf-products.com
norman@rf-products.com
jimmy@rf-products.com

Technical Support: zhaoyaxi@rf-products.com

Addr: Rm.1002, Block B China Railway Venture building, No.28 Pingguoyuan Rd., Shijingshan District, Beijing, 100041, China.

Website: www.rf-products.com