



LR68NA-C Module Datasheet V2.0

Beijing Jia An Electronics Technology Co., Ltd.

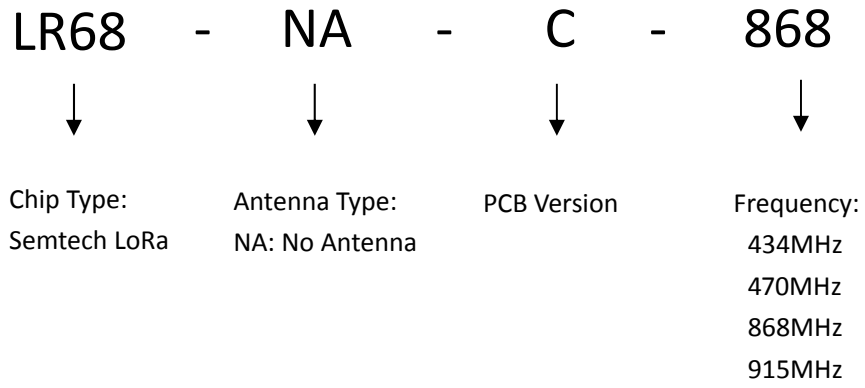
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History

Date	Version	Description	Draft	Approval
2020-10-16	V2.0	Release	ZYX	Amy

Module Name Information



Features

- LoRa and FSK Modem
- 170 dB maximum link budget
- Wide-Supply Voltage: VBAT:1.8 to 3.7V
- RF output up to +21 dBm
- Programmable bit rate
- Integrated DC-DC converter and LDO
- High sensitivity: down to -148 dBm
- 80 dB blocking immunity at 1 MHz offset
- Co-channel rejection of 19 dB in LoRa mode
- Fully integrated synthesizer with a resolution of 122 Hz
- FSK, GFSK, MSK, GMSK and LoRa modulation
- Built-in bit synchronizer for clock recovery
- Automatic Channel Activity Detection (CAD) with ultra-fast AFC
- Preamble detection
- Package and Operating Conditions:
3.4 mm Pitch, 17 mm×19mm Stamp
Package for Easy Assembly and
Low-Cost PCB Design
- Operating Temperature Range: -40°C to +85°C

Applications

- 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 LR68NA-C module is sub-GHz radio transceivers are ideal for long range wireless applications. These devices support LoRa® modulation for LPWAN use cases and (G) FSK modulation for legacy use cases. The devices are highly configurable to meet different application requirements utilizing the global LoRaWAN® standard or proprietary protocols.

The devices are designed to comply with the physical layer requirements of the LoRaWAN specification released by the LoRa Alliance™.

The radio is suitable for systems targeting compliance with radio regulations including but not limited to ETSI EN 300 220, FCC CFR 47 Part 15, China regulatory requirements and the Japanese ARIB T-108. Continuous frequency coverage from 150 MHz to 960 MHz allows the support of all major sub-GHz ISM bands around the world..

Architecture

The LR68NA-C is a half-duplex transceiver capable of low power operation in the 150-960 MHz ISM frequency band. The radio comprises four main blocks:

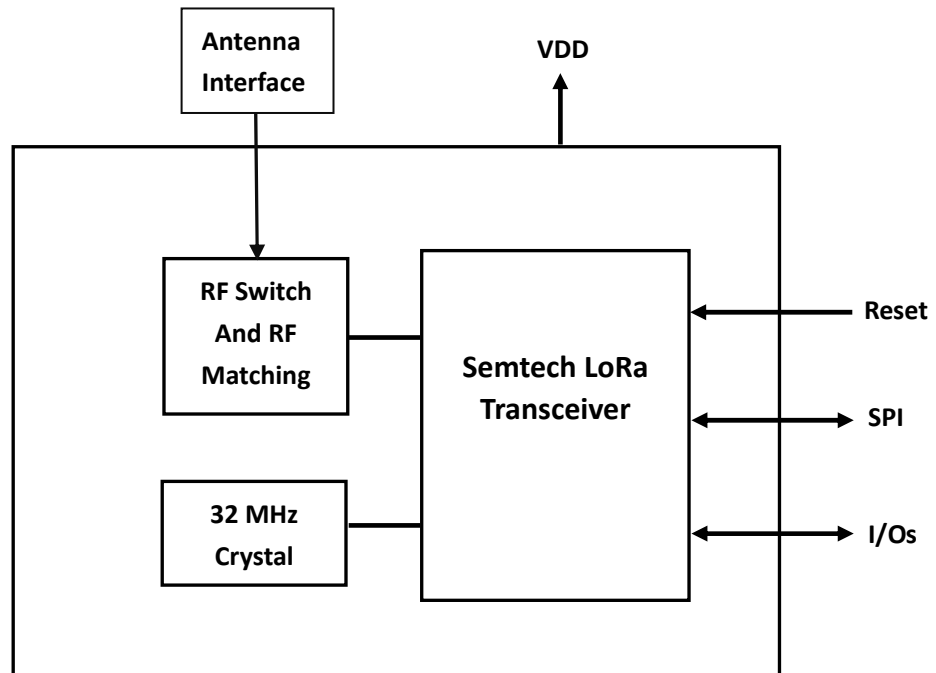
1. Analog Front End: the transmit and receive chains, as well as the data converter interface to ensuing digital blocks. The LR68NA-C transceiver is capable of delivering up to +21 dBm under the battery supply.
2. Digital Modem Bank: a range of modulation options is available in the LR68NA-C:

- ♦ LoRa® Rx/Tx, BW = 125 - 250 - 500 kHz
- ♦ LoRa® SF = 5 - 6 - 7 - 8 - 9 for BW = 125 kHz
- ♦ LoRa® SF = 5 - 6 - 7 - 8 - 9 - 10 for BW = 250 kHz
- ♦ LoRa® SF = 5 - 6 - 7 - 8 - 9 - 10 - 11 for BW = 500 kHz

3. Digital Interface and Control: this comprises all payload data and protocol processing as well as access to configuration of the radio via the SPI interface.

4. Power Distribution: two forms of voltage regulation, DC-DC or linear regulator LDO, are available depending upon the design priorities of the application.

Block Diagram

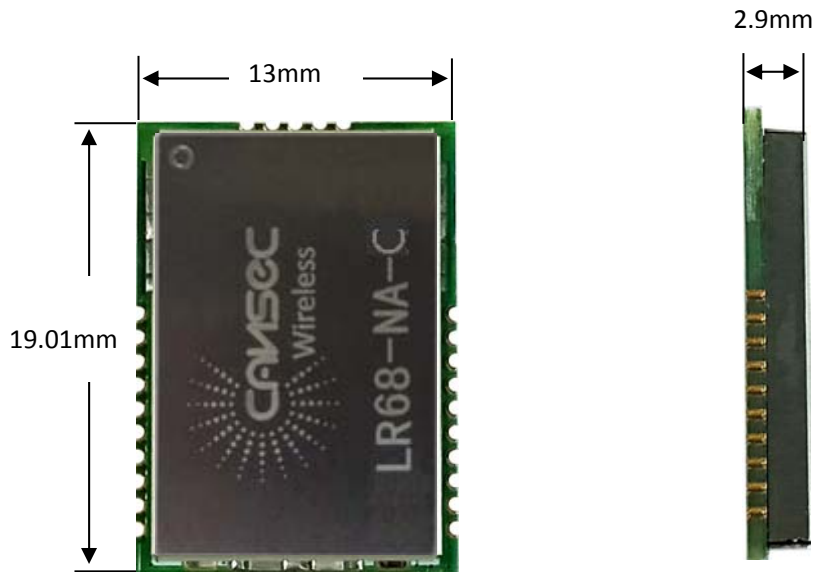


Specifications

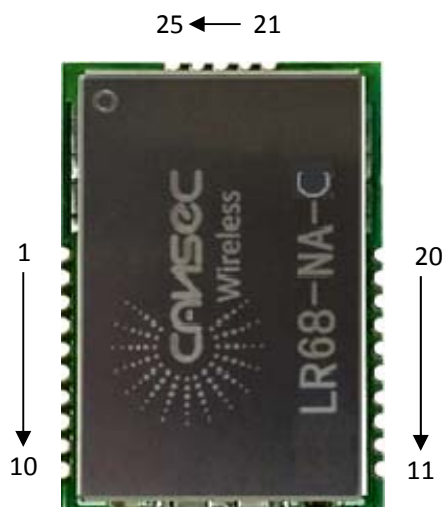
Parameter		Min	Typ	Max	Unit
Operating Voltage		1.8	-	3.7	V
Operating Temperature		-40	-	+85	℃
Current Consumption	Sleep Mode	-	0.5	1.5	uA
	Receive mode(@LDO mode)	-	12	-	mA
	Transmit Mode	-	120	-	mA
TX Power (For Carrier)		-	20.5	21	dBm
RX Sensitivity (For Lora Modulation)		-	-	-148	dBm
Distance		4.8K			m

Mechanical Drawing

LR68NA-C-XXX:

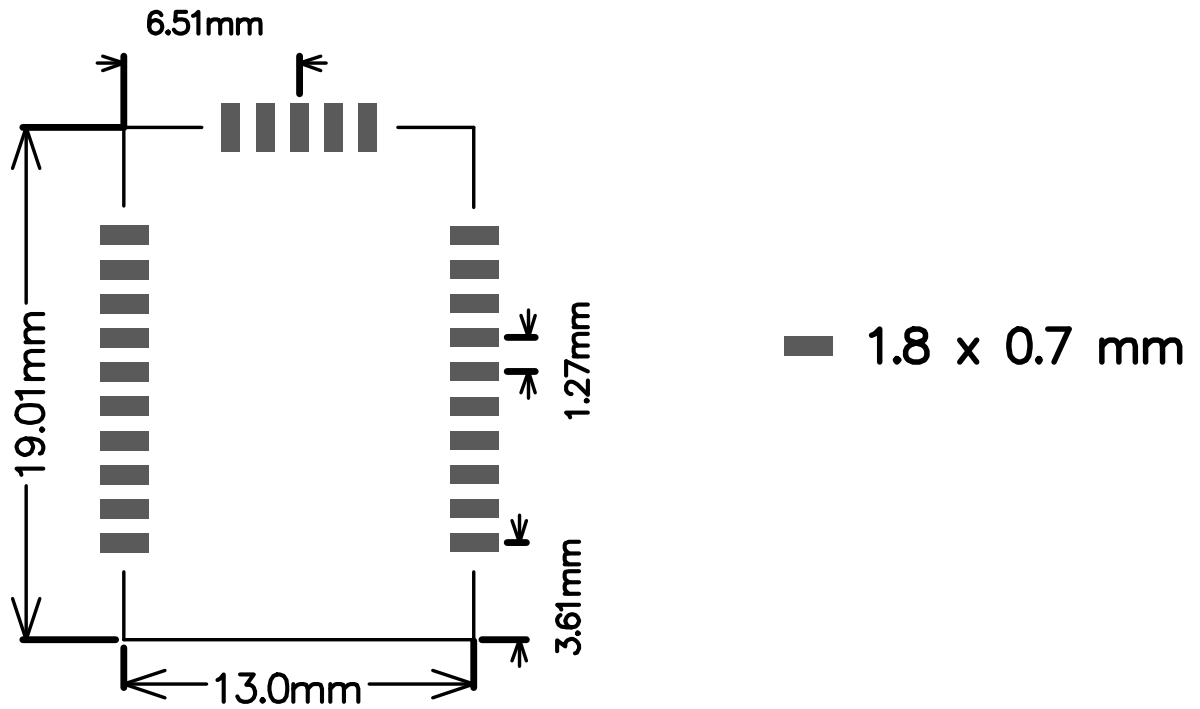


Terminal Description

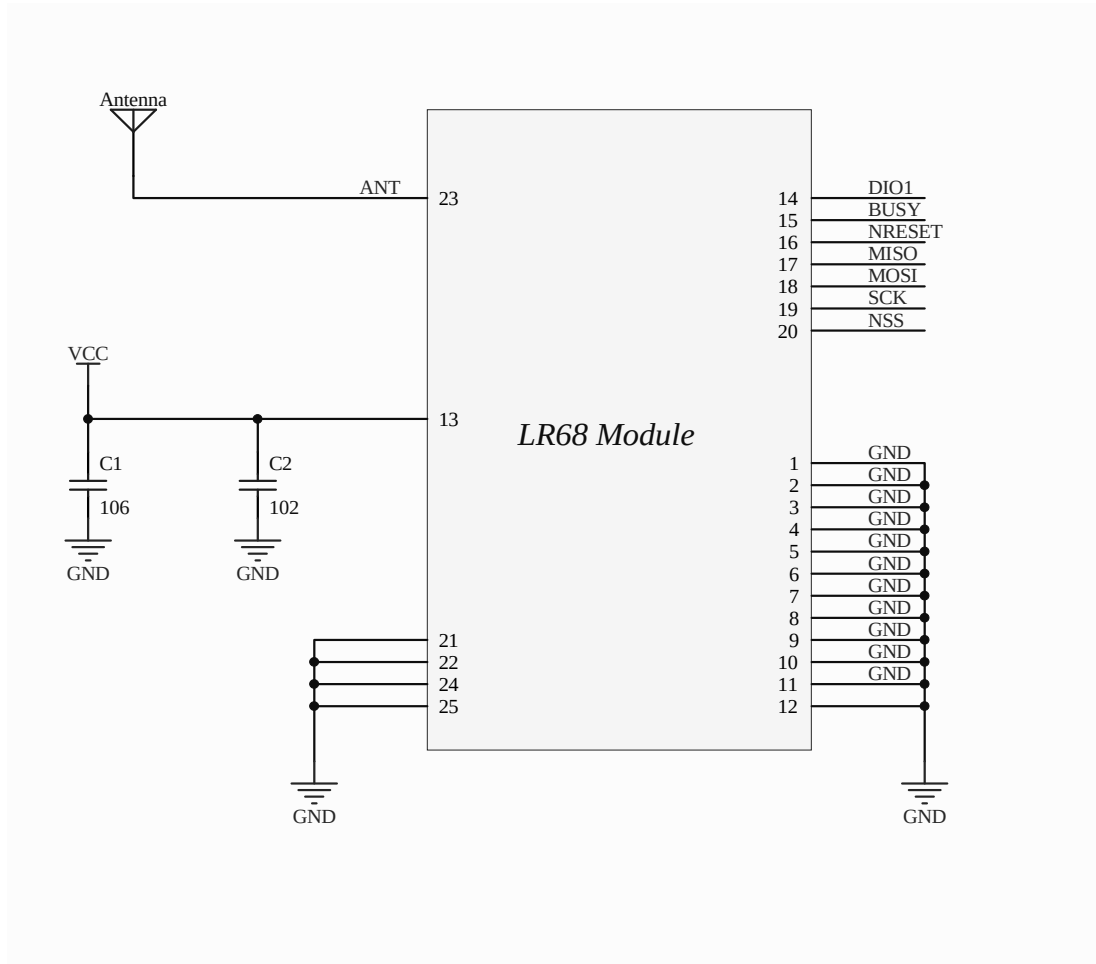


Pad Number	Name	Pin Type	Description
1-12	GND	Ground Pin	Connect to GND
13	VDD	POWER	1.8V to 3.7V main chip supply
14	DIO1	I/O	Multi-purpose digital IO
15	BUSY	O	Busy indicator
16	NRESET	I	Reset trigger input
17	MISO	O	SPI slave output
18	MOSI	I	SPI slave input
19	SCK	I	SPI clock
20	NSS	I	SPI Slave Select
21	GND	Ground Pin	Connect to GND
22	GND	Ground Pin	Connect to GND
23	RF_OUT	O	RF transmitter output
24	GND	Ground Pin	Connect to GND
25	GND	Ground Pin	Connect to GND

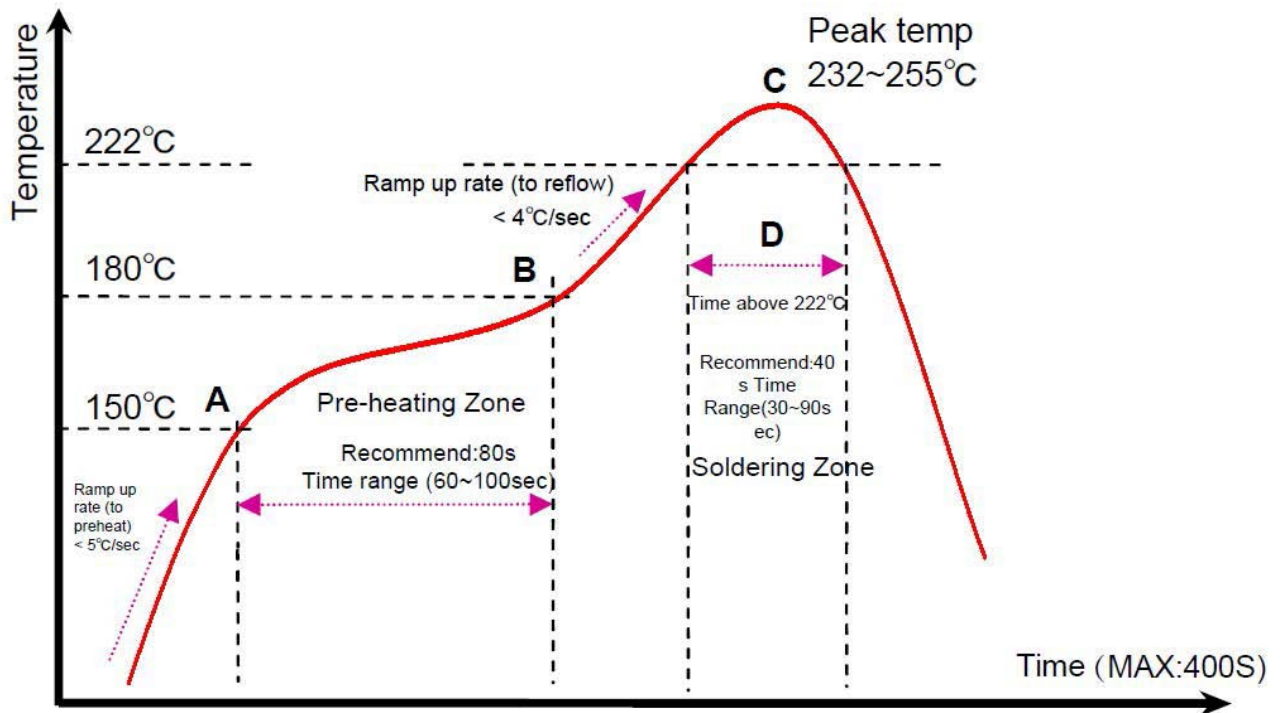
Recommended PCB Layout for Package



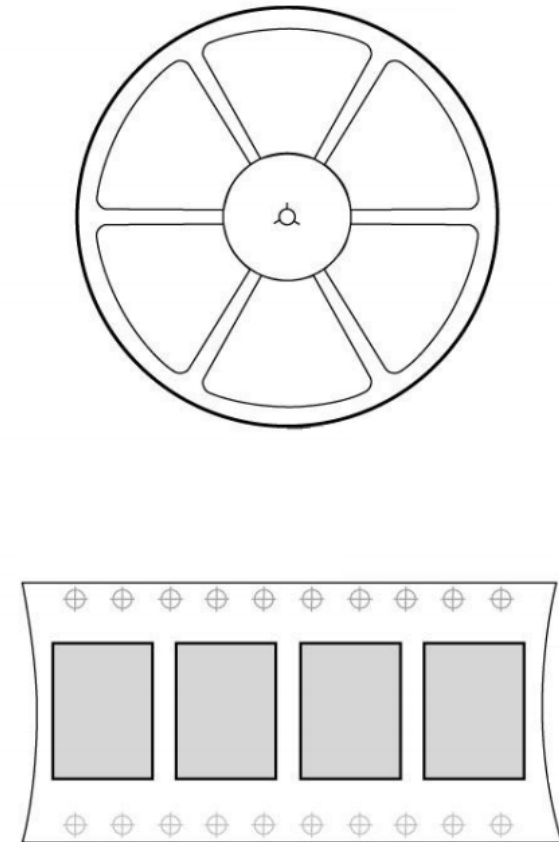
Reference Schematics



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: amy@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