

# A-1-001-01

## Wi-SUN UART Module (Half-hole)



Version	Date	Change Description
0.1	6 Oct 2020	Initial release.
0.2	11 Jan 2021	Add module dimensions information. Add reflow chart. Modify module dimensions height value. Modify Pin description .
0.3	13 Jan 2021	Modify RF characteristics

## Description

The A-1-001-01 is a half hole module using the VC7300 chipset, it integrates Cortex-M3 MCU, 1024 KB Flash, 128 KB SRAM and sub-GHz radio. The solution has varieties of power saving modes which can be leveraged to build ultra-low power IoT networks with powerful computing capability. The embedded sub-GHz RF transceiver features low power consumption, long-range and robust wireless links, being able to reject large nearby interfering RF signals.

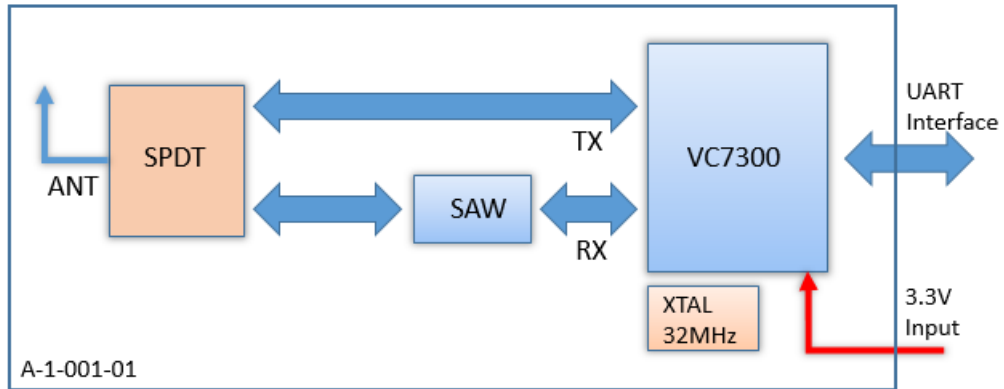
## Features

- Operates in 902~928MHz
- Modulation schemes: OOK, (G)FSK, 4(G)FSK and GMSK
- Data rate up to 300kbps
- Support wireless M-Bus
- AES accelerator of 128/192/256-bit keys
- Maximum 35 GPIOs
- Standard footprint: 28.0×17.0×1.95mm
- RoHS compliance

## Applications

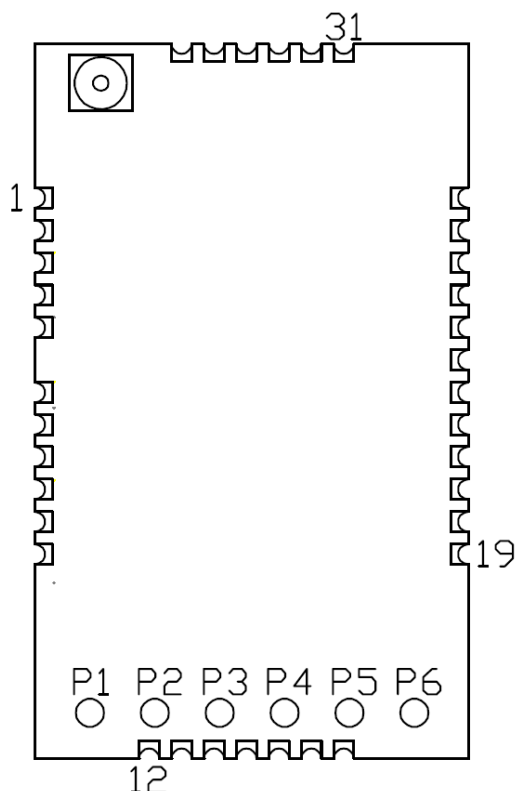
- Smart Grid
- Smart lighting
- IoT gateway
- IoT sensor devices

## Functional Block Diagram



Block Diagram

## Pin Assignment (Top view)



## Pin Definition

Pin	Signal	Input /Output	Description
1	RXD1	I	UART Receive Data,for programming and debug use
2	TXD1	O	UART Transmit Data,for programming and debug use
3	MODE	I	Mode selection
4	BOOT	I	Boot mode selection
5	RESET	I	RESET pin
6	IOA6	I/O	GPIO
7	IOA0	I/O	GPIO
8	IOA1	I/O	GPIO
9	GND	Power	Ground
10	VDD33	Power	DC 3.3V power supply
11	IOA7	I/O	GPIO
12	IOE4	I/O	GPIO
13	IOE5	I/O	GPIO
14	GND	Power	Ground
15	IOE6	I/O	GPIO
16	IOE7	I/O	GPIO

17	TXD0	O	UART Transmit Data,for application use
18	RXD0	I	UART Receive Data, for application use
19	GND	Power	Ground
20	IOB7	I/O	GPIO
21	IOB1	I/O	GPIO
22	IOB14	I/O	GPIO
23	IOB13	I/O	GPIO
24	IOB11	I/O	GPIO
25	IOB9	I/O	GPIO
26	IOB12	I/O	GPIO
27	IOB10	I/O	GPIO
28	GND	Power	Ground
29	IOB6	I/O	GPIO
30	IOB0	I/O	GPIO
31	GPIO5	I/O	GPIO
32	TOP	O	RXIF test out
33	TON	O	RXIF test out
34	GND	Power	Ground
35	ANT	RF	RF input/output pin
36	GND	Power	Ground
P1	VDD33	Power	DC 3.3V power supply
P2	RESET	I	RESET pin
P3	RXD0	I	UART Receive Data
P4	TXD0	O	UART Transmit Data
P5	NC	NC	NC
P6	GND	Power	Ground

## Functional Specification

Product Description	
Wi-SUN Standard	IEEE 802.15.4g/Wi-SUN compliant
Host Interface	UART
Main Chipset	VC7300
Dimension	28.0mm x 17.0mm x 1.95mm
Package	Half-hole PCB module
Electrical Specifications	
Frequency Range	902 to 928 MHz
Data Rate	802.15.4g: 2.4~300kbps
Modulation Technique	802.15.4g: OOK, (G)FSK, 4(G)FSK, GMSK
Operational Channel	900MHz
Operating Voltage	3.3V

## Temperature Limit Ratings

Parameter	Min.	Max.	Units
Ambient Operating Temperature	-40	+85	°C

## Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VDD	Supply voltage of core power	-0.3 to 3.6	V

## Recommended Operating Range

Symbol	Parameter	Min	Typ	Max	Units
VDD	Supply voltage of core power	2.0	3.3	3.6	V

## RF Characteristics

Parameter	Description	Min	Typ	Max	Unit
Frequency Range		902	915	927	MHz
Output Power	802.15.4g,2.4~300kbps		20		dBm
TX Power Accuracy			±1.5		dBm
RX Sensitivity	802.15.4g,50kbps		-106		dBm

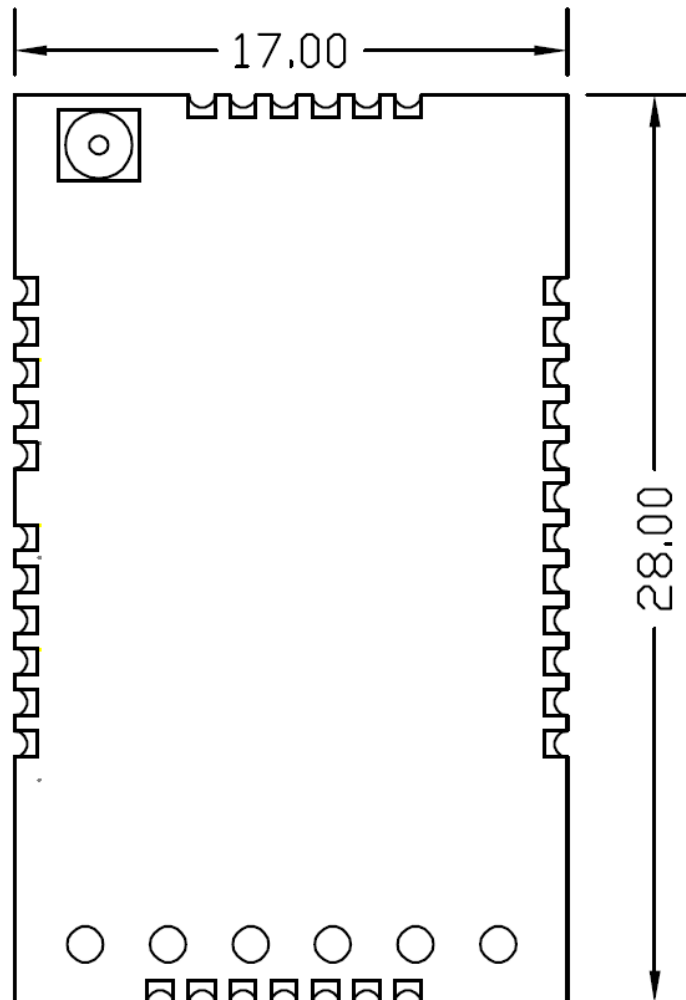


## Power Consumption Characteristics

TBD

## Module Dimensions

Top view:

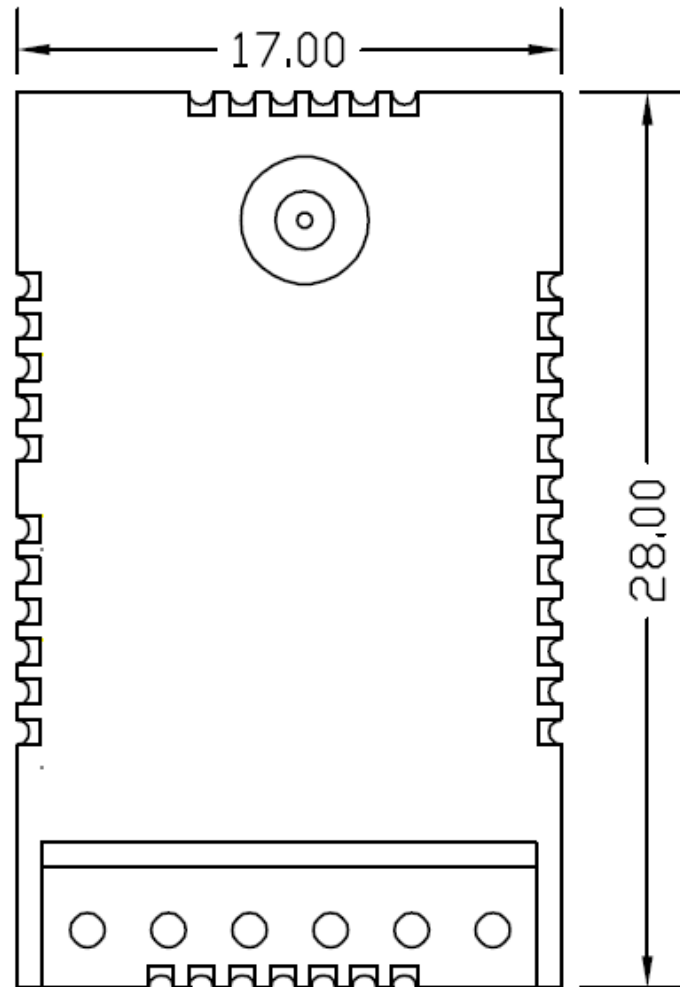


All dimensions are in millimeters.  
Tolerance: +/- 0.15mm

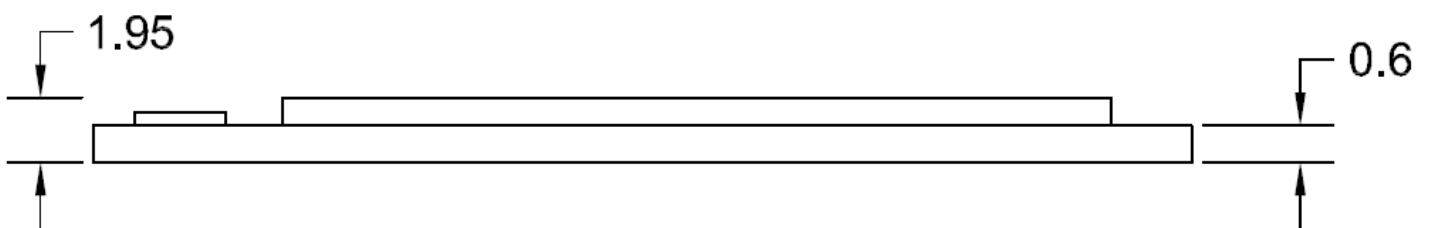


## Module Dimensions

Bottom view:



Side view:



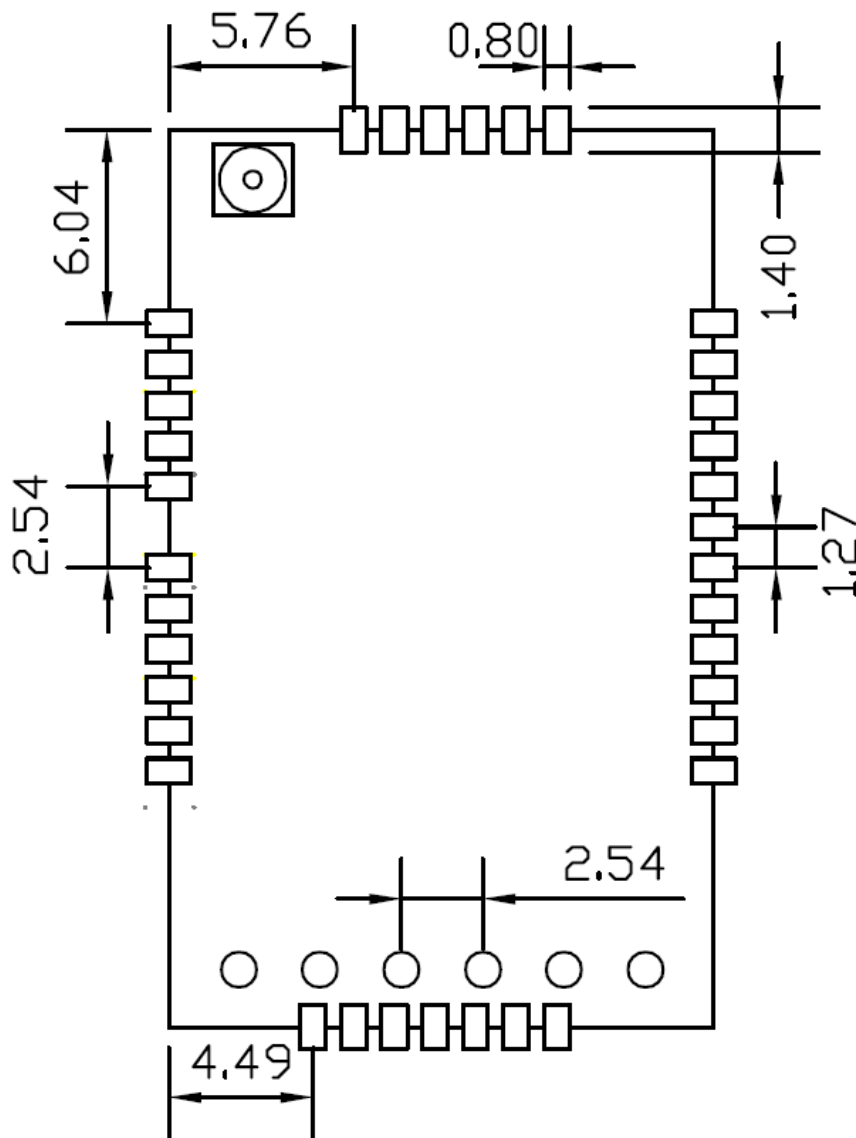
All dimensions are in millimeters.

Tolerance:  $\pm 0.15$ mm

## Layout Design Guide

The recommended layout pads for A-1-001-01 module are shown below. (Module top view)

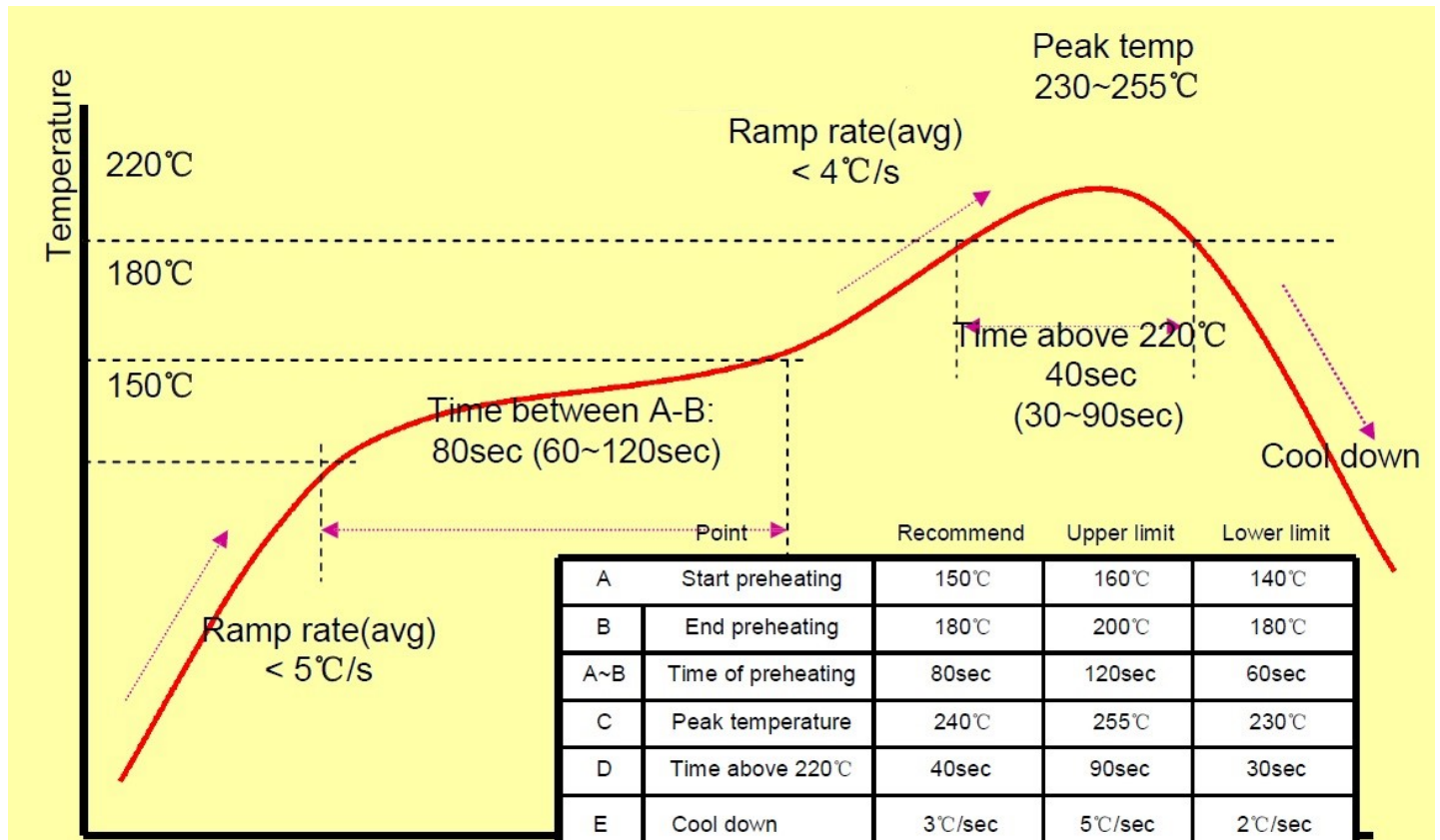
- DO NOT route any digital or analog signal traces between the RF traces and reference ground.
- DO NOT put any metal shielding in the surrounding area of module and try to leave the module placed in the corner of chassis board as close as possible.
- DO NOT put any metal plane into clearance area. Please keep the clearance area close to the corner of main board or out of the board's edge.



All dimensions are in millimeters.

Tolerance:  $\pm 0.15\text{mm}$

## Reference Temperature Reflow Chart



### Note:

1. If the system PCBA is double side design please reflow the side without this module first.
2. Don't let the solder machine temperature over 250°C or follow solder paste vender's recommended temperature.
3. The Ramp-up temperature speed is 1~4 °C per second, the Ramp-down temperature speed is 1~4 °C per second.
4. This temperature reflow chart is for reference only, it depends on the manufacturing machine's characters requirement.