

LoRa Module

WSL301ASR

Compact-sized
With Ultra-low Power
Consumption



LoRaWAN Support



WSL301ASR(L) : 470MHz



AT Commands



Extended Temperature
Range: -40°C to +85°C



Ultra-Low Power Consumption
(<3uA @ sleep mode)

The WSL301ASR feature the LoRa™ long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption.

LoRa™ also provides significant advantages in both blocking and selectivity over conventional modulation techniques, solving the traditional design compromise between range, interference immunity and energy consumption.

◆ General Feature

- General LoRa module for Smart City, Smart Agriculture , Smart Industry, IOT Application
- Compact Form Factor: 16 x 18 x 2.5 mm
- 40 Pin Stamp Pad for PCB SMT mounting
- I/O port: UART/I2C/GPIO
- Temperature range: -40°C to +85°C
- Supply voltage: 1.8 ~ 3.6V
- Frequency range: 470 – 510 MHz
- IEEE 802.15.4g, Wireless M-Bus and Proprietary Systems
- Maximum 22dBm output power and -141dBm high sensitivity
- Low-Power Wireless Systems with 7.8-kHz to 500-KHz Bandwidth

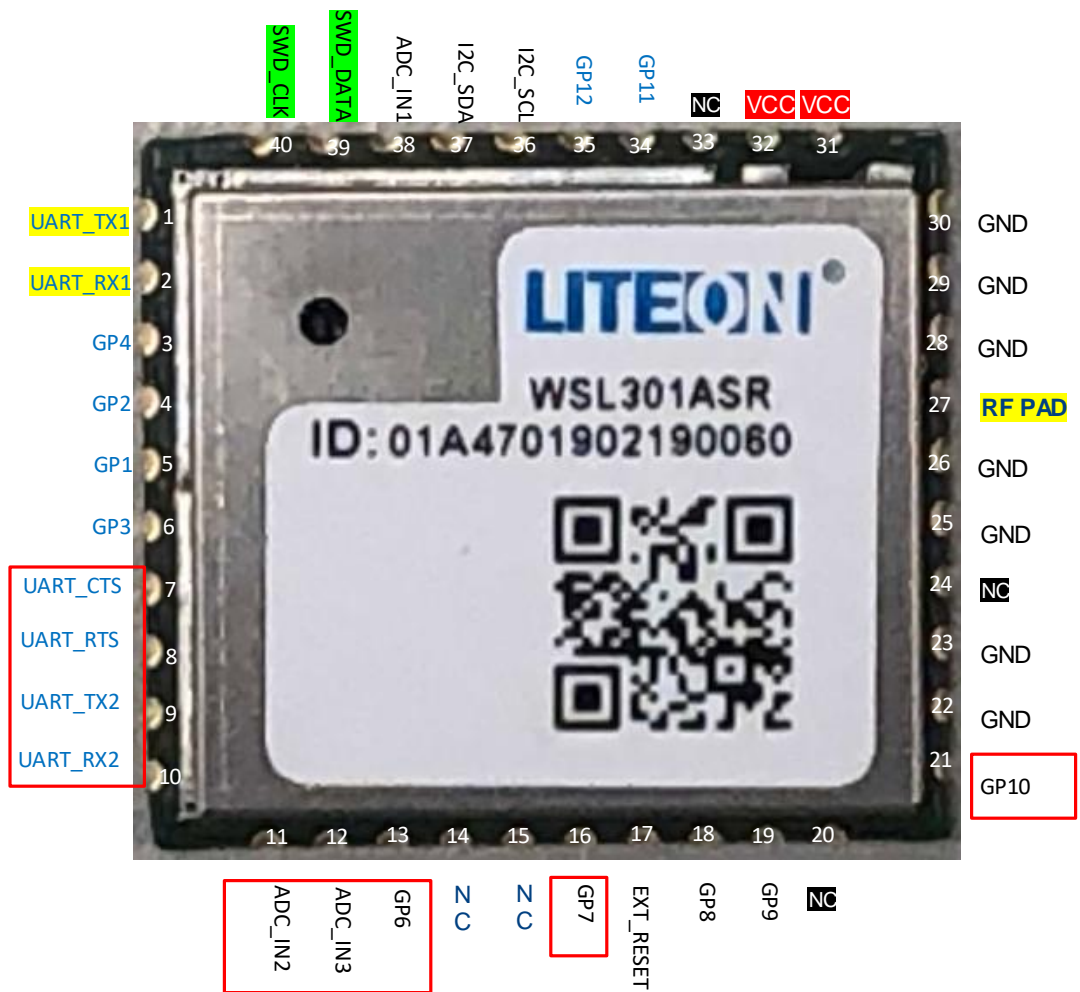
◆ Product Specifications

RF Function	
Standard	IEEE 802.15.4g
Interface	UART/I2C/GPIO
Transmit Output Power	Max. 22dBm
Data Rate	0.018 - 37.5 kbps
Modulation Techniques	Multilevel (G)FSK and MSK
Frequency bands	470 – 510 MHz
Operating Voltage	1.8 ~ 3.6V
Operating Temperature	-40 ~ 85 degree C

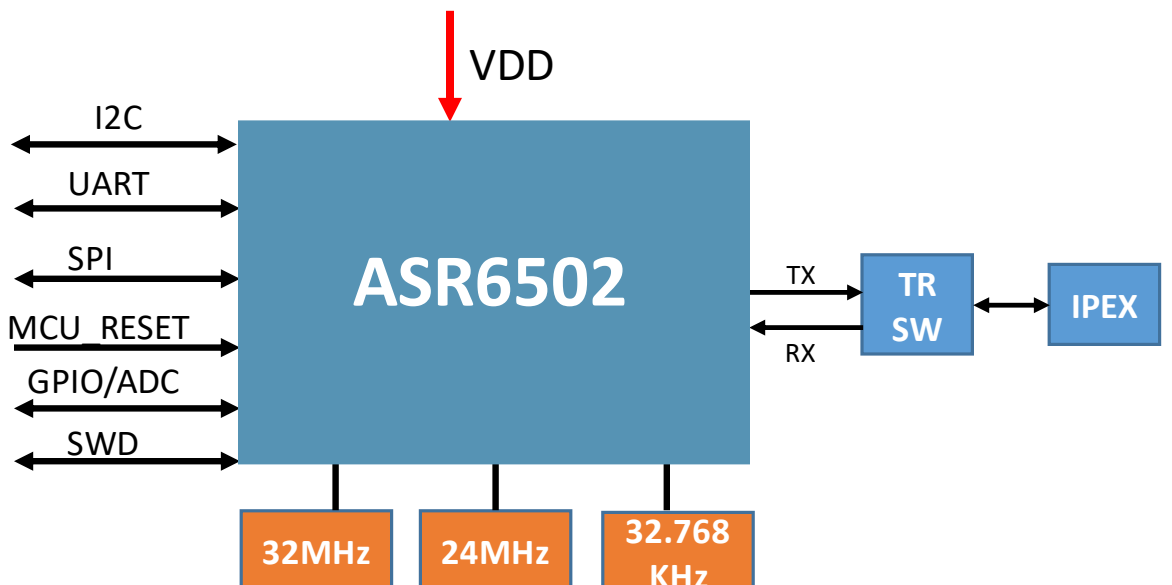
◆ Power Consumption

Item	Min.	Typ.	Max.	Unit	Condition
Transmit mode @22dBm		118		mA	
Receive mode		10		mA	
Sleep mode		3		uA	

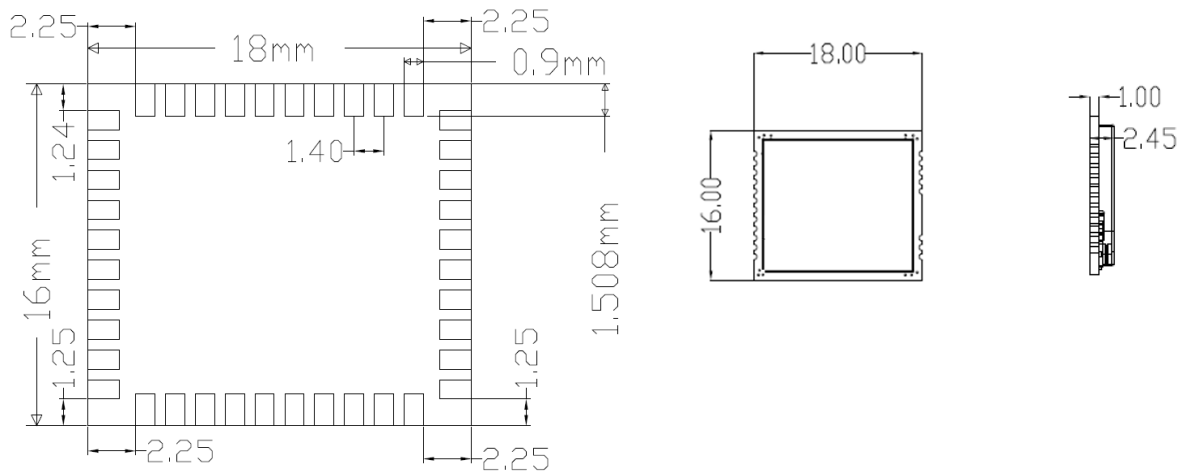
◆ **MODULE PINOUT**



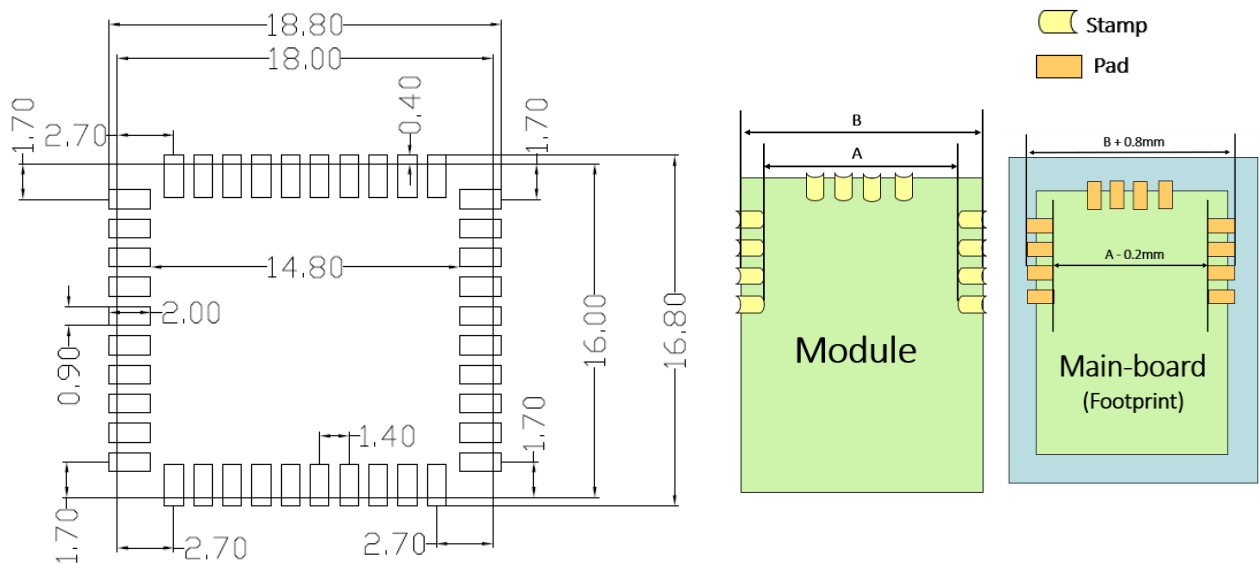
◆ **BLOCK DIAGRAM**



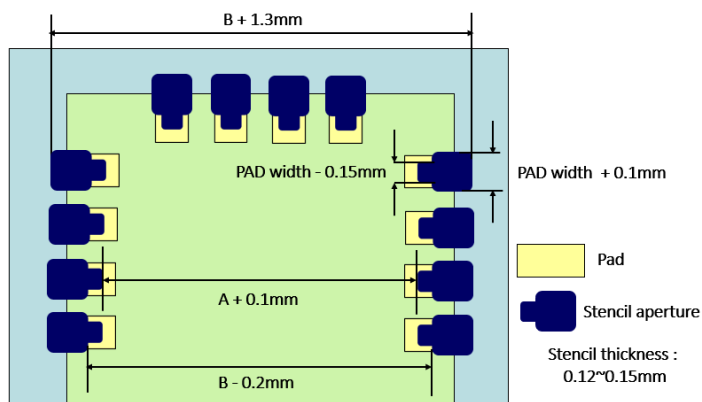
◆ MODULE DIMENSION



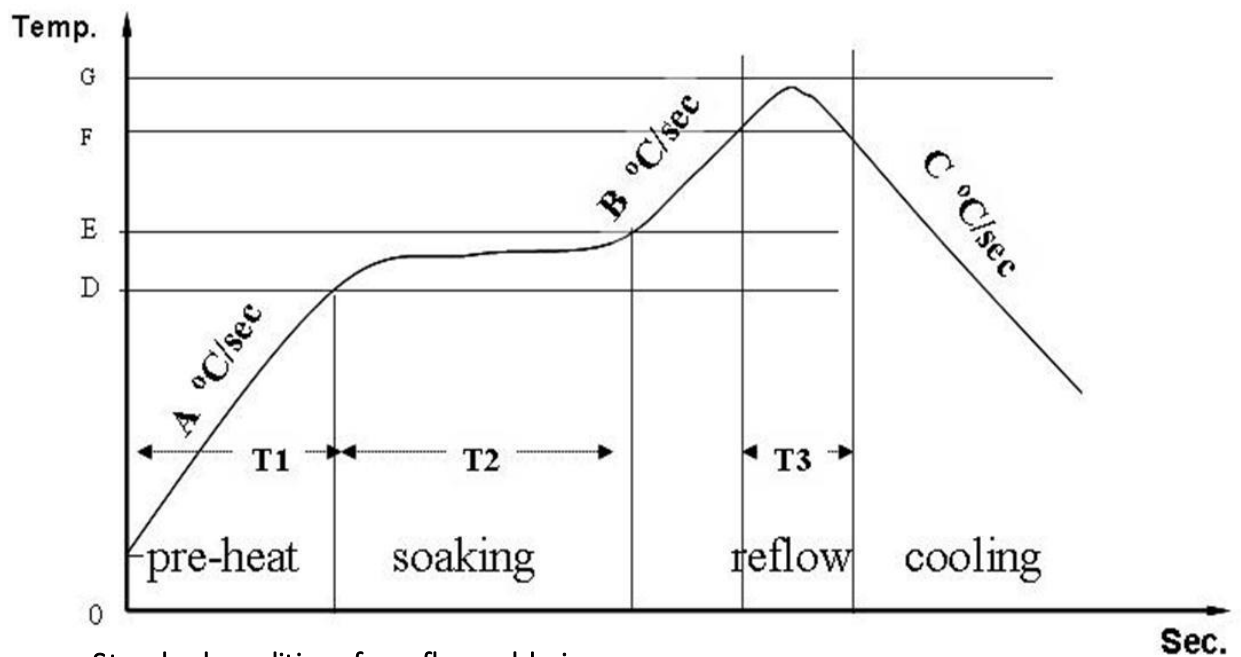
◆ RECOMMENDED FOOTPRINT



◆ RECOMMENDED STENCIL DESIGN



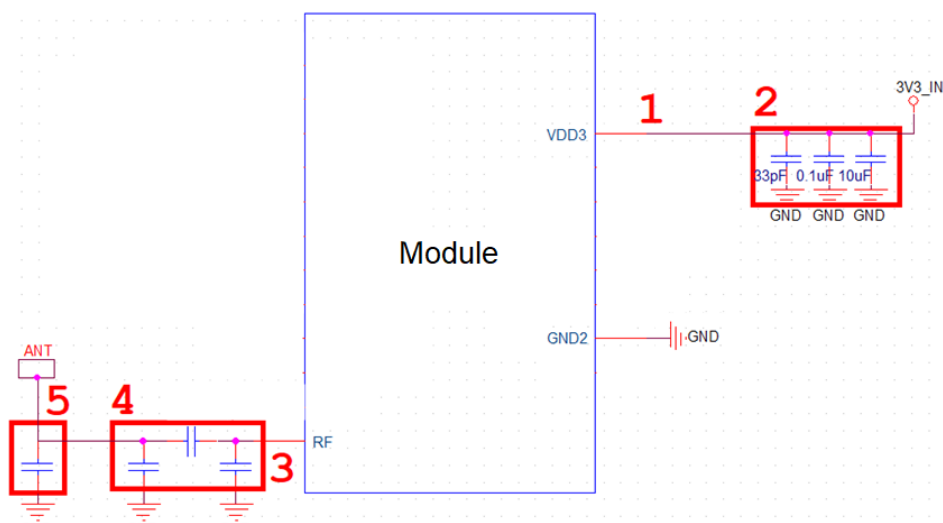
◆ RECOMMENDED REFLOW PROFILE



Standard conditions for reflow soldering:

- a. Pre-heating Ramp (A) (Initial temperature: 150°C): 1~2.5°C/sec;
- b. Soaking Time (T2) (150°C~180°C): 60sec~100sec;
- c. Peak Temperature (G): 230~250°C;
- d. Reflow Time (T3) (>220°C): 30~60 sec;
- e. Ramp-up Rate (B): 0~2.5°C/ sec;
- f. Ramp-down Rate (C): 1~3°C/ sec.

◆ Additional Guidelines



1. Power output routing width recommended more than 1mm.
2. Recommended to reserve capacitors to suppress ripple and noise.
3. RF output need routing with 50ohm impedance line.
4. Reserve the Pi-Matching for Antenna performance tuning.
5. Reserve the TVS for ESD protection. (Option)

◆ CHANGE LIST

Rev	Date	Author	Change List
V1.0	2018.10.27	Kaysa Lee	Preliminary
V1.1	2018.12.28	Kaysa Lee	Update pin definition
V1.2	2019.03.06	Connie HY Wu	Update Min. supply voltage
V1.3	2019.04.11	Kaysa Lee	Remove IPEX version, only keep RF PAD Modify Shielding & update product photo