

LoRa 2W 470MHz RF MODULE

文星電子 2024 年 5 月發表 **TRW-LORA12783X**(LoRa)遠距離無線數據傳輸模組。採用先進的 LoRa 擴頻技術，基於遠程廣域 IoT 應用，符合高功率 FCC PART 90.205 33dBm 規範。

TRW-LORA12783X 具有抗干擾能力強的優勢，提高可靠性和傳輸效率；覆蓋率廣，特別適合遠程監控應用；提供豐富的介面和配置選項，應用靈活。

TRW-LORA12783X 具有-151dBm 超高接收感度，最大功率可達 33dBm(近 2W)，超遠距離無線傳輸。適用於 IoT 物聯網、智能城市、交通、工業控制、自動化農業、醫療、軍事等不同領域之應用。

Application

- 遙控飛機
- 無人車
- 智慧住宅
- 智慧路燈
- 物流追蹤
- 農業自動化灌溉
- 數位對講機
- 遙控天車
- 設備通訊



尺寸：18mm * 35.2mm * 3.85mm

Features

- 頻率 470MHz
- 接收感度-151dBm
- 採用 SX1278 晶片
- 自動頻率控制 AFC
- FSK/OOK Mode
- SPI 串口
- 發射功率 33dBm
- 工作電壓 3.8 ~ 5.5V
- 信號強度檢測 AGC
- 127dB RSSI 動態範圍

Version History

Version	Date	Changes
V1.01	May.10.2024	1 st Edition

Specifications

Model : [TRW-LORA12783X](#)

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Frequency Range	420		500	MHz	470MHz (Center frequency)
Receiver Sensitivity	-151			dBm	0.03125bps
Transmit Power			33	dBm	near 2W
Data Rate	0.03125		8	Kbps	LoRa Protocol
Supply Voltage, VCC	3.8		5.5	V	DC
TX Current		1300		mA	33dBm(about 2W)
RX Current		23		mA	
Power down Current			0.1	uA	Power down Mode
Power up time	50			ms	Disable to Enable time
Operating Temperature	-40		+80	°C	

Data Rate/Sensitivity

Date Rate (kbps)	Spreading Factor	Bandwidth (kHz)	Coding Rate	Receiver Sensitivity (dBm)
0.03125	12	125kHz	4/5	-151
0.0625	12	250 kHz	4/5	-148
0.125	12	500 kHz	4/5	-146
0.125	11	125 kHz	4/5	-149
0.25	11	250 kHz	4/5	-146
0.5	11	500 kHz	4/5	-144
0.25	10	125 kHz	4/5	-150
0.5	10	250 kHz	4/5	-147
1	10	500 kHz	4/5	-145
0.5	9	125 kHz	4/5	-151
1	9	250 kHz	4/5	-148
2	9	500 kHz	4/5	-146
1	8	125 kHz	4/5	-152
2	8	250 kHz	4/5	-149
4	8	500 kHz	4/5	-147
2	7	125 kHz	4/5	-153
4	7	250 kHz	4/5	-150
8	7	500 kHz	4/5	-148

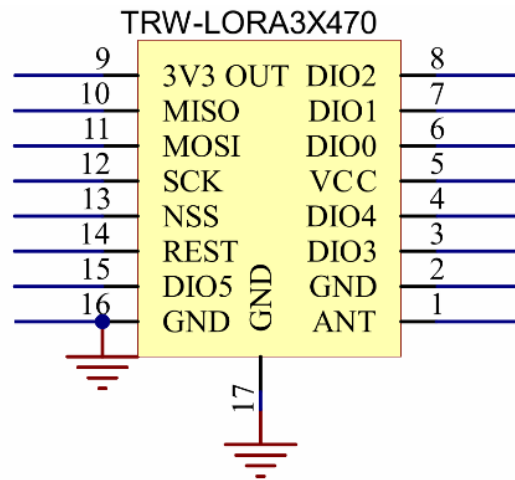
正視圖



底視圖



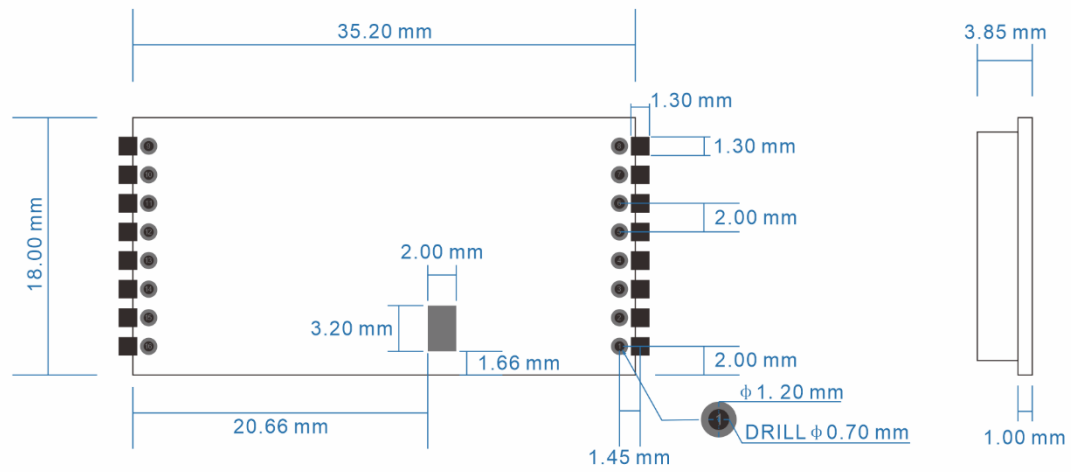
Pin Assignment



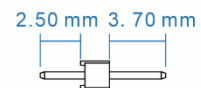
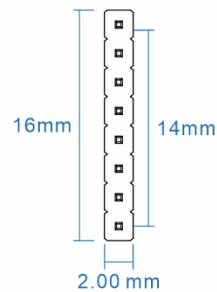
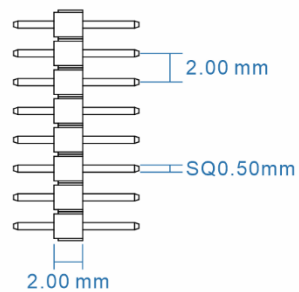
Pin	Name	I/O	Description
1	ANT	I/O	Antenna interface
2	GND	-	Ground
3	DIO3	I/O	Digital I/O, software configured
4	DIO4	I/O	Digital I/O, software configured
5	VCC	I	Supply voltage for RF 3.8~5.5V
6	DIO0	I/O	Digital I/O, software configured
7	DIO1	I/O	Digital I/O, software configured
8	DIO2	I/O	Digital I/O, software configured
9	3V3 OUT	O	LDO out 3.3V
10	MISO	O	SPI Data output
11	MOSI	I	SPI Data input
12	SCK	I	SPI Clock input
13	NSS	I	SPI Chip select input
14	NRESET	I/O	Reset trigger input
15	DIO5	I/O	Digital I/O, software configured
16	GND	-	Ground
17	GND	-	Exposed ground pad

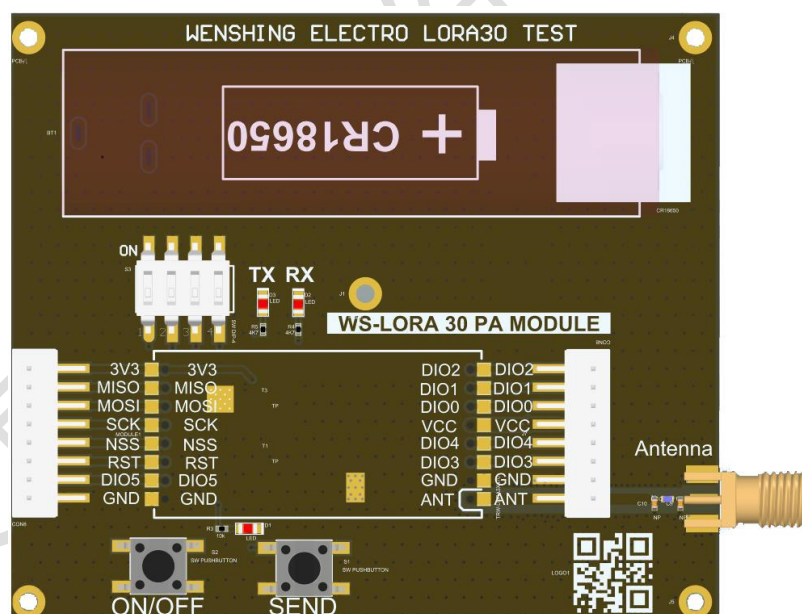
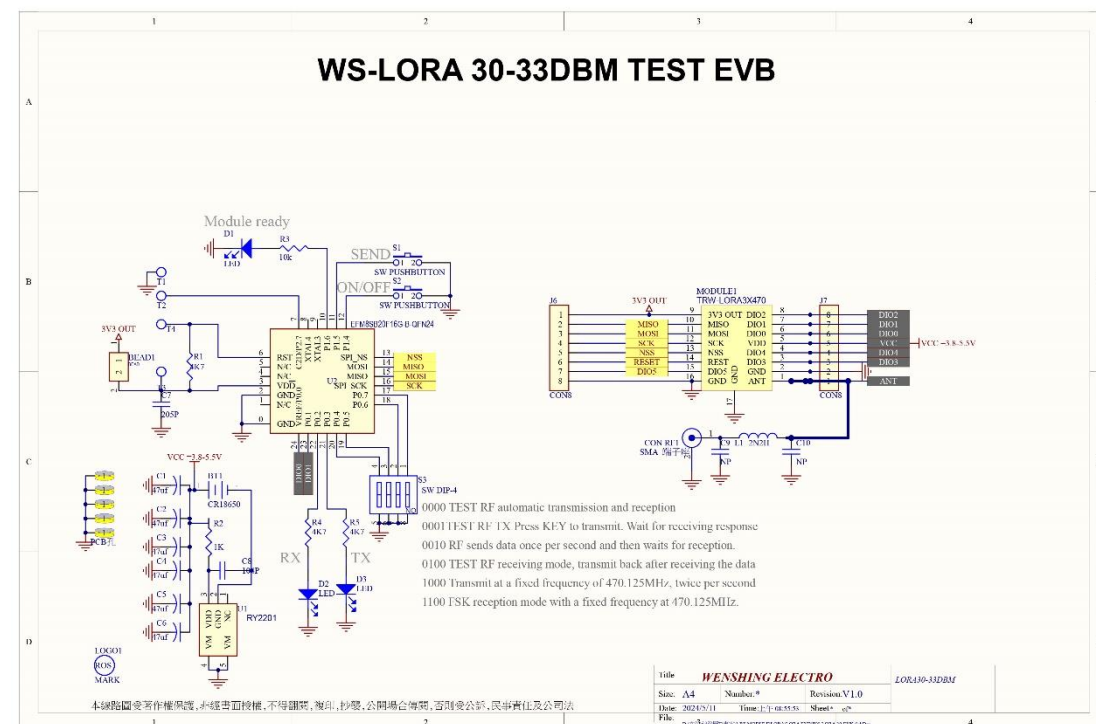
Dimension

TRW-LORA12783X



排針





- LoRa 距離計算參考：
<https://www.rfwireless-world.com/calculators/LoRaWAN-Range-calculator.html>
- 天線長度計算參考：
https://rf.net.tw/Design_tools/ant_design.html