LW313-1/2M-V4.2
Mini 2.4GHz Transceiver Module

Description

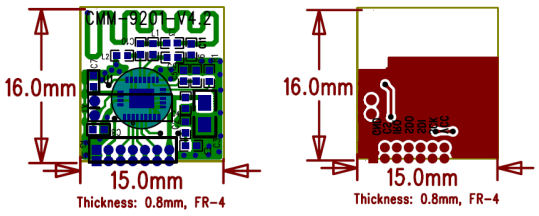
The LW313-1/2M module is a miniaturised 2.4GHz transceiver module based on EM Microlectronic's low energy RF transceiver EM9201/02. The module is highly optimized for proprietary link application requiring ultra low power consumption and short time-to-market. It offers a plug and play solution for any EM9201 application without any additional hardware nor RF layout. Built in with an inverted-L PCB antenna, this small sized, low cost module provides an ideal solution to wireless 2.4GHz license-free applications worldwide.

The EM9201/02 is a low-voltage 2.4GHz transceiver IC with built-in link-layer logic permitting proprietary wireless links in the 2.400 … 2.4835 GHz ISM band. It has a radio core with a low-IF architecture and GFSK modulation scheme being compliant with the emerging Bluetooth low energy technology standard.

1.1 Features

- Fully integrated 2.4 GHz transceiver (Die form)
- Operating voltage can reach down to 0.8V
- Mini-sized (16mm x 15mm)
- Programmable RF output level (- 20 to + 4 dBm) by controlling software
- On-chip Battery Level Detection (BLD)
- Low current consumption (0.8uA at standby, 12.5mA in RX, 11.5mA in TX (0dBm))
- 1Mb/s (LW313-1M), 2Mb/s (LW313-2M) data rate
- No Tuning necessary
- Reaches 20m at open space
- GFSK modulation
- SPI interface to host controller

1.2 Module Dimension & Pin Assignement

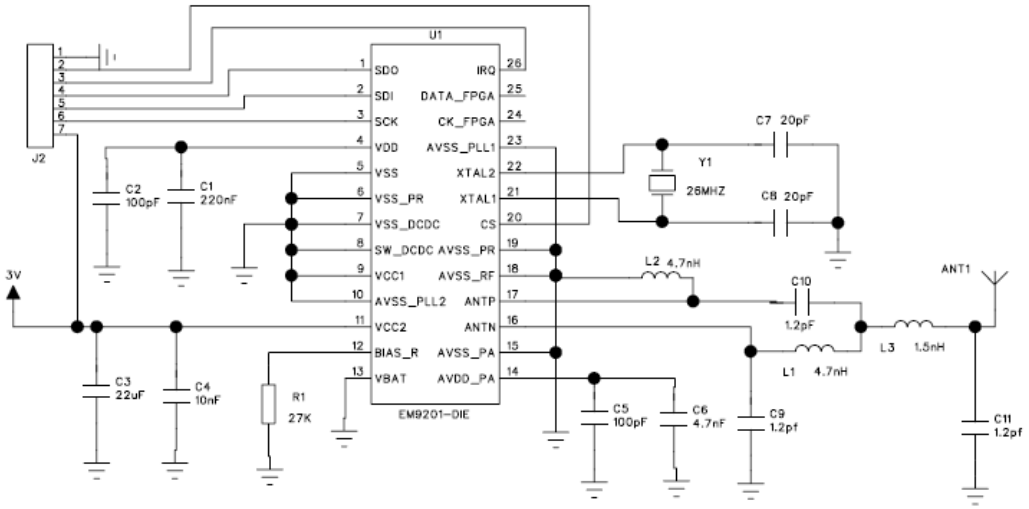


FRONT **BACK**

Module thickness: 5.5mm max.
(Connection socket not inclusive)

Pin Number	Pin Name	Pin Description
1	VCC	Power Supply (Input voltage depend on module version)
2	SCK	SPI Clock Input
3	SDI	SPI Data Input
4	SDO	SPI Data Output
5	IRQ	Interrupt Output for external host Controller
6	CS	Chip Select (Active LO)
7	GND	Ground Connection

1.3 Module Reference Circuit diagram



1.4 Module Electrical Specifications

Specification	LW313-1-1M	LW313-2-1M	LW313-1-2M	LW313-2-2M
Voltage Range	0.8V to 1.8V	0.8V to 1.8V	1.9V to 3.6V	1.9V to 3.6V
Battery-low detection (adjustable)	0.82V to 1.25V	0.82V to 1.25V	2.1V to 2.45V	2.1V to 2.45V
Frequency Range	2.4 to 2.484 GHz	2.4 to 2.484 GHz	2.4 to 2.484 GHz	2.4 to 2.484 GHz
Modulation	GFSK	GFSK	GFSK	GFSK
On-air data rate	1Mbps	2Mbps	1Mbps	2Mbps
RF channels	40	40	40	40
Current Consumption (Vcc = 2,1V)				
- RX mode	12.5mA	12.5mA	12.5mA	12.5mA
- TX mode (0dBm output power)	11.5mA	11.5mA	11.5mA	11.5mA
- Sleep-mode	3.0uA	3.0uA	3.0uA	3.0uA
- Power-down mode	0.8uA	0.8uA	0.8uA	0.8uA
Programmable output power	-20dBm to +4dBm	-20dBm to +4dBm	-20dBm to +4dBm	-20dBm to +4dBm
RF setup time (Standby <-> TX/RX)	Max 180 us	Max 180 us	Max 180 us	Max 180 us

2. Ordering information

C-MAX Module Part Number	Max Data Rate	Typical Operating Voltage
LW313-1-1M	1 Mbps	1.5V
LW313-2-1M	2 Mbps	1.5V
LW313-1-2M	1 Mbps	3V
LW313-2-2M	2 Mbps	3V

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