Instruction of EM-UWBTG100

变更记录

No	Version	Time	Discription	Note
1	V1.0	2018-12-5	The initial version	
2	V1.1	2018-12-7	Add detailed working current	
3				
4				

Table of Contents

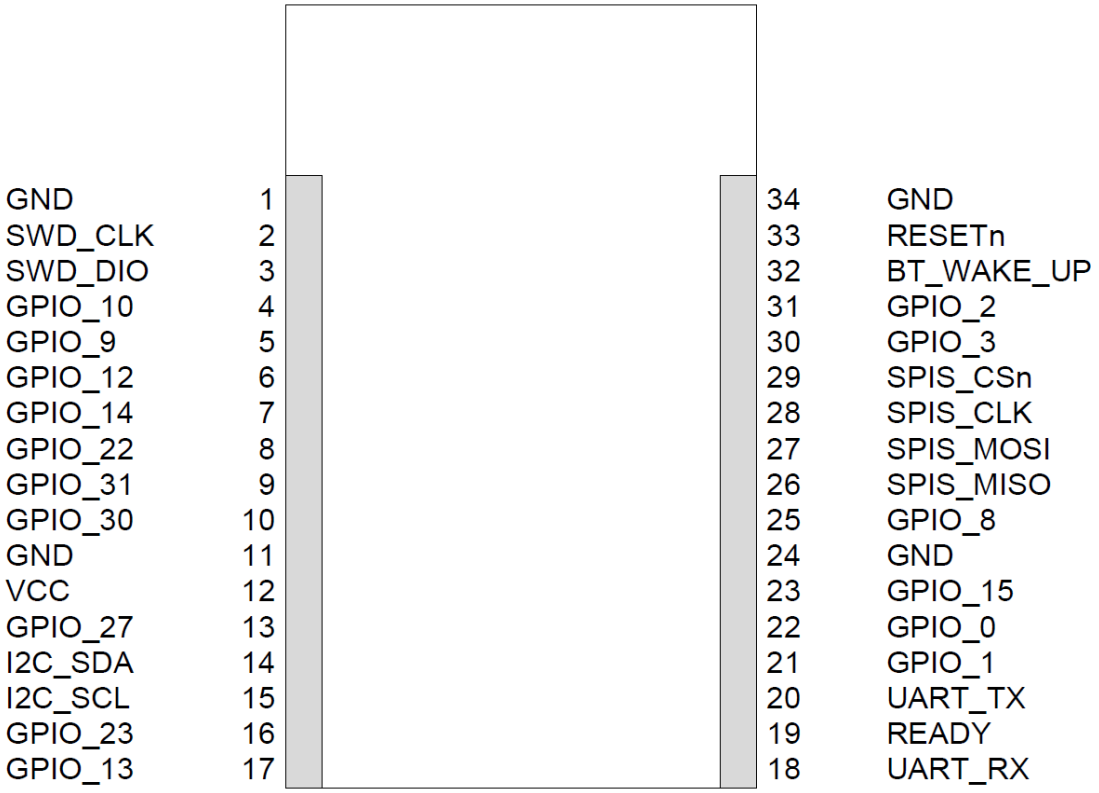
1 Overview

The EM-UWBTG100 is based on Decawave's DW1000 Ultra Wideband (UWB) transceiver IC, which is an IEEE 802.15.4-2011 UWB implementation. It integrates UWB and ARM® Cortex®-M4 32-bit processor with FPU, Nordic Semiconductor nRF52832 and a motion sensor which can control the power dissipation flexibly.

2 Key Features

* Ranging accuracy to within 10cm
* UWB channel 2 and channel 5 printed PCB antenna
* Up to 6.8 Mbps data rate
* IEEE 802.15.4-2011 UWB compliant
* Motion sensor: 3-axis accelerometer
* Current consumption optimised for low power sleep mode: <15μA
* Supply voltage: 2.8 V to 3.6 V
* Size: 19.1 mm x 36.5 mm x 2.6 mm
* Operating temperature: -40℃ ~ +85℃*
* Storage temperature: -40℃ ~ +85℃；

3 Pin Descriptions



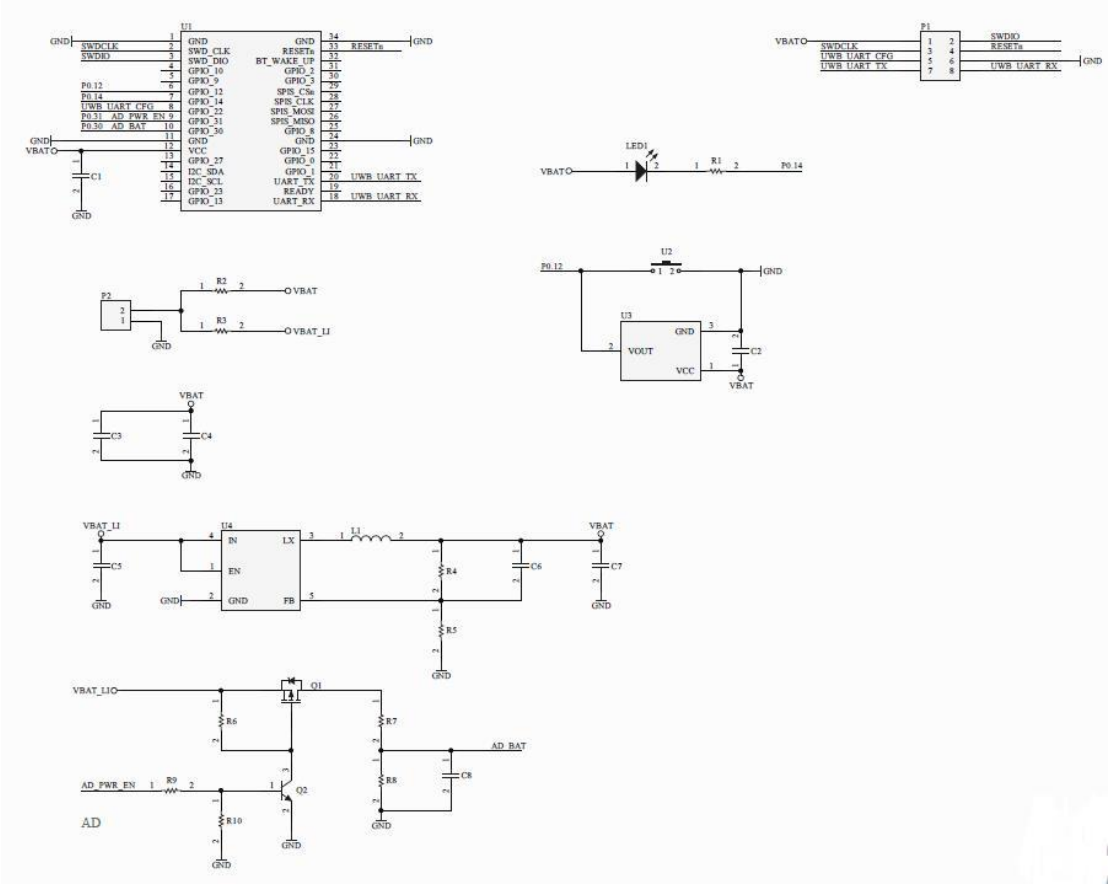
PIN	SIGNAL NAME	DESCRIPTION
1	GND	Common ground
2	SWD_CLK	Serial wire debug clock input for debug and programming of Nordic Processor
3	SWD_DIO	Serial wire debug I/O for debug and programming of Nordic Processor
4	GPIO_10	General purpose I/O pin, P0.10 of nRF52832
5	GPIO_9	General purpose I/O pin, P0.9 of nRF52832
6	GPIO_12	General purpose I/O pin, P0.12 of nRF52832
7	GPIO_14	General purpose I/O pin, P0.14 of nRF52832
8	GPIO_22	General purpose I/O pin, P0.22 of nRF52832
9	GPIO_31	General purpose I/O pin, P0.31 of nRF52832
10	GPIO_30	General purpose I/O pin, P0.30 of nRF52832
11	GND	Common ground
12	VCC	External supply for the module. 2.8V - 3.6V
13	GPIO_27	General purpose I/O pin, P0.27 of nRF52832
14	I2C_SDA	Master I2C Data Line, P0.29 of nRF52832
15	I2C_SCL	Master I2C Clock Line, P0.28 of nRF52832
16	GPIO_23	General purpose I/O pin, P0.23 of nRF52832
17	GPIO_13	General purpose I/O pin, P0.13 of nRF52832
18	UART_RX	UART_RX, P0.11 of nRF52832

19	READY	Generated interrupt from the device. Indicates events such as SPI data ready, or location data ready. P0.26 of nRF52832
20	UART_TX	UART_TX, P0.05 of nRF52832
21	GPIO_1	General purpose I/O pin, GPIO1 of DW1000
22	GPIO_0	General purpose I/O pin, GPIO0 of DW1000
23	GPIO_15	General purpose I/O pin, P0.15 of nRF52832
24	GND	Common ground
25	GPIO_8	General purpose I/O pin, P0.08 of nRF52832
26	SPIS_MISO	Configured as a SPI slave this pin is the SPI data output, P0.07 of nRF52832
27	SPIS_MOSI	Configured as a SPI slave this pin is the SPI data input, P0.06 of nRF52832
28	SPIS_CLK	Configured as a SPI slave this pin is the SPI clock, P0.04 of nRF52832
29	SPIS_CSn	Configured as a SPI slave this pin is the SPI chip select, P0.03 of nRF52832
30	GPIO_3	General purpose I/O pin, GPIO3 of DW1000
31	GPIO_2	General purpose I/O pin, GPIO2 of DW1000
32	BT_WAKE_UP	BT_WAKE_UP, P0.02 of nRF52832
33	RESETn	Reset pin. Active Low Input, P0.21 of nRF52832
34	GND	Common ground

4 ELECTRICAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.
Supply voltage VCC	2.8V		3.6V
Frequency range	3244MHz		6999MHz
Average current		272uA	
Peak current			17mA
Supply current in SLEEP mode			36uA（UART OPEN）
Range			130m
Operating temperature	-25℃		+85℃

5 Reference circuit



This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the modular transmitter

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

2.7 Antennas

This radio transmitter 2AS75-EM-UWBTG100 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna No.	Operate frequency band	Antenna Type	Maximum antenna gain
Antenna 1	6200MHz-6750MHz	PCB Antenna	2.0dBi

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID:2AS75-EM-UWBTG100".

2.9 Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.