NLB52832 DataSheet

V1.2.3 en

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FCC Warning :
If the FCC identification number is not visible when the module is installed inside another device,
then the outside of the device into which the module is installed must also display a label referring to the enclosed module.
This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2AQWI-NLB52832”

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. 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.
   (2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Compliance Information :
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.

“CAUTION : Exposure to Radio Frequency Radiation.
Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation.
The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.
* Antenna Type: Chip Antenna
* Antenna Gain: 0.5 dBi

No	Version	Date	Part	Description
1	1.0.0	2017-01-25	ALL	First release of the product specification
2	1.1.0	2017-02-20	3,7	Pin 1 GND delete, Pin number renaming. Pin account 42 pin to 41pin.
3	1.2.0	2017-02-21	ALL	ADD Introduction and Reference. Update table of contents.
4	1.2.1	2017-05-02	7	Update certification
5	1.2.2	2017-07-24	7	Update certification
6	1.2.3	2017-08-25	1	Update Spec.

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1. NLB52832 Introduction

Features

- Single chip, highly flexible, 2.4 GHz multi-protocol SoC
- 32-bit ARM Cortex-M4F Processor
- 1.7v to 3.6v operation
- 512kB flash + 64kB RAM
- Supports concurrent Bluetooth low energy/ANT protocol operation
- On-chip NFC tag for Out-of-Band (OOB) pairing
- Up to +4dBm output power
- -96dBm sensitivity, Bluetooth low energy
- Thread safe and run-time protected
- Event driven API
- On air compatible with nRF24L and nRF24AP series
- 2 data rates (2Mbps/1Mbps)
- PPI - maximum flexibility for power-efficient applications and code simplification
- Automated power management system with automatic power management of each peripheral
- Configurable I/O mapping for analog and digital I/O
- 3 x Master/Slave SPI
- 2 x Two-wire interface (I^2C)
- UART (RTS/CTS)
- 3 x PWM
- AES HW encryption
- Real Time Counter (RTC)
- Digital microphone interface (PDM)
- On-chip balun

Applications

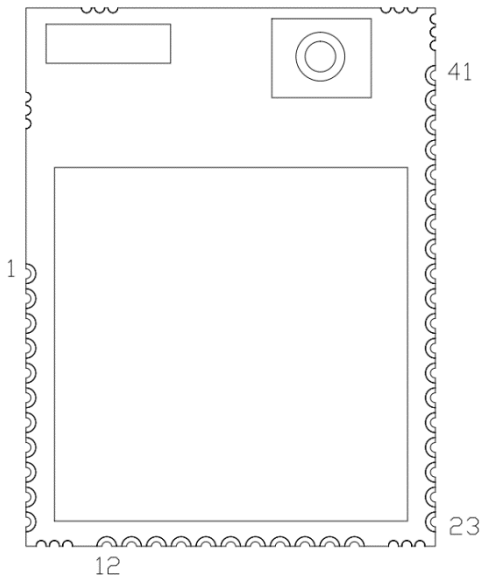
- Internet of Things (IoT)

- Wearables
- SmartHome sensors
- Connected white goods
- Computer peripherals
- Voice-command smart remotes
- A4WP ‘Rezence’ wireless charging
- Beacons
- Sports and fitness sensors and hubs
- Connected health products
- Smart watches
- RC Toys
- Interactive games
- Building automation and sensor networks

Specifications

Manufacturer:	Nordic Semiconductor
RoHS:	
Type:	Bluetooth
Core:	ARM Cortex M4F
Operating Frequency:	2.4 GHz
Maximum Data Rate:	2 Mb/s
Output Power:	+ 4 dBm to - 20 dBm
Sensitivity:	- 96 dBm
Operating Supply Voltage:	1.7 V to 3.6 V
Supply Current Receiving:	5.4 mA
Supply Current Transmitting:	5.3 mA
Program Memory Size:	512 kB
Operating Temperature Range:	- 40 C to + 85 C
Package / Case:	QFN-48
ADC Resolution:	12 bit
Brand:	Nordic Semiconductor
Data Bus Width:	32 bit
Data RAM Size:	64 kB
Data RAM Type:	SRAM
Interface Type:	2-Wire, I2C, I2S, PDM, SPI, UART
Maximum Clock Frequency:	64 MHz
Maximum Operating Temperature:	+ 85 C
Minimum Operating Temperature:	- 40 C
Mounting Style:	SMD/SMT
Number of ADC Channels:	8 Channel
Number of I/Os:	32 I/O
Number of Timers:	5 x 32 bit
Processor Series:	nRF52
Program Memory Type:	Flash

2. NLB52832 Pin Definitions

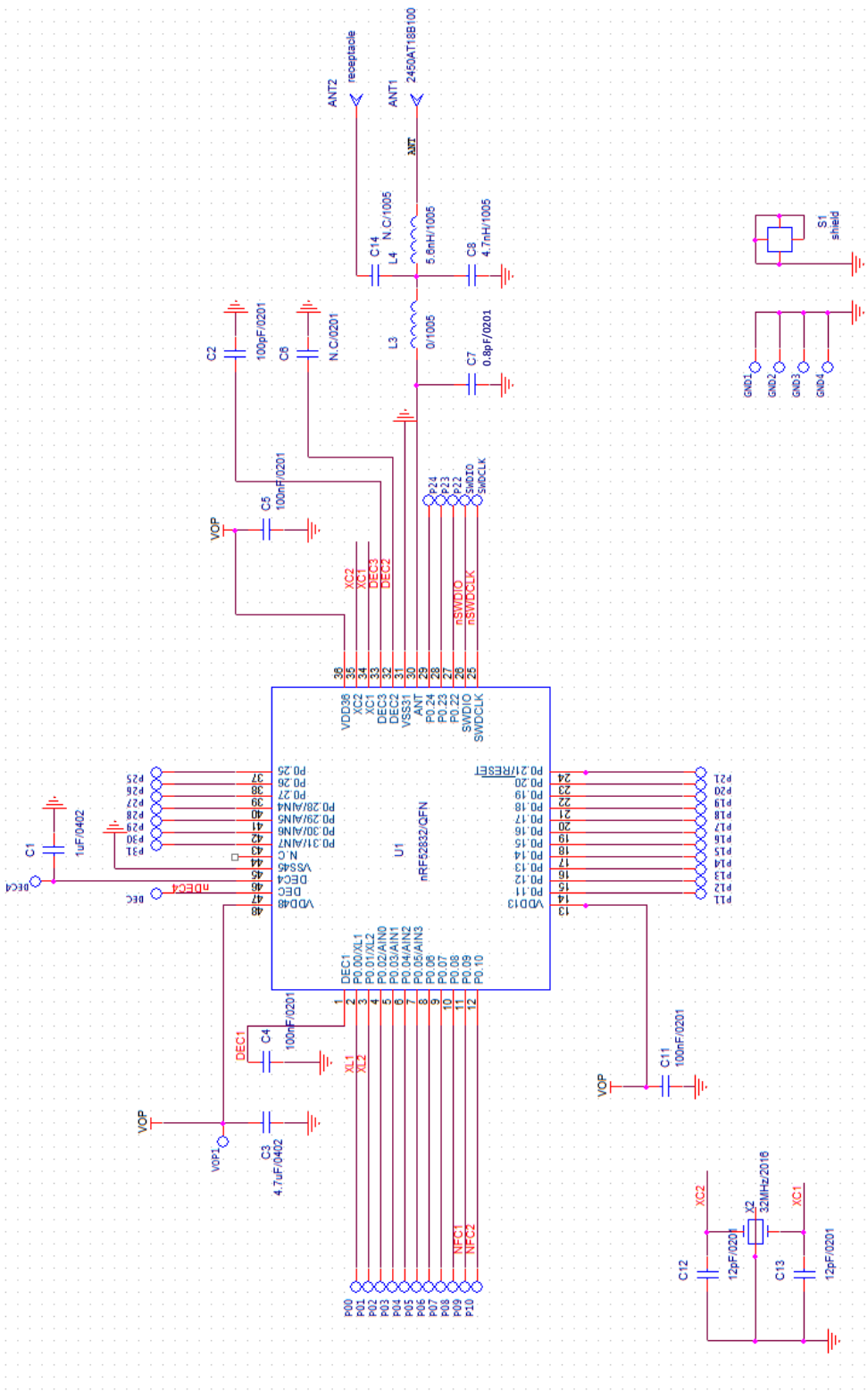


Pin #	Pin Name	nRF52832 QFN Pin	Comment
11,23,37, 38	GND	31,45	VSS GND
1	VOP	13,36,48	VDD
2	P25	37	
3	P26	38	
4	P27	39	
5	P28	40	AIN4
6	P29	41	AIN5
7	P30	42	AIN6
8	P31	43	AIN7
9	DEC4	46	
10	DEC	47	

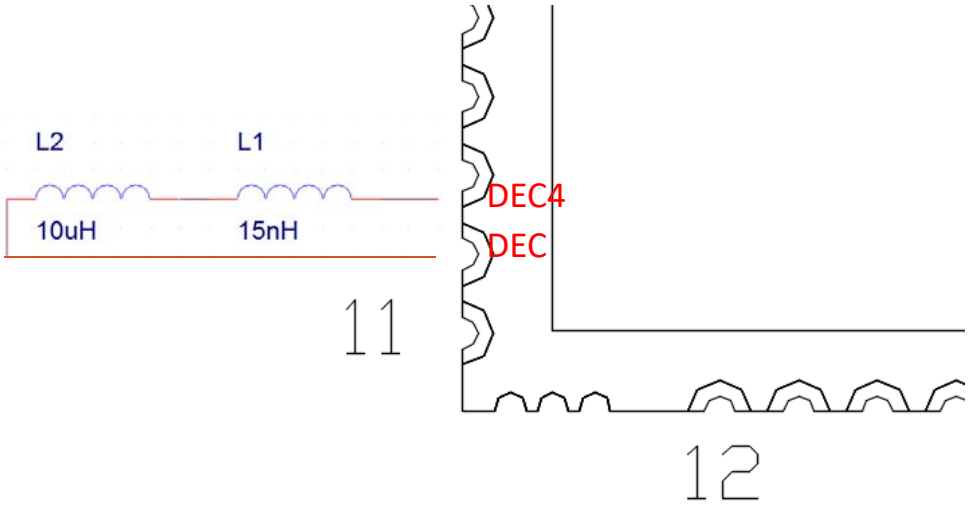
Pin #	Pin Name	nRF52832 QFN Pin	Comment
12	P00	2	XL1
13	P01	3	XL2
14	P02	4	AIN0
15	P03	5	AIN1
16	P04	6	AIN2
17	P05	7	AIN3
18	P06	8	
19	P07	9	
20	P08	10	
21	P09	11	
22	P10	12	
24	P11	14	
25	P12	15	
26	P13	16	
27	P14	17	
28	P15	18	
29	P16	19	
30	P17	20	
31	P18	21	
32	P19	22	
33	P20	23	
34	P21	24	/RESET
35	SWDCLK	25	
36	SWDIO	26	
39	P22	27	
40	P23	28	
41	P24	29	

3. NLB52832 Schematic

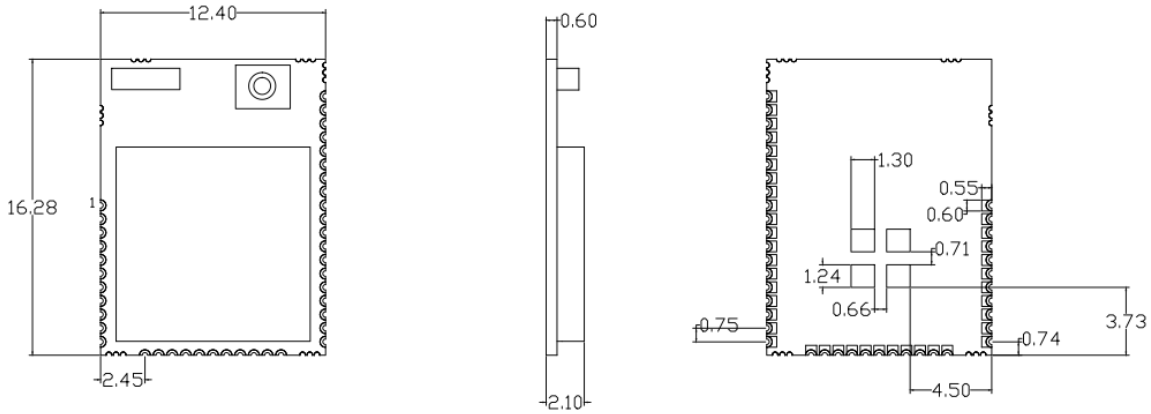
Internal LDO mode VOP : 1.7 V–3.6 V supply voltage range (Reference : 3.3V)



When using 'DC / DC Regulator mode', it is necessary to configure external circuit.

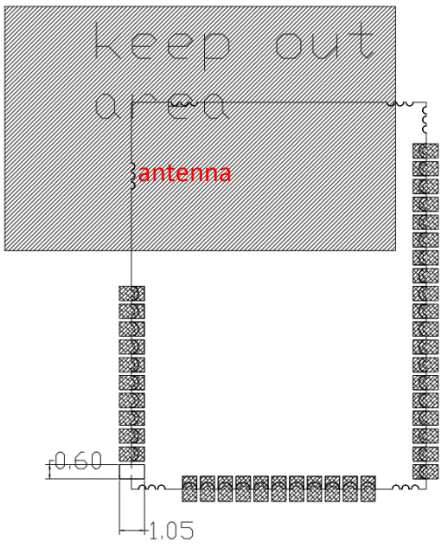


4. NLB52832 Dimension



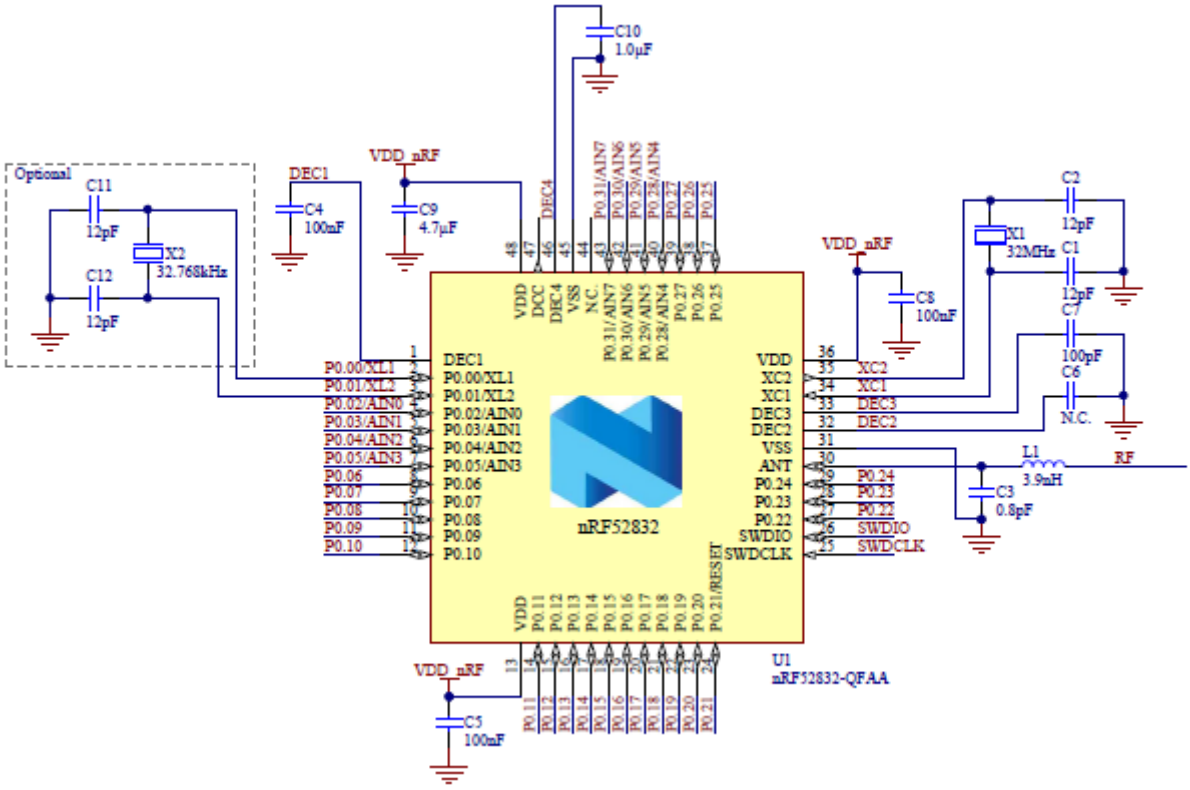
tolerance : ±0.1 unit : [mm]

5. NLB52832 Pcb Artwork matters that require attention

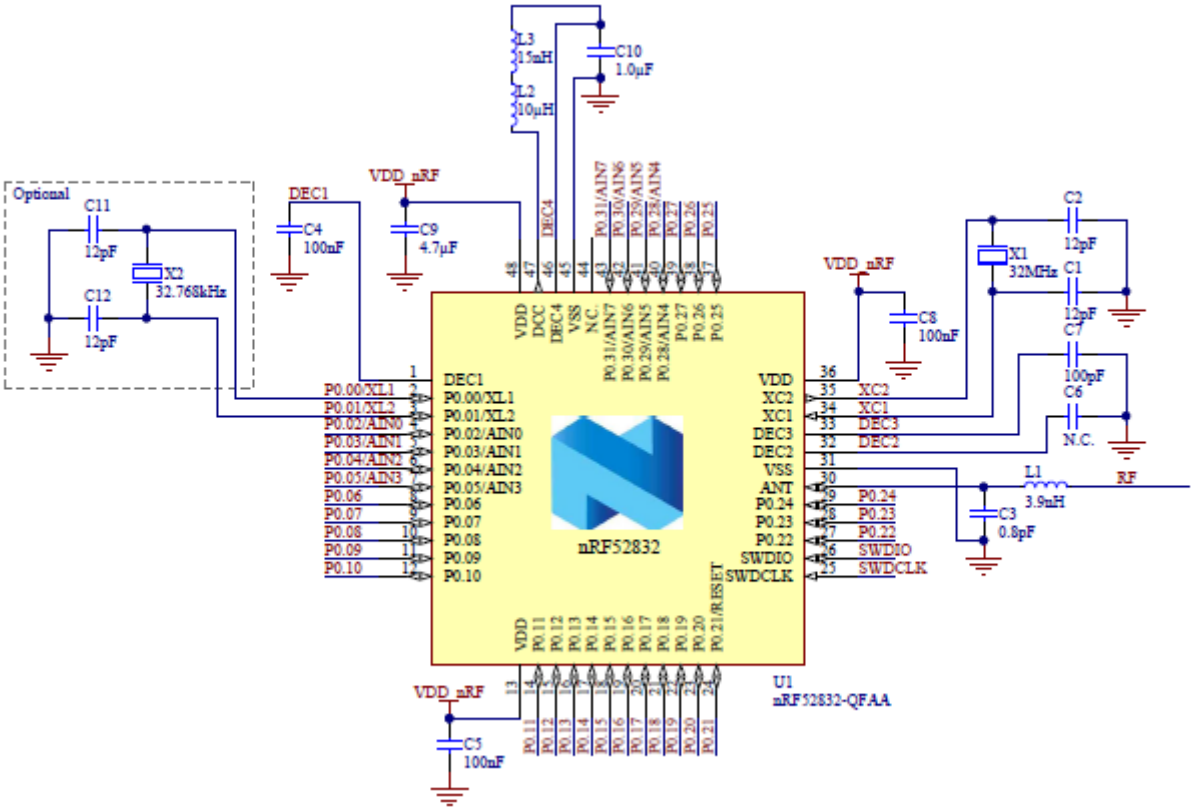
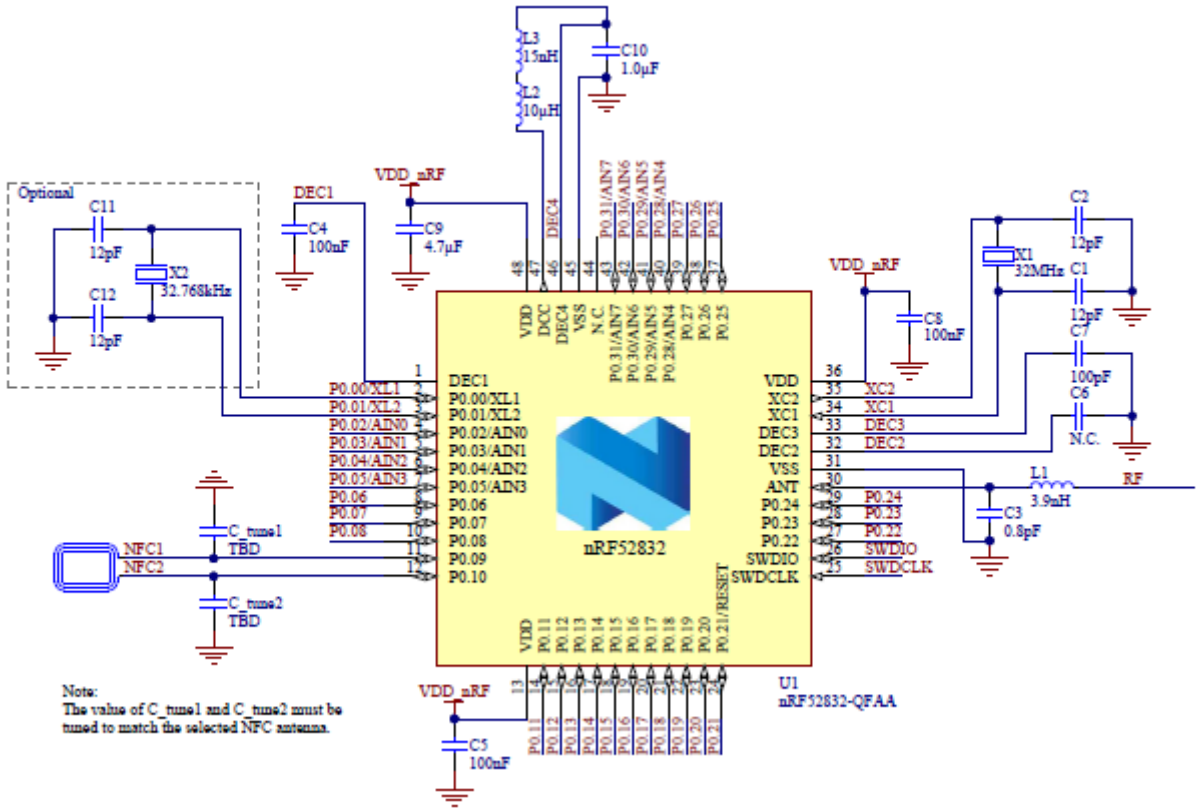


6. NLB52832 Reference

6-1. internal LDO setup



6-2. DC/DC regulator setup



6-3. DC/DC regulator and NFC setup