

PTR7024

2.4GHz Coin-size Ultra LowPower Bidirectional Wireless Embedded Module with 2Mbps Air datarate & 16K Flash MCU

Features

- Worldwide 2.4GHz ISM Band, GFSK Modulation, 125 channels.
- Fully featured ultra low power nRF24L01+ 2.4GHz transceiver core
- Enhanced ShockBurst hardware link layer
- 250 kbps, 1 Mbps and 2 Mbps on-air data rate options
- Air compatible with nRF24L01, nRF24L01+, nRF24LU1P, and nRF2401A, nRF2402, nRF24E1
- Enhanced 8-bit 8051 compatible microcontroller
- 32-bit multiplication-division unit, AES encryption/decryption accelerator
- 16 kbytes on-chip flash memory, 1 kbyte on-chip data flash memory
- 512 bytes high-endurance data flash memory, 1 kbyte on SRAM plus 256 bytes of IRAM
- Low power 16MHz crystal and RC oscillators, Ultra low power 32kHz option
- Flexible real-time counter and three 16-bit timers/counters
- Ultra low power analog comparator for system wake-up
- Rich set of digital interfaces including: SPI, 2-wire, and UART
- 2-channel PWM, WDT, RTC, Comparator
- Programmable resolution ADC: 6, 8, 10, or 12-bits
- True Random Number Generator based on thermal noise
- Very small size(smaller than 2032 coin battery), about 15mmx15mm with Antenna
- The Module Design by nRF24LE1F16Q24

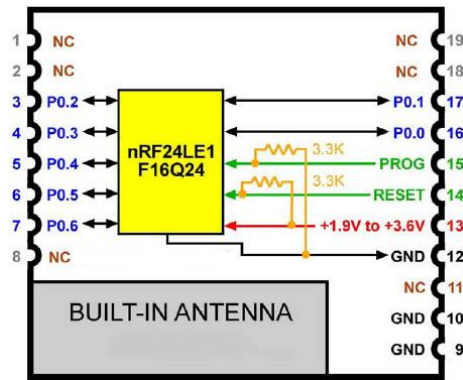
Typical Applications:

- RFID
- Security Applications
- Vehicle alarm systems
- Remote meter reading
- Remote data acquisition
- Alarm and Security System
- Authorization / Access control
- Automatic Meter Reading (AMR)
- High integrity wireless Fire / Security alarms
- Building environment control / monitoring
- Wireless mouse/keyboard and PC peripherals
- Wireless hands free, Sports and leisure equipment
- Game pads, Wireless Communication

Performance Data:

Parameter	Value	Note
Frequency	2400MHz~2527MHz	
Supply voltage	1.9~3.6 V	
Maximum channel number	125	
Maximum output power	+0 dBm	
Data Rate	250/1000/2000 kbps	
Supply current in TX mode@0dBm output power	11.1 mA@0dBm output	
Supply current in RX mode@2000 kbps	13.3 mA@2Mbps	
MCU Part Current	4mA@8MHz 3V	
Sensitivity @250kbps	-94 dBm@250kbps	
Antenna	PCB Antenna	
Dimensions	15mm*15mm*1.8mm	

Pin Description of Module (Top View) :



Pin of Module	Name	Description	Note
1	NC	Not Use, Do Not connect	
2	NC	Not Use, Do Not connect	
3	P0.2	I/O	Pin 8 of nRF24LE1Q24
4	P0.3	I/O	Pin 9 of nRF24LE1Q24
5	P0.4	I/O	Pin 10 of nRF24LE1Q24
6	P0.5	I/O	Pin 11 of nRF24LE1Q24
7	P0.6	I/O	Pin 12 of nRF24LE1Q24
8	NC	Not Use, Do Not connect	
9	GND	Power Ground	
10	GND	Power Ground	
11	NC	Not Use, Do Not connect	
12	GND	Power Ground	
13	VDD	Power (1.9~3.6V)	
14	RESET	Reset, Left open if using internal reset	Pin 13 of nRF24LE1Q24
15	PROG	Flash Program Enable	Pin 5 of nRF24LE1Q24
16	P0.0	I/O	Pin 24 of nRF24LE1Q24
17	P0.1	I/O	Pin 1 of nRF24LE1Q24
18	NC	Not Use, Do Not connect	
19	NC	Not Use, Do Not connect	

Flash Program interface of Module :

Part	Flash Program interface				
	MOSI	MISO	SCK	CS	PROG
nRF24LE1-F16Q24	Pin 9	Pin 10	Pin 8	Pin 11	Pin 5
PTR7024	Pin 4	Pin 5	Pin 3	Pin 6	Pin 15

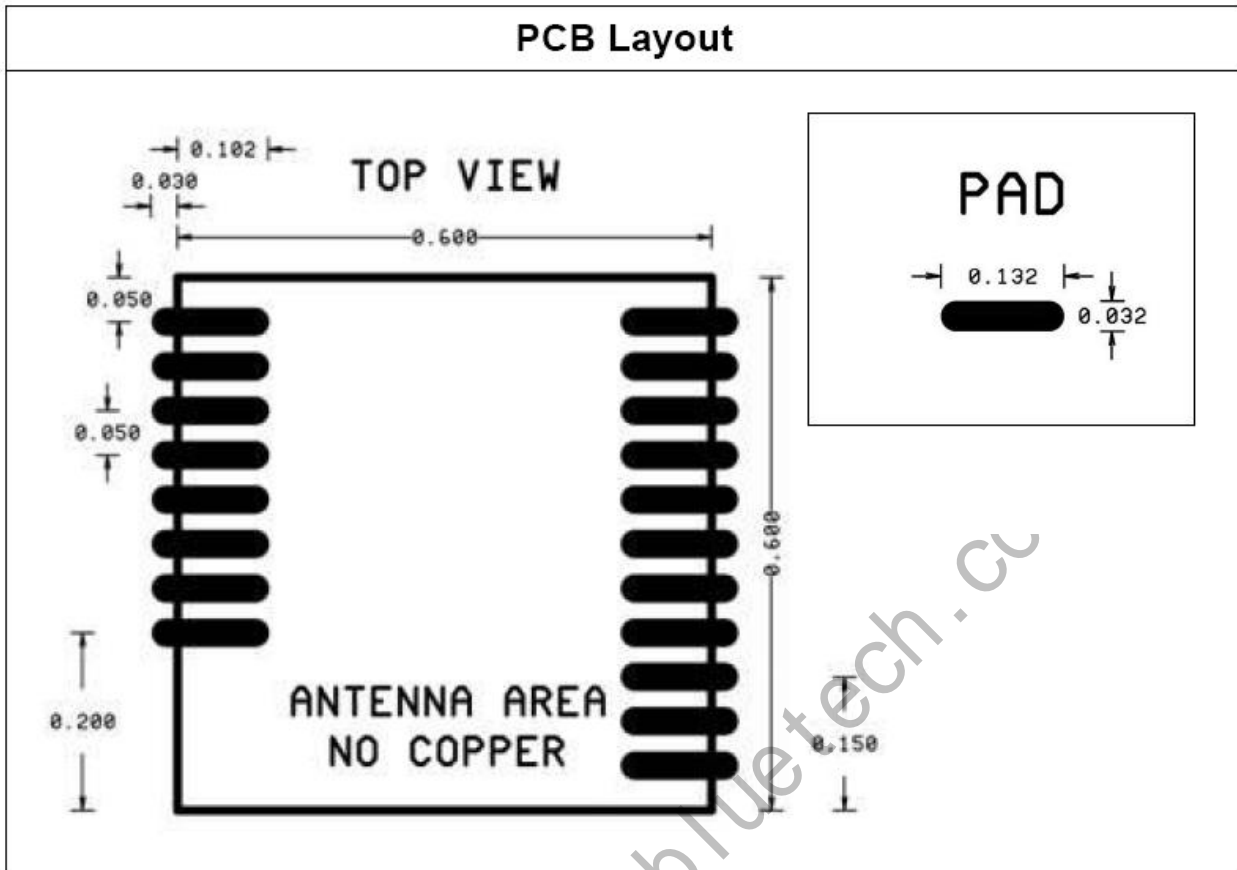
Pin assignments of nRF24LE1F16Q24:

Pin	Default connections		Dynamically enabled connections									
	Inputs	Outputs	XOSC32K	SPI Master	Slave/Flash SPI	HW Debug	2-Wire	PWM	ADC/COMP			
			priority 1	priority 2	priority 3	priority 4	priority 5	priority 6	priority 7			
P0.6	p0Di 6 UART/ RXD	p0Do 6				OCITO out	W2SDA inout	PWM1 out	AIN6	ana		
P0.5	p0Di 5 UART/ TXD	p0Do 5			SCSN in FCSN ^a in	OCITDO out	W2SCL inout		AIN5	ana		
P0.4	p0Di 4 TO	p0Do 4		MMISO in	SMISO out FMISO ^a out	OCITDI in			AIN4	ana		
P0.3	p0Di 3	p0Do 3		MMOSI out	SMOSI in FMOSI ^a in	OCITMS in		PWM0 out	AIN3	ana		
P0.2	p0Di 2 GPINT1	p0Do 2		MSCK out	SSCK in FSCK ^a in	OCITCK in			AIN2	ana		
P0.1	p0Di 1	p0Do 1	CLKLF ^b						AIN1	ana		
P0.0	p0Di 0 GPINT0	p0Do 0	CLKLF ^c	ana					AIN0	ana		
Conflict exists, use priorities to determine IO allocation												
Conflict may exist depending on device configuration. In the case of a conflict, use priorities to determine IO allocation												

- a. Flash SPI interface only activated when PROG is set high, no conflict with runtime operations
- b. Connection depends on configuration register CLKLFCTRL 2:0
 CLKLFCTRL 2:0 = 3'b000: Crystal connected between pin P0.0 and pin P0.1.
 CLKLFCTRL 2:0 = 3'b011: Low-amplitude clock source for CLKLF from analog connection pin P0.1.
 CLKLFCTRL 2:0 = 3'b100: Digital clock source for CLKLF.
- c. Connection depends on configuration register CLKLFCTRL 2:0
 CLKLFCTRL 2:0 = 3'b000: Crystal connected between pin P0.0 and pin P0.1.

For more detail information, please refer nRF24LE1F16Q24 datasheet.

PCB Layout:



Important Notice:

- Reserves the right to make corrections, modifications, and/or improvements to the product and/or its specifications at any time without notice.
- Assumes no liability for the user's product and/or applications.
- Products are not authorized for use in safety-critical applications, including but not limited to life-support applications.

ATTENTION!

Electrostatic Sensitive Device
Observe Precaution for handling.