

## Movon Nordic Module Application Note

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### Features

- Single chip 2.4GHz RF Transceiver
- 4Mbit RF link
- Programmable Latency
- SPI and UART Interface for up to 12 kbit/s peak bi-direction digital control
- size(20.0 x 17.0 x 2.0mm)
- surface Mountable
- single 2.8 ~ 3.3V Power Supply

### Applications

- Compact Disk, CD quality Headset
- MP3/ Mini disk Headset
- Speakers/Surround Speakers

### General Description

This module is providing for CD quality audio streaming of up to 16bit 48 kSPS audio, support up to 24bit 48kSPS input. SPI or 2-wire(I2S compatible) control serial interfaces. Embedded voltage regulators yield maximum noise immunity and allows operation from a single 3.0V ~3.6V.

### Quick Reference Data

Parameter	Value	Unit
Minimum supply voltage	2.7	V
Temperature range	-20 ~ 70	℃
Maximum transmit outpower	0	dBm
Audio sample rate	8 to 48	kSPS
Receiver sensitivity	-80	dBm

Pio No.	Pin Name	Description	Pad Type
1	PIO_1	Programmable input/output line	Bi-directional
2	LINPUT	Audio signal input negative	Analogue
3	RINPUT	Audio signal input positive	Analogue
4	TX	UART data output	CMOS output
5	RX	UART data input	CMOS input
6	MCU_RST	Serial Peripheral Interface data reset	CMOS input
7	AIO_1	Programmable input/output line	Bi-direction
8	AIO_2	Programmable input/output line	Bi-direction
9	AIO_3	Programmable input/output line	Bi-direction
10	MCU_SCK	Serial Peripheral Interface data clock	CMOS input
11	MCU_MISO	Serial Peripheral Interface data output	CMOS output
12	MCU_MOSI	Serial Peripheral Interface data input	CMOS input
13	MODE	Transmitter/Receiver mode selection	Digital input
14	PIO_8	Programmable input/output line	Bi-direction
15	GND	Common Ground	Vss
16	RF	Connect to Antenna(for RF signal)	Analogue
17	GND	Common Ground	Vss
18	PIO_7	Programmable input/output line	Bi-direction
19	PIO_6	Programmable input/output line	Bi-direction
20	PIO_5	Programmable input/output line	Bi-direction
21	PIO_4	Programmable input/output line	Bi-direction
22	PIO_3	Programmable input/output line	Bi-direction
23	VCC_3.3V	Module Power Supply	Vcc
24	GND	Common Ground	Vss
25	LOUT	Speaker output negative	Analogue
26	ROUT	Speaker output positive	Analogue
27	GND	Common Ground	Vss
28	PIO_2	Programmable input/output line	Bi-direction

## Software Guide

### <INPUT>

Mode Pin : High = Tx, Low = Rx

PIO(1,2) : (Low,Low)=44.1Khz Sampling, (delay: 9ms)  
(Low,High)=48Khz Sampling, (delay: 18.2ms)  
(High, Low)=32Khz Sampling (delay: 25.1ms)

PIO3 : High = RF Run(Tx,Rx 모두), Low = RF Disable(Tx,Rx 모두)

PIO4 : High = Pairing Mode 진입(2 초간 유지되면), Default = Low

PIO7 : VOLUME UP (100msec 이상 유지되면)

PIO8 : VOLUME DOWN (100msec 이상 유지되면)

### <ADC-TX Mode>

Default Volume: 0dBm

Volume Up 단계: 0.5dB 단계로 10 단계. 최고 5dB

Volume Down 단계: 0.5dB 단계로 10 단계. 최저 -5dB

### <DAC-RX Mode>

Default Volume: 0dBm

Volume Up 단계: 1dB 단계로 5 단계. 최고 5dB

Volume Down 단계: 1dB 단계로 5 단계. 최저 -5dB

### <OUTPUT> Status 표시

PIO5 : High = Connect OK, Low = Not Connect

PIO6 : LED 동작 High 로 동작함

(동작, 대기모드, 페어링 모드로 구분)

동작: 3 초에 3 회 100mSec 점멸

대기모드: 3 초에 1 회 100msec 점멸

페어링 모드: 400mSec 주기로 점멸

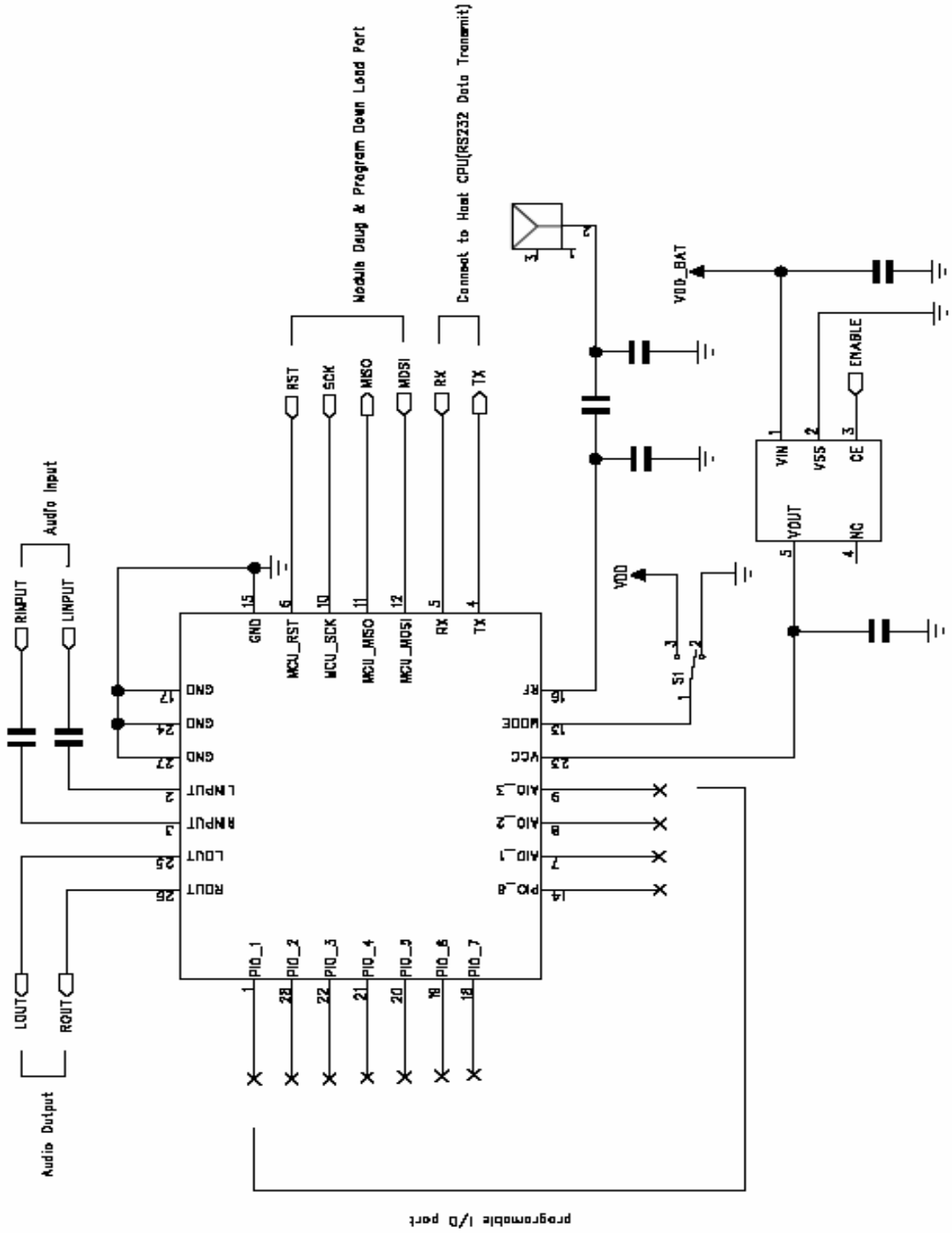
### <기타>

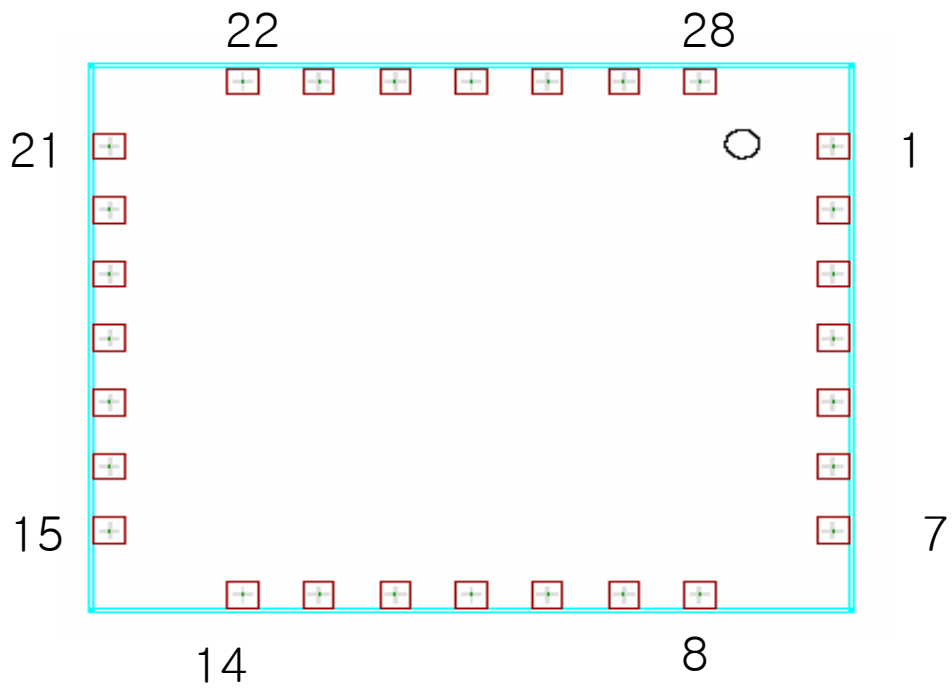
AIO1 : AD Converter (4.2V 완충 기준으로 3.3V 일때)  
AIO 2 번 PIN 이 High 로 됨.

AIO3 : Reserved

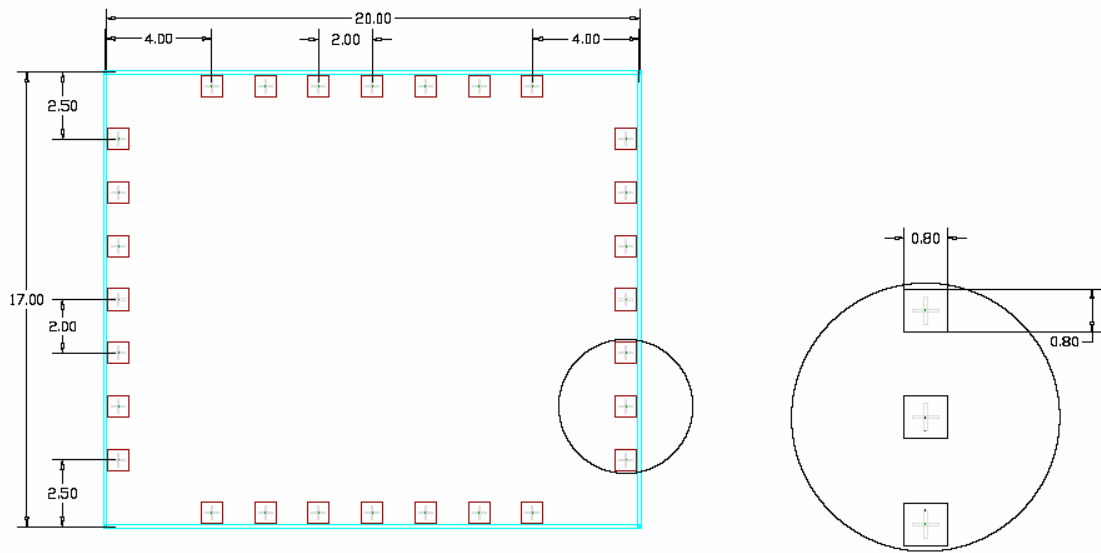
Reset : High = Default(동작), Low = Reset 상태.

# Example Schematic Circuit





PIN NUMBER: Bottom View



PCB Layout