



成都亿佰特电子科技有限公司
Chengdu Ebyte Electronic Technology Co.,Ltd.

E01-ML01D Datasheet V1.0

1. Introduction

E01-ML01D



E01-ML01D is a 1mW , industrial-grade wireless transceiver module, operates at 2.4GHz with high air data rate (2Mbps maximum). SPI interface, inline pin, high stability, cost-effective and Batch production, which makes the module is suitable for various applications.

E01-ML01D is based on original imported nRF24L01P form Nordic in Norway. The module uses industrial component with sufficient transmitting power, good spectral characteristics and small volumes. With high-performance PCB antenna and impedance matching precision, there is no need for an external antenna for embedded development.

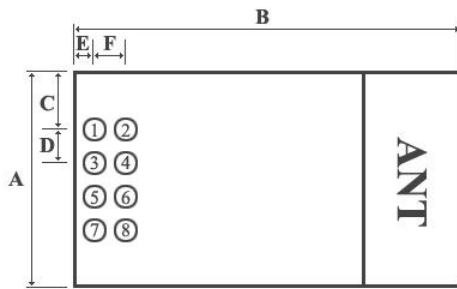
2. Electrical parameter

E01-ML01D

No.	Parameter item	Parameter details	Description
1	RF IC	nRF24L01P	Nordic
2	Size	12.6 * 22.6 mm	
3	Production process	Machine	Lead-free
4	Connector	2 * 4 * 2.54mm	Plug-in
6	Supply voltage	1.9 ~ 3.6V DC	Notes: the voltage higher than 3.6V is forbidden
3	Frequency	2400 ~ 2525MHz	Adjustable
7	Communication level	0.7VCC ~ 3.6V	VCC refers to the supply voltage
8	Operation Range	100m	Test condition: Clear and open area, 0dBm , antenna gain: 5dBi , height: 2m , Air date rate: 250Kbps
9	Max Power	Maximum 0dbm	About 1mW
10	Air data rate	3 level adjustable	250kbps, 1Mbps, 2Mbps
11	Sleep current	1.0uA	nRF24L01P sets as power-down
12	Transmitting current	13mA@0dBm	The largest emission current
13	Receiving current	13mA	CE=1
14	Communication interface	SPI	Data rate: up to 10Mbps
15	Transmitting length	3 level FIFO.	32 bytes (maximum) for one package
16	Receiving length	3 level FIFO.	32 bytes (maximum) for one package
17	RSSI support	N/A	Support simple data packet loss statistics
18	Antenna type	PCB	50 ohm characteristic impedance
19	Sensitivity	-106dBm	250kbps
20	Operating temperature	-40 ~ +85°C	Industrial-grade
21	Operating humidity	10% ~ 90%	Relative humidity, without condensation
22	Storage temperature	-40 ~ +125°C	Industrial-grade

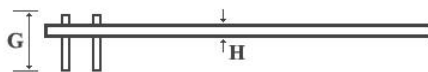
3. Pin definition

E01-ML01D



Units: mm

	MIN	MAX
A	12.6	12.7
B	22.6	22.7
C	2.48	2.50
D	2.54	2.54
E	1.29	1.31
F	2.54	2.54
G	11.2	11.3



Pin No.	Pin item	Pin direction	Pin application
1	GND		Ground
2	VCC		Power supply 1.9V ~ 3.6V DC
3	CE	Input	Chip Enable
4	CSN	Input	SPI Chip select
5	SCK	Input	SPI clock
6	MOSI	Input	SPI master output slave input
7	MISO	Output	SPI master input slave output
8	IRQ	Output	Interrupt request.

Please see more details in < nRF24L01P Datasheet >, such as pin definition, software drivers, communication protocol.

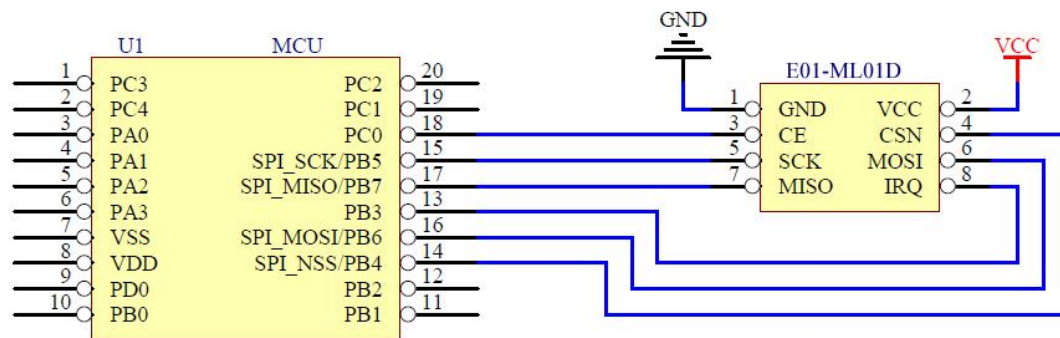
4. Note

E01-ML01D

No.	Item	Attention
1	Static electricity	Please try not to touch the electronic components with bare hands.
2	Welding	When welding, soldering iron needs grounding. The producer needs to wear cable electrostatic bracelet which is grounding when mass production.
3	Power supply	Power quality has a great impact on the performance of the module, please make sure the power supply has small ripple and avoid the frequent and large jitter. π filter is recommended (Ceramic capacitor // tantalum capacitor + inductance).
4	Ground	Single-point grounding is recommended. 0 ohm resistor or 10mH inductance are recommended.
5	Antenna	How to install antenna has a great impact on the performance of the module, please make sure the antenna is exposed and vertical upward. It will lead to the transmitting distance greatly weakened if the antenna installs in the interior of housing. When the module is installed in the interior of the housing, high-quality antenna extension line can be used to extend the antenna to the outside of the housing.
6	Interference	If there are different modules work in other frequency band in the same product, the user need to plan rationally and take measures to shield, in case the harmonic interference and intermodulation interference exist.

5. USAGE

E01-ML01D



No.	Brief introduction of connection between module and MCU (STM8)
1	CE pin can be high level for long-term, but it needs to set as POWER DOWN mode when the module write registers, and it is recommended that CE is controlled by MCU pin.
2	As interrupt pin for IRQ, it can be used to wake-up MCU and achieve fast response; But the user can get the interrupt status through SPI (not recommended, it is not conducive to the overall power consumption, and with low efficiency) .

6. Drive mode

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No.	Description
1	The same as nRF24L01P, please see more details in nRF24L01P datasheet.

7. Series of products

E01-ML01D

Model	RF IC	Package	Power	Range	Antenna Type
E01-ML01S	nRF24L01P	SMD	0dBm	100m	PCB
E01-ML01D	nRF24L01P	Plug-in	0dBm	100m	PCB
E01-ML01IPX	nRF24L01P	SMD	0dBm	100m	IPEX
E01-ML01DP3	nRF24L01P	Plug-in	20dBm	1100m	SMA-K
E01-ML01DP4	nRF24L01P	Plug-in	20dBm	800m	PCB
E01-ML01DP5	nRF24L01P	Plug-in	20dBm	2100m	SMA-K
E01-ML01SP2	nRF24L01P	SMD	20dBm	1200m	PCB /IPEX
E01-ML01SP4	nRF24L01P	SMD	20dBm	1800m	IPEX

8. FAQ

E01-ML01D

★ Operation Range is too short to reach the ideal distance		
1	Barrier	2.4G frequency features with poor penetration due to its physical properties, it has deep influence on the operation range when there are barriers.
2	Interference resource	Temperature, humidity , same frequency interference can increase the packet loss rate of the communication
3	Metal	Metal objects around the antenna, antenna placed inside metal case, which cause the signal attenuation badly.
4	CE Pin	If the pin cannot keep high level when transmitting, it may lead to the lower receiving sensitivity when receiving signals.
5	Parameter values	Wrong parameter setting. Setting the air data rate too high, which lead to the shorter distance.
6	Low voltage	When the voltage below 3.3V, the lower the voltage is, the lower the transmitting power can be.

9. About us**E01-ML01D**

Chengdu Ebyte Electronic Technology Co., Ltd is a high-tech company, focus on wireless transmission. Our company owns a number of independent research & development products and obtain unanimously approved customers. With powerful R&D team, our company can provide customers with perfect After-sales service and technical assistance.



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