Magnetic Wireless Charging Module

Supporting Qi2.2 (Magnetic Power Profile, MPP 25W)

1，Overview：

The CV221 is a magnetic wireless charging module that supports the latest Qi2.2 standard (MPP 25W). It utilizes magnetic attraction to automatically and precisely align the transmitter and receiver coil module, providing a more convenient wireless charging experience. The module also supports Qi standard BPP 5W, Samsung 10W, Apple MPP 15W, and MPP 25W.

The module is equipped with complete protection functions, including undervoltage protection, hardware overvoltage protection, overcurrent protection, and overtemperature protection. It only requires an adapter or DC power supply for full functionality.

The module is constructed using PCBA, aluminum holders, coil module, magnet module, and other components. Customers can reduce development time and save design and development costs by only needing to design the enclosure and assembly, while being able to create a wireless charger with Qi2.2 (Magnetic Power Profile, MPP 25W) magnetic attraction functionality.

2， Product Appearance Diagram:

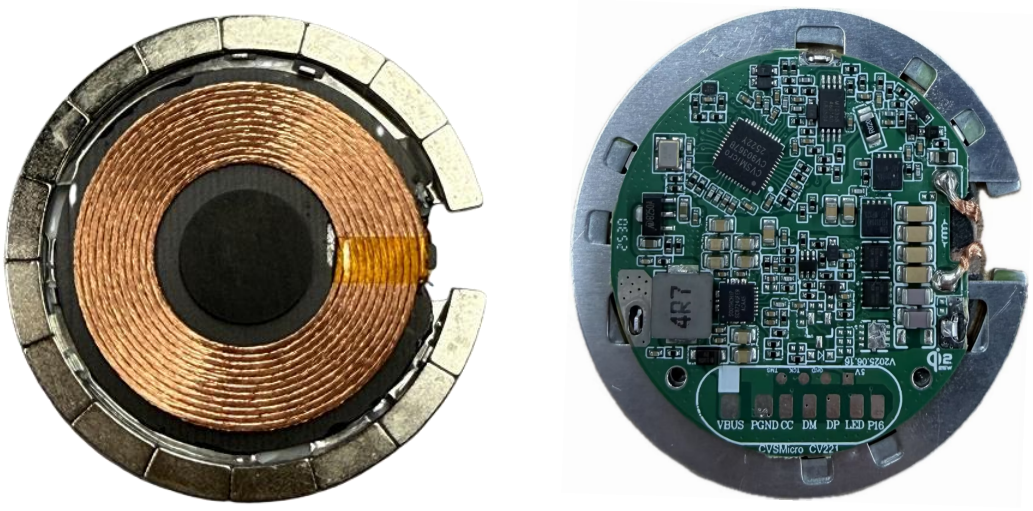


Figure 1: Top and Bottom View of the Module

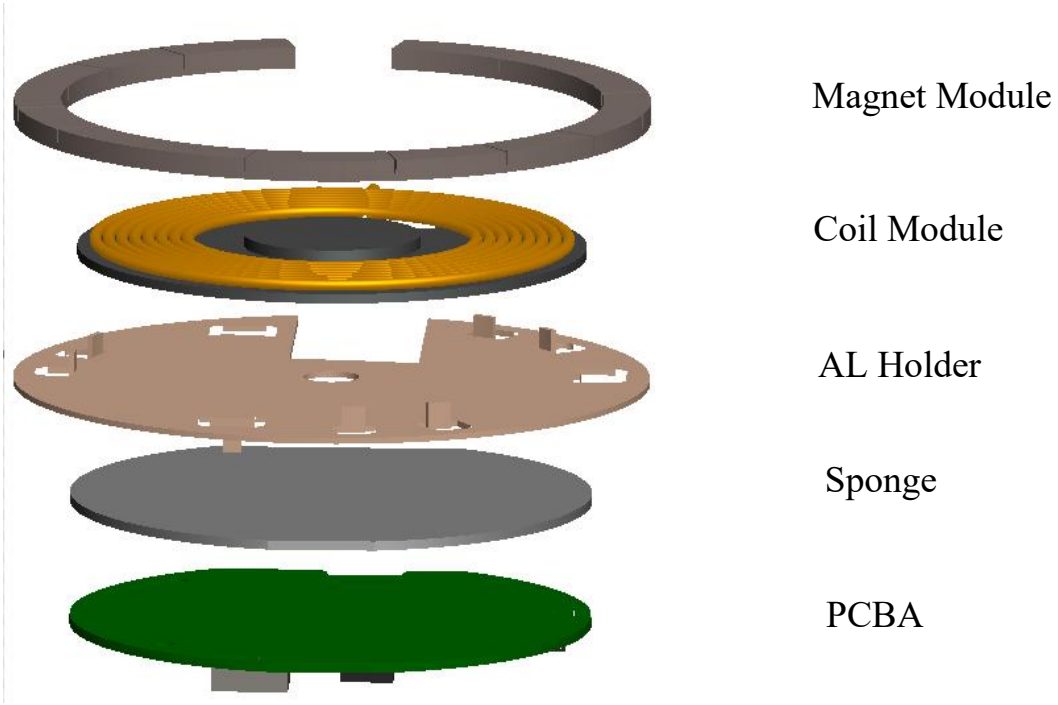


Figure 2: Exploded Structure View

3，Electrical Characteristics：

The CV221 magnetic wireless charging module is designed based on the Qi2.2 (MPP25) standard and supports BPP 5W, Samsung 10W, Apple MPP 15W, and MPP 25W.

The product features a PD/QC port, supporting PD3.0, PD2.0, QC2.0/3.0, BC1.2, and DC power input (adjustable 5V/9V/12V/15V). Depending on the power level requirements, a 5V/9V/12V/15V power supply can be used. To achieve 25W of power output, a power supply of at least 35W@12V is required.

The product includes 2 GPIO pins, which can be used for LED indicators, communication, and data output.

Project	Parameters
Chip	CV90367B
Input Power	USB PD/QC 12V@2.5A/ 9V@3A / 5V@1.5A DC 15V@2.22A
Output Power	25W Max

Static Power Consumption	<300mW
Charging Efficiency	85%
Charging Protocol	Qi2.2: MPP 25W /MPP 15W/SAMSUNG 10W/BPP 5W
Coil Type	7.7uH@128KHz
Protection Mechanism	OVP/UVP/OCP/OTP
FOD	Q factor/ Analog Ping / Power Transfer FOD based on power loss modeling
Dimensions	Diameter：54±0.1mm ， Height：6.2±0.1mm
Interface	Programming Interface: VCC（5V）,GND,TCK,TMS Power Supply: VBUS,GND,CC1,DM,DP,GPIO,GPIO/P16

4，Pin Connection Guide：

The module supports PD2.0, PD3.1, QC2.0/QC3.0, and BC1.2 fast charging protocols.

The pin connection requirements are as shown in the diagram below:

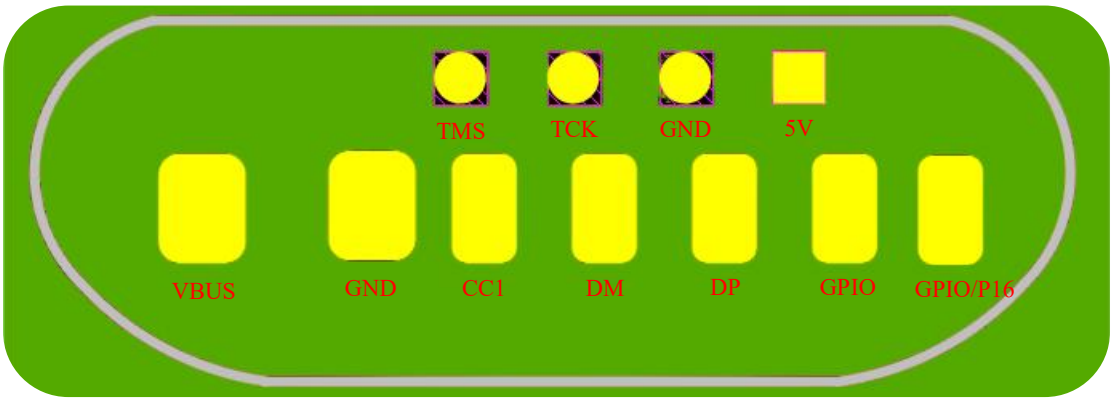


Figure 3: Pad Diagram

Pin Name	Description
5V	Programming Power Pin
GND	Ground
TCK	Programming Interface Clock Pin
TMS	Programming Interface Digital Pin
VBUS	External Power Supply
GND	Ground
CC1	Type-C CC1 Detection Pin

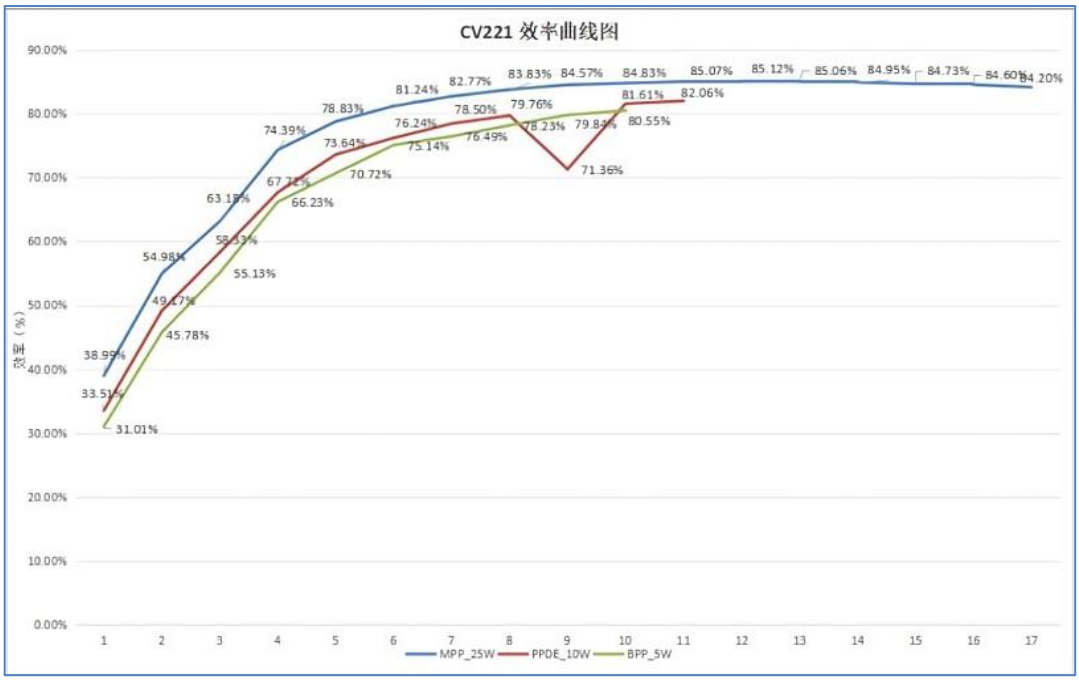
DM	USB Port DP Connection
DP	USB Port DM Connection
GPIO	General Digital IO LED Indicator
GPIO/P16	General Digital IO ADC Channel Input

5，Firmware Upgrade：

Online programming is performed via the TMS\TCK port, or updates can also be done through the DP/DM port.

6，Efficiency Test：

TX:CV221 Magnetic Module，RX:CV8055D DEMO



7，Temperature Rise Test：

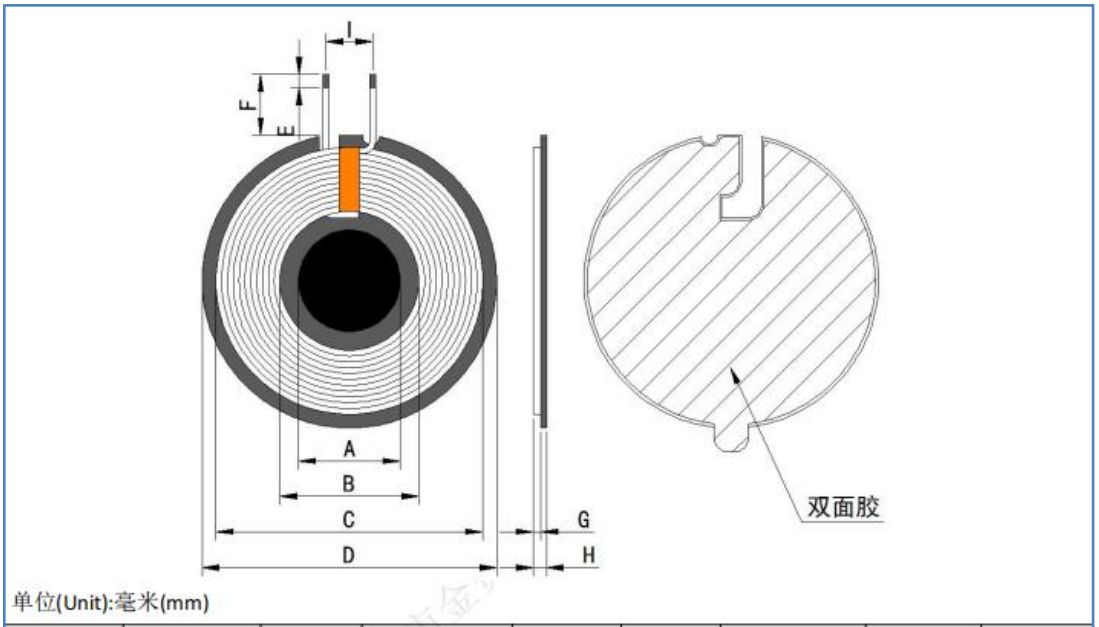
iPhone16 Promax								
	CH1 MD8250A	CH2 4.7uH	CH3 CV90367B	CH4 SC8724	CH7 NTC	CH8 0814A	CH9 0310AD	CH13 线圈
最高温度 Maximum temperature	71.95℃	61.40℃	65.36℃	64.91℃	61.70℃	63.84℃	70.05℃	51.86℃
平均温度 Average temperature	60.30℃	48.97℃	53.90℃	50.97℃	49.32℃	50.49℃	52.81℃	44.52℃

iPhone16 Plus								
	CH1 MD8250A	CH2 4.7uH	CH3 CV90367B	CH4 SC8724	CH7 NTC	CH8 0814A	CH9 0310AD	CH13 线圈
最高温度 Maximum temperature	67.04℃	56.81℃	61.35℃	60.45℃	57.49℃	59.49℃	64.98℃	49.06℃
平均温度 Average temperature	58.90℃	48.13℃	53.03℃	50.28℃	48.67℃	49.83℃	52.23℃	43.52℃

iPhone 16 Pro								
	CH1 MD8250A	CH2 4.7uH	CH3 CV90367B	CH4 SC8724	CH7 NTC	CH8 0814A	CH9 0310AD	CH13 线圈
最高温度 Maximum temperature	62℃	50.38℃	55.93℃	53.40℃	51.87℃	53.04℃	57.20℃	46.48℃
平均温度 Average temperature	59.02℃	47.87℃	52.92℃	49.92℃	48.49℃	49.58℃	51.69℃	43.97℃

8, Magnetic Module Dimension Diagram：

8.1 Coil Dimension Diagram：（**Unit：mm**）



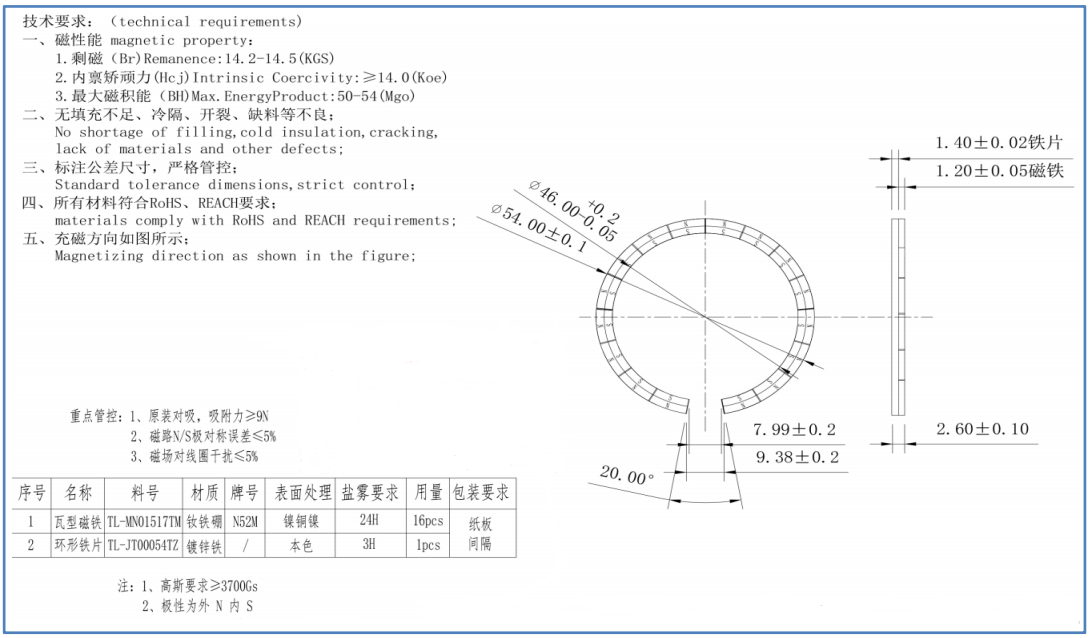
单位(Unit):毫米(mm)

A	B	C	D	E	F	G	H	I
15±0.5	20.5±0.5	39±0.5	42.75-43.35	2±1	9+0/-2	1±0.05	2.4MAX	3±0.5

PS:1.（F）为磁外引线长度；2.（H）包含进线，不包含离型纸；3.线圈不压线.

圈数 Turns	线径 Wire Dia.	绕线方式 疏/密 Wdg. Type Spred/Close	绕线方向 Wdg.Direction	相交 是/否 Intersect Yes/Not	线圈 正/反贴 Coil Positive/Anti Paste
11TS	0.08*80P 热风绞线 (Stranded wire)	密绕（Close）	逆时针 (Anticlockwise)	是（Yes）	反贴（Anti/-Paste）

8.2 Magnet Dimension Diagram：（Unit：mm）



8.3 Module Outline Dimension Diagram：（Unit：mm）