

Product Specifications Document

Client Name: 永世达

Product Name: Three-coil Wireless Charger

Product Model: HRZC_WXC_S30

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Revision History

Number	Version/ Status	Originator	Reviewer	Date	Amendment Description	Remark
1	V1.0	李盼盼	陈松华	11/23	initial release	
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1. Product Overview

This product is a Qi 1.2.4 MP-28 compliant coil wireless charging transmitter, supporting standard 5W, 10W, and 15W EPP protocol output. For example, it provides fast wireless charging for Samsung's Note5, S7, NOTE7, S8 edge, S9, S10, S20, and S23. It also supports 7.5W fast wireless charging for Apple devices such as iPhone X, iPhone 8, iPhone 8 Plus, iPhone 14, and iPhone 15, while ensuring good compatibility with 5W wireless charging phones. This PCBA can be fitted into casing from Yongchuang, Yijia, Luozhuo, and other mold factories, and also supports external button ON/OFF control of the host.

2. Product Specifications

2.1 Key Components

Chip Name	brand	Model	Temperature Range	Remark
Main Chip IC	BLD	D9100	-40℃ ~+85℃	
MOS IC	Vergiga Semiconductor	A04884	-40℃ ~+85℃	
Drive IC	BLD	D9015	-40℃ ~+85℃	
DC-DC	Lattice Art Semiconductor	LA1314	-40℃ ~+85℃	
COIL	QI Standard	MP-A28	-40℃ ~+85℃	

2.2 Indicator Light Panel

Indicator Light Display:

Display Status	Red Light	Green Light
Standby Mode	ON	OFF
charging	OFF	flash
FOD error	alternating red and green flashes	
misplacement	alternating red and green flashes	

2.3 Mobile Phone Charging Time Test

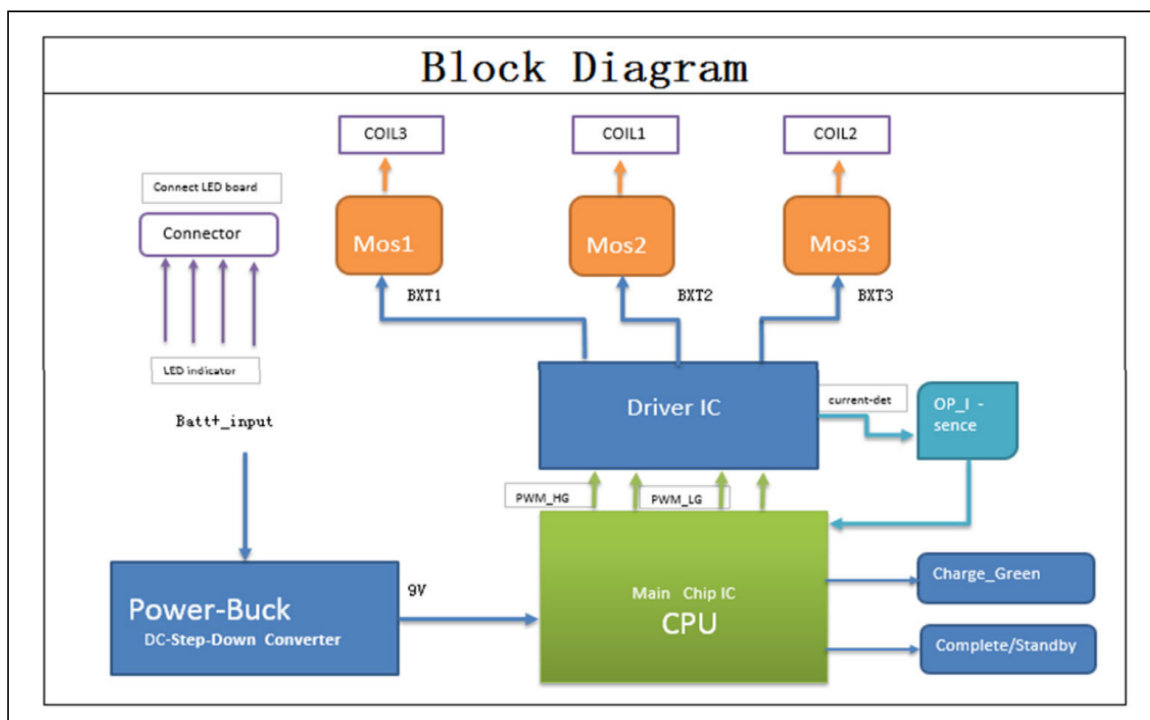
Test Condition 1: iPhone model: iPhone XR Ambient temperature: 20°C

Duration	Charging Current	Battery Progress	Remark
10min	0.6A	9%	NPO
30min	0.68A	22%	
60min	0.48A	46%	
90min	0.53A	60%	
120min	0.68A	84%	
150min	0.38A	96%	
160min	0.32	100%	

Test Condition 2: Samsung phone model: S8+ Ambient temperature: 20°C

Duration	Charging Current	Battery Progress	Remake
10min	0.72A	10%	NPO
30min	0.68A	28%	
60min	0.48-68A	49%	
90min	0.53-0.72A	68%	
120min	0.68A	84%	
150min	0.38A	100%	

2.4 Implementation Block Diagram



3. Electrical Performance Parameters

Parameter	specification	Remark
Input voltage	9V-16V	
Input current	3A	
Output power	5W,7.5W,10W,15W	
Operating frequency	110~205KHZ	
Conversion efficiency	~75%	
Induction distance	2~10mm	
Operating temperature	-40℃~+85℃	
Storage temperature	-40℃~+105℃	
Metal foreign object detection	Detection of 1 round coin and other solid objects	
Standby power consumption	≤0.1W	

4. Product appearance and dimensions

4.1 Product dimensions

Product PCBA dimensions: **105mmX55mm** as shown in Figure 1.

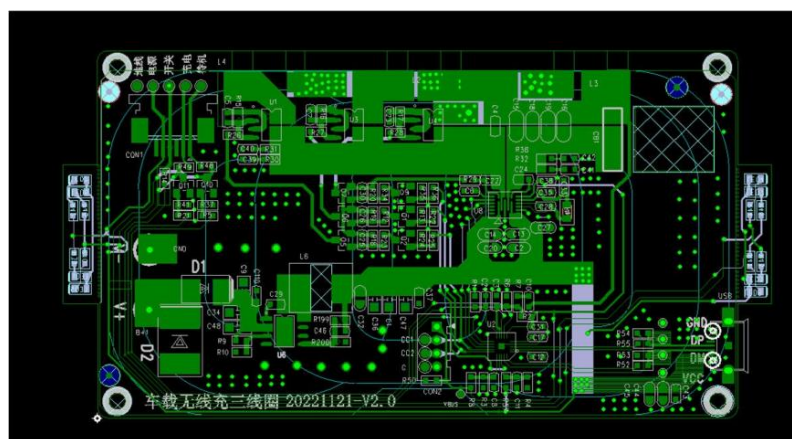


Figure 1

4.2 Product exterior images

Product dimensions: **105X55X8(mm)**

Front view, as shown in Figure 2



Figure 2

Back view, as shown in Figure 3

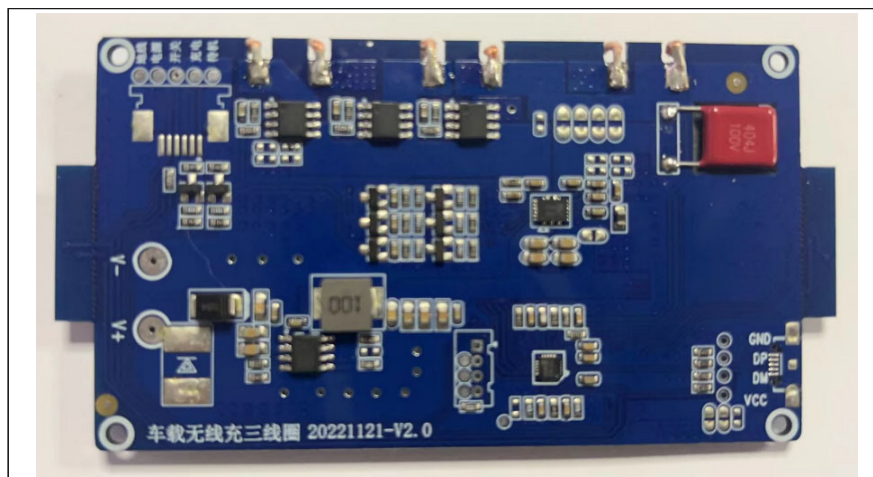


Figure 3

5. Wireless transmission test

5.1 System efficiency:

The ratio of output power to input power is the actual efficiency of wireless charging.

5.1.1 Test method: Connect to a DC power supply, adjust the input voltage to 5.1V, connect the output of the receiver to a load meter, and adjust the load meter to output in a constant current mode, increasing the output in steps of 100mA until 1A.

5.1.2 Notes: The wiring from the DC power supply to the product input terminal should be kept as short and thick as possible to minimize DC losses; similarly, the wiring from the output terminal to the load meter should also be kept as short and thick as possible. The effective distance between the transmitting and receiving ends should be maintained at around 2-4mm for optimal testing results.

5.1.3 Efficiency Test:

The results are as follows:

5.1.3.1 5W Efficiency table

Operating conditions	Input: Vin=5V,Output: VOUT=5 V coil to coil height: >5mm							
Input power(w)	1.4	2.2	2.2	3.3	4.5	5.9	6.7	
Output power(w)	0.5	1	1.5	2.5	3.5	4.5	5	
Conversion efficiency (%)	35.7	45.5	68.2	75.8	77.8	75.3	74.6	

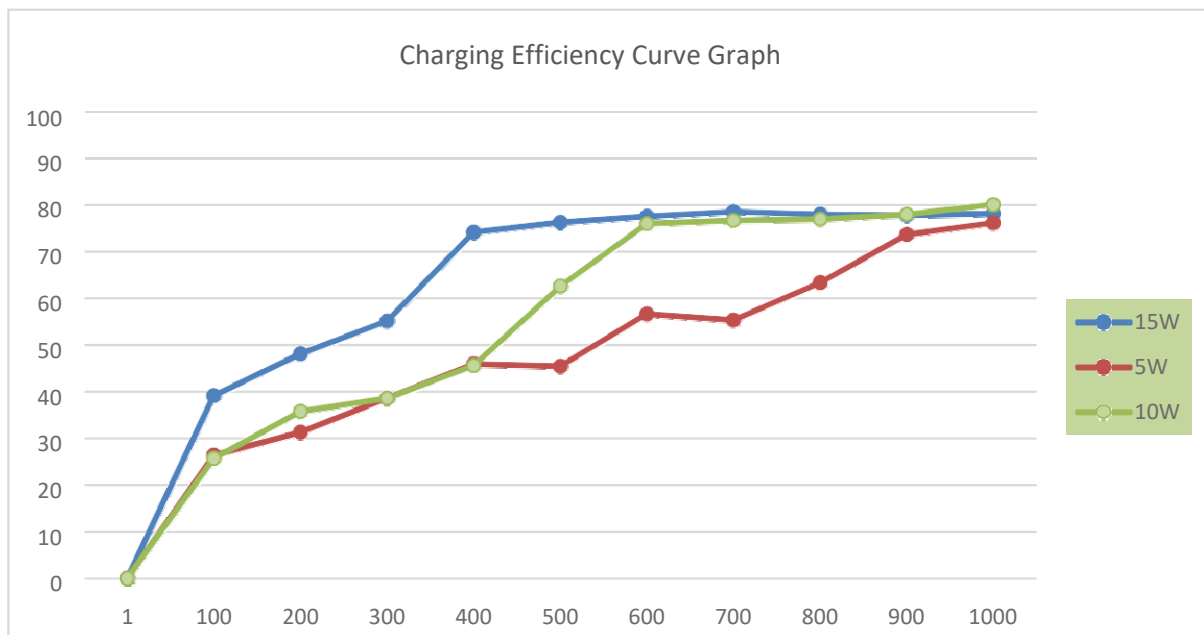
5.1.3.2 10W Efficiency table

Operating conditions	Input: Vin=9V,Output:VOUT=9V coil to coil height: >5mm									
Input power(w)	1.9	3.8	4.8	6	7.2	8.4	9.4	10.7	12.2	12.55
Output power(w)	0.5	1.5	3.5	4.5	5.5	6.5	7.5	8.6	9.7	10
Conversion efficiency (%)	26.3	38.5	72.9	75	76.4	77.4	79.8	79.2	79.1	79.9

5.1.3.3 15W Efficiency table

Operating conditions	Input: Vin=15V,Output:VOUT=12V coil to coil height: >5mm										
Input power(w)	3.8	4.1	4.55	4.72	6.57	8.39	8.9	11.56	14.1	16.7	19.2
Output power(w)	1.5	2.0	2.5	3.5	5.0	6.5	7.0	9.0	11	13	15
Conversion efficiency (%)	39	48	55	74	76.1	77.4	78.4	77.8	78.2	77.6	78

5.1.3.4 Efficiency curve



5.2 Dynamic Energy Balance Testing For Mobile Phones:

Phones undergoing testing	500mA	1000mA	1500mA
Mate30pro	OK	OK	OK
Samsung S8+	OK	OK	OK
iPhone XR	OK	OK	OK
Samsung S9+	OK	OK	OK
Xiaomi 10	OK	OK	OK

5.3 Metal foreign object detection(FOD):

Testing Description: 1.Turn on the transmitter TX. Place a metal foreign object on the TX. If the foreign object extends beyond the coil range of the TX, the TX should not transmit power; otherwise, the test is considered a failure.

2.Turn on the transmitter TX. Place a metallic foreign object on the TX within the coil range of the TX. Then, place the receiver RX on the foreign object. The TX should not transmit power in this scenario; otherwise, the test is considered a failure.

Phones undergoing testing	Metal foreign object	Test result
iPhone XR	1 round coin	OK
Samsung S8+	1 round coin	OK
HUAWEI MATE30	1 round coin	OK
Xiaomi 9	1 round coin	OK
HUAWEI V10	metal shell	OK
HONOR V20	metal shell	OK

5.4 Maximum load capacity test(current limiting test):

maximum load capacity test	12V 2A
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5.5 Standby power consumption:

Input voltage	Standby current	Standby power consumption
9V-16V input	0.01	≤0.2W

5.6 Overvoltage limit test:

VDD input voltage (max)	16V
Coil voltage limit (max)	60V

5.7 Operating temperature test:

Test conditions: Load test with a 15W receiver power, at an ambient temperature of 30℃, continuous operation for 90 minutes. Unit (℃)

Component Name	Temperature (℃)
Main Chip IC	35
MOS transistor	45
Resonant capacitor	46
COIL	47

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.