

Scope

- WPC Qi certified wireless charging module, meets the functional requirements of WPC1.3 transmitter module Qi protocol, and compatible with lower version.
- The Wireless Charging TX Module meet RoHS requirement.

Applications

- Wireless charging pad
- Power bank
- Home appliances, Furniture
- Computer peripheral devices
- Car holder, GPS navigation

Product Characteristic

QPT-6071A is a WPC1.3 Qi fast charge wireless charging platform: Its transmission efficiency is up to 70% ± 5% and can provide up to 10W transmission capacity. It enables powering or charging for any WPC-Qi certified products. With fast charging function for Samsung® and iPhone® mobile phone. It adopts intelligent identification system while its transmitter and receiver unit adopts UART (Universal asynchronous receiver/transmitter) encrypted transmission control signal which is stipulated by WPC1.3. The console will process the corresponding power adjustment based on the encoding of the receiving unit. The module has fulfilled the WPC1.3 Qi requirement and Qi certified.

LED indicator working status:						
LED	Operational States					
	Power On	Standby	Charger	Full Charged	Abnormal	Power Control
LED1, Red	0.5 S	Off	Off	Off	On	Blink slow
LED2, Blue	0.5 S	Off	On	Off	Off	Off
External LED	Note: When using dual-color LED lamp, common anode LED lamp should be used; the current of LED lamp is limited to less than 10mA, if it is more than 10mA, please use external LDO to supply power to LED lamp separately.					

Performance Parameter

1	Power input protocol	QC2.0 / QC3.0 / AFC / PD2.0/3.0
2	Input voltage & current	DC5V/3A, DC9V/2.2A, QC12V/1.67A
3	Working voltage & current	DC5V/1.65A, DC9V/1.5A, DC12V/1.8A
4	Output power	5W / 7.5W / 10W / 15W
5	Power transfer efficiency	70% ± 5%
6	5W / 10W frequency	Frequency conversion 110kHz ~ 205kHz
7	Apple 7.5W frequency	Constant frequency 127.7kHz
8	Ripple noise	Max. 100m Vp-p
9	Operating temperature	0 ~ 40°C
10	Relative humidity	10% ~ 80%

Safety Control

- Short Circuit Protection
In the case of short-circuit at the receiver output, the transmitter red light on and stop output. When removed the receiver or short circuit, the transmitter will resume normal operation.
- Over Current Protection
When the receiver load exceeds the rated value (110% ~ 130%), the overcurrent protection is triggered and the transmitter stops working. When removed the receiver, the transmitter will resume normal operation.
- Over Voltage Protection
The product would stop working when the input voltage exceeds the rated value (13V). The product would be restarted working when the voltage returns to the set value range.
Note: The input voltage shall not exceed 13.5V in case damage the product.
- Foreign Object Detect (FOD) (1 RMB coin as the standard.)
When placing the coin onto the center of the product under no-load condition, the transmitter detected foreign object and reports an error, then stops working. Removes the foreign object to resume normal operation .

When placing the load and coin together onto the center of the product, an error is reported within 10s (time varies with different mobile phone models) and the output is closed. Removes the foreign object to resume normal operation.
- Over Temperature Protection
The NTC temperature protection of the PCBA is $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The transmitter stops working when the temperature exceeds the value. Resets the receiver or cools to $55 \sim 60^{\circ}\text{C}$, the transmitter returns to normal operation (optional replacement with external NTC).
- Average Working Time Without Failure
Working for 20,000 hours, the average failure rate is less than 0.5% at 25°C environment temperature.

Reliability Requirements

- Reliability Test

Test items	Test conditions
Storage at high temperature test	+60°C, 16hours
Storage at low temperature test	-20°C, 16hours
Operating at high temperature test	+40°C, 8hours
Operating at low temperature test	0°C, 8hours
High / Low temperature cycle test	+55°C (1Hr) → -20°C (1Hr) continually 5 cycles

For other tests, please refer to Reliability Test Specification and Reliability Test Report.

- Burn-in Test
2 hours at $35^{\circ}\text{C} (\pm 5^{\circ}\text{C})$ environment, nominal input voltage, nominal load.

Environment Requirement

- Operating Temperature and Relative Humidity
 0°C to $+40^{\circ}\text{C}$, 20%RH to 80%RH @ altitude shall be below 10000 feet.
- Storage Temperature and Relative Humidity
 -20°C to $+60^{\circ}\text{C}$, 10%RH to 90%RH (non-condensing) @ altitude shall be below 30000 feet.

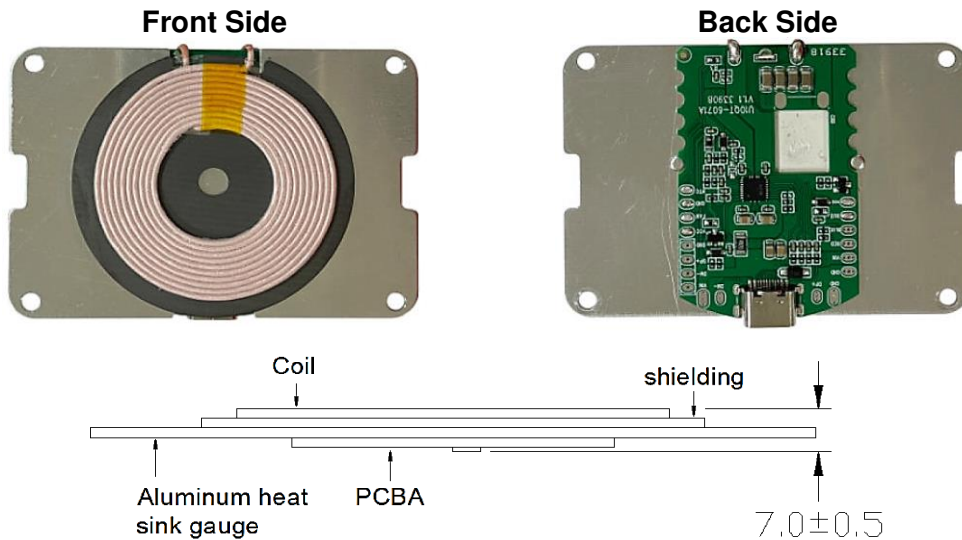
Execution Standards (Compatible with these specifications)

- EMC Standards

EN55032	EN55035
---------	---------

- WPC1.2.4_Qi Standards

Photo of Product



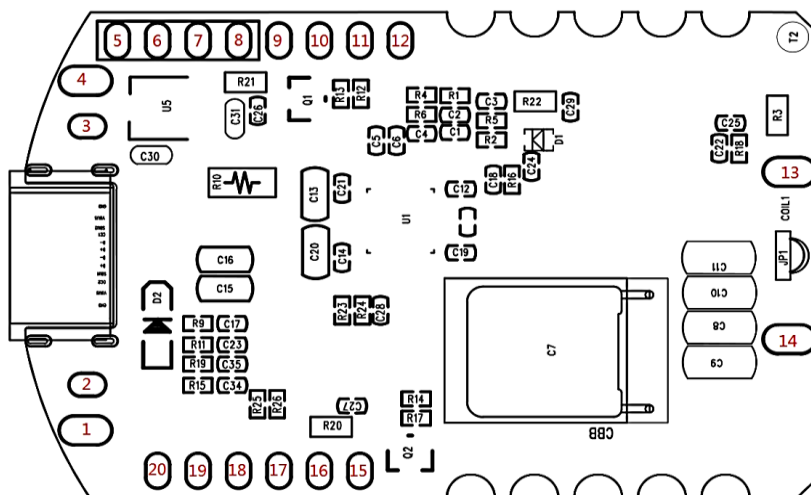
Module

- Product design proposal

According to the standardization of Qi, please note below 3 points :

- (1) The distance between Tx Coil with PCB and other metal components is Min. 4.50mm.
- (2) The distance between the surface of Tx coil and the surface of product (Working Face) is $3.0_{-0.25}^{+0.5}$ mm, which means the thickness of the working face plastic is not more than 2.0mm.
- (3) The surface distance between Tx Coil and Rx Coil is 3.0~4.5mm.

- PCBA Port Functional Illustration

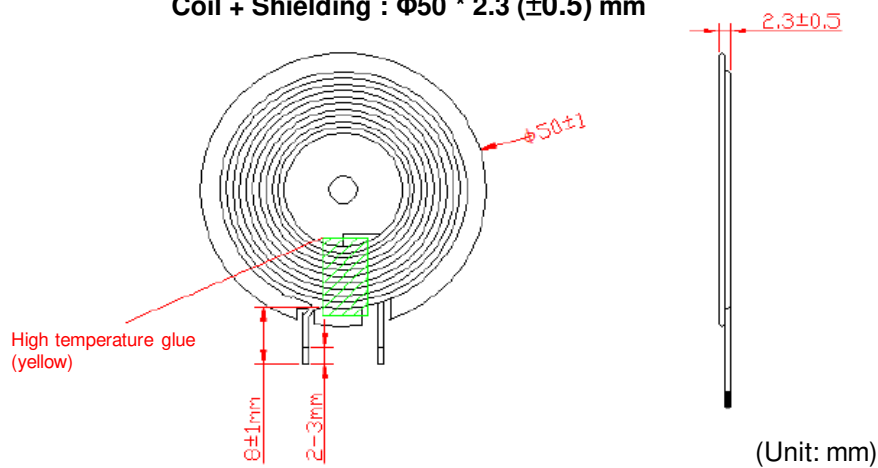


PCBA Size : 50 (±0.5) * 32 (±0.5) * 3.0 (±0.5) mm

Port	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
Function	GND	USB D+	USB D-	VIN	Burn_VCC	Burn_I/O	Burn_I/O
Port	Pin 8	Pin 9	Pin 10	Pin 11	Pin 12	Pin 13	Pin 14
Function	Burn_GND	FAN+	FAN-	NTC-	NTC+	Coil	Coil
Port	Pin 15	Pin 16	Pin 17	Pin 18	Pin 19	Pin 20	
Function	Buzz-	Buzz+	LED_Blue	LED_Red	LED_VCC	LED_GND	

- Tx_Coil Spec

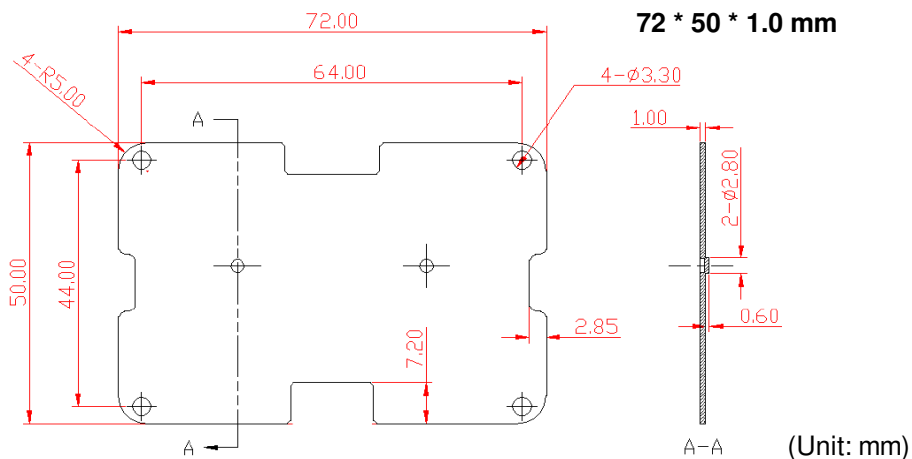
Coil + Shielding : $\Phi 50 * 2.3 (\pm 0.5)$ mm



Electrical specification @25°C

Parameters	Unit	Limit
Inductance, LS @100kHz, 1.0V, 0.08mm*105 ~10Turns	uH	6.5 ± 10%
Q	---	65 ± 10%
DCR	mΩ	Max. 380

- Aluminum Heat Sink Guage Spec





Fuel The Digital World

QPT-6071A

Wireless Charging Transmitter Module

Others

- Weight : 26 ± 2 g
- Major Test Equipment
 - (1) DC Supply
 - (2) Rx Module
 - (3) Electronic Load
 - (4) DPO3014 Digital Phosphor Oscilloscope
 - (5) Logical Analyzer
 - (6) Q110 Qi BST (Base Station Tester)