

Scope

- This product conforms to the TX module function requirements of the WPC1.2.4 Qi protocol and it is also compatible with all versions of WPC1.2.4 or lower.
- The Wireless Power supply's Tx Module should meet the ROHS requirement.

Applications

- Smartphone
- Wearable devices
- Home appliances
- Portable consumer products

Product Characteristic

QPT-0038 is a WPC1.2.4 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 WPC1.2.4. The console will process the corresponding power adjustment based on the encoding of the receiving unit. This module has fulfilled the WPC1.2.4 Qi requirement and is certified by Qi.

Multiple LED indication scheme available for options						
LED	Operational States					
	Power On	Standby	Charger	Charge Complete	Fault	Dynamic Power Limiting
LED1, Red	0.5S	Off	Off	Off	On	Blink slow
LED2, Blue	0.5S	Off	On	Off	Off	Off

Input Characteristics

- Input Voltage

Item	Minimum	Normal	Maximum
Input Voltage	4.75VDC	9.0VDC	9.5VDC

TX Input Voltage	RX Module			
	Qi 5W	Qi 10W	Apple 7.5W	Samsung 10W
USB, QC2.0 / QC3.0	V	V	V	V

- Input Current

1.75A max. @ 9.0VDC	Full load
1.65A max. @ 5.0VDC	Full load
- Inrush Current (cold)

2.00A max. @ 9.0VDC	Full load & Ambient temperature 25°C
1.85A max. @ 5.0VDC	Full load & Ambient temperature 25°C
- Energy Consumption

At 4.75VDC or 9.0VDC, energy consumption ≤ 0.625W.

Output Characteristics (Rx_Module)

- Static Output Characteristics <Vo & R+N>

Output Power	Rated Load		Peak Load	Output Range	R+N
	Min. Load	Max. Load			
10W	0.10A	1.00A	1.10A	9.0V ± 5%	≤ 450m Vp-p

Note:

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output end paralleled a 0.1uF ceramic capacitor and a 47uF electrolysis capacitor.

- Line & Load Regulation

Output Power	Load Condition		Line Regulation	Load Regulation
	Min. Load	Max. Load		
10W	0.10A	1.00A	± 5%	± 5%

- Charging Mode and Frequency

Charging Mode	Qi 5W	Qi 10W	Samsung Fast Charger	iPhone 7.5W
Frequency	110kHz ~ 205kHz			127.7kHz ± 0.4kHz

Protection Requirement

- Short Circuit Protection

When the output of the RX is short circuit to ground, the input power should decrease, the power supply remains undamaged and automatically recover when fault condition is removed.

- Over Current Protection (OCP)

OCP Point Limited : 120%~130% auto restart

The output will be blocked when output is over-current, and should automatically recover when fault condition is removed.

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	-20°C, 8hours
High / Low temperature cycle test	+40°C (2Hrs) → -20°C (2Hrs) → +40°C (2Hrs) → -20°C (2Hrs) continually work 24hours

- Vibration Test

- (1) Amplitude: 2 mm
- (2) Frequency: 12.4 Hz
- (3) Direction: X, Y
- (4) Time: 30 minutes/pc

- Carton Dropping Test
 - (1) Test height: Determined by the weight level
 - (2) Drop times: 10 times (one corner, three edge, six surface)
 - (3) Drop platform: 1~2cm thickness solid wood

Equal to or greater than		But Less than		Free Fall	
lb	Kg	lb	Kg	In	mm
0	0	21	10	30	760
21	10	41	19	24	610
41	19	61	28	18	460
61	28	100	45	12	310
100	45	150	68	8	200

Environment Requirement

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

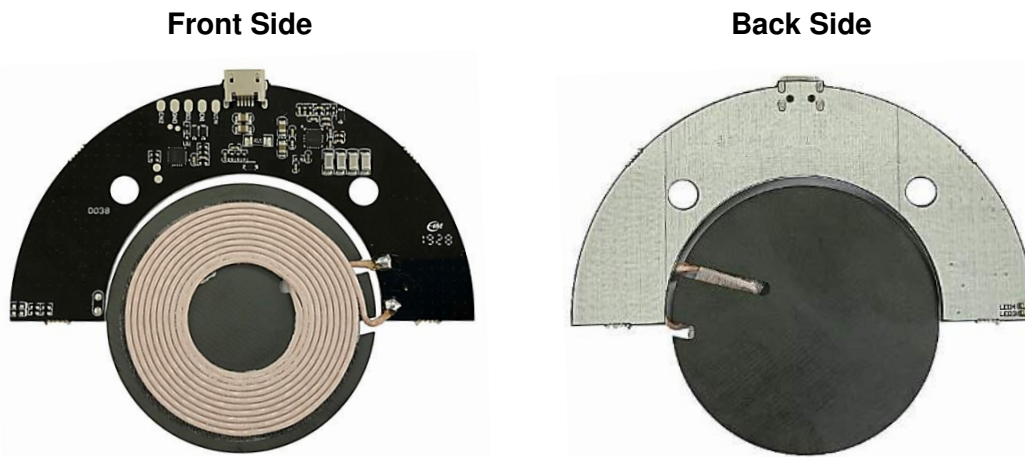
Execution Standards (Compatible with these specifications)

- EMC Standards

EN55032	EN55024
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- WPC1.2.4_Qi Standards

Photo of Product



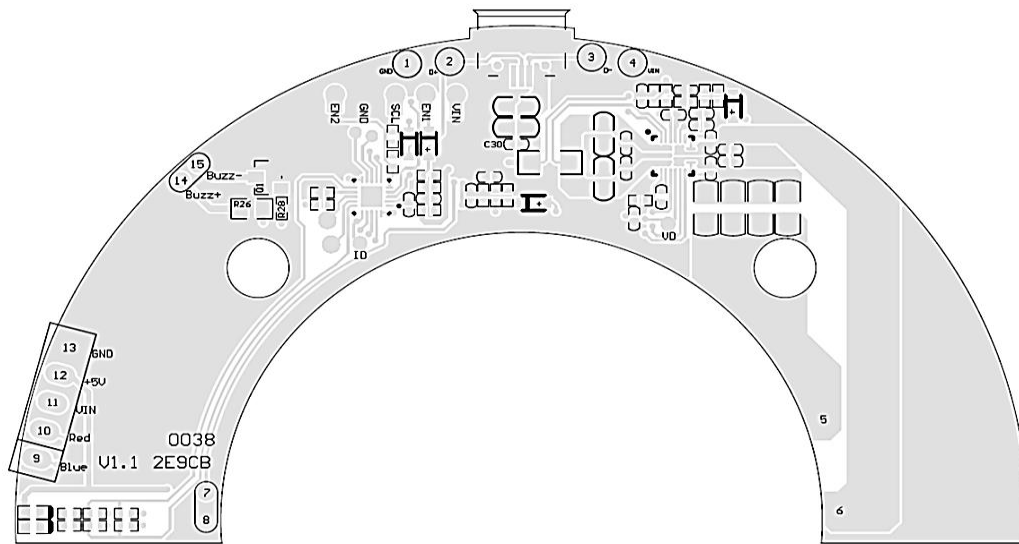
Module

- 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 2.00mm.
- (3) The surface distance between Tx Coil and Rx Coil is 4.0~6.0mm.

- PCBA Port Functional Illustration

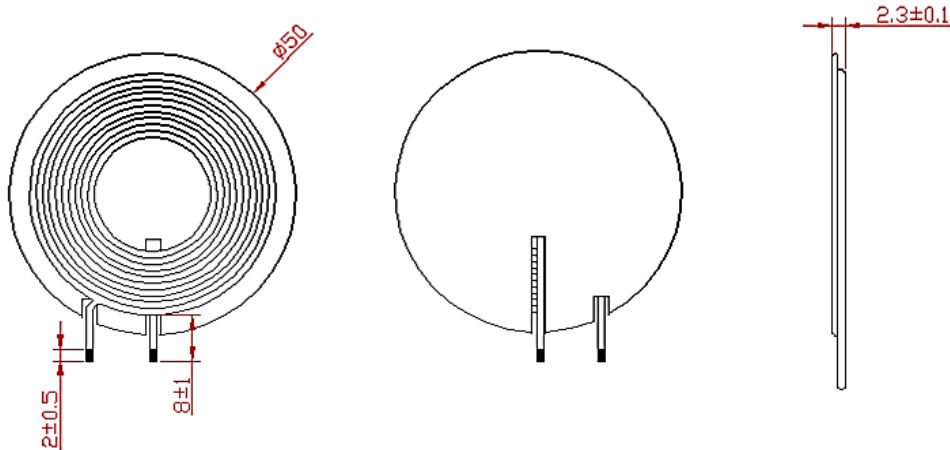


PCBA Size : 45 * 85 * 3.4 mm (±0.2 mm)

Port	Pin 1	Pin 2	Pin 3
Function	GND	USB/D+	USB/D-
Port	Pin 4	Pin 5	Pin 6
Function	VIN	TX_Coil	TX_Coil
Port	Pin 7	Pin 8	Pin 9
Function	NTC+	NTC-	Blue_LED
Port	Pin 10	Pin 11	Pin 12
Function	Red_LED	PCBA_VIN	PCBA_+5V
Port	Pin 13	Pin 14	Pin 15
Function	GND	Buzz+	Buzz-

- Tx_Coil Spec

Coil + Shielding : $\Phi 50 * 2.3 (\pm 0.1)$ mm



Electrical specification @25°C

Parameters	Unit	Limit
Inductance, LS @100kHz, 1.0V, 0.08mm*105 ~10Turns	uH	6.5 \pm 10%
Q	---	65 \pm 10%
DCR	m Ω	35 \pm 10%

Others

- Weight : 18 \pm 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)