



Guanyu (Dongguan) Intelligent Technology Co., LTD

Sample acknowledgment

**SPECIFICATION FOR APPROVAL**

	Supplier name	Zhongli Guanda (Intelligent) Technology Co., LTD		
	product model	Z12-BLD-V1.3		
	Guan Yu coding	GY-Z12-2		
	name of material			
	Hardware version	Z12 lamp board-V1.3 (lamp board) Z12-BLD-V1.3 (motherboard) Z12-GF5100_V1.3-Watch board		
	software release	ZLGD-Z12_D9612_9610_D9018_GUI_Bin0x0040F5AD_Gui0x00052747_In0x0057DB97_0x0057DB97_20221024110656		
	Delivery date	2022 年 11 月 8 日		
	承認印 APPROVED BY			
supplier sign	engineering department	vocational work	character	ratify
client sign	Structure/ electronics pack /ID	purchase	character	PM/ vocational work

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URL:

Make / revise the change resume

version	Revision page	Change time	Change the person	Reason and content of the change	remarks
A0		2022/10/19		The version was first released	
A1					
A2					
A3					
A4					
A5					
A6					

## 1、PCBA specifications

content	parameter
Enter the interface	TYPE-C
Support fast charging agreement	PD、QC2.0、QC3.0、AFC
Support input voltage	5V/9V
Cell phone power output	15W, 10W, 7.5W, 5W
Wireless output power	3W
The Apple Watch has an output of power	2.5W
The mobile phone senses the charging distance	1 ~ 6 mm
service frequency	110KHz~205KHz

## 2、Lights description

### Mobile phone wireless charging indicator light:

1. Power on: green light 0.5S 0.5S, blue light 0.5S 0.5S, blue green light 0.5S 0.5S, and then turn to standby green light
2. Standby prompt: green light
3. Charging tip: Blue breathing light
4. Full tip: The phone is full of blue lights always on
5. Detection of metal foreign body indicates that: blue light and green light flicker alternately
6. Headphone lighting: No
7. Watch light: No

## 3、Electrical parameters of products

	test condition	least value	rating	crest value	unit
Standby current	VCC = 9 V (light on)	30		100	mA
Standby power consumption	VCC = 9 V (light on)	0.27	-	0.9	W
working voltage	VCC=9V	5	9	9	V
The main board protects the temperature		60	65	70	℃

## 4、absolute rating

parameter	sign	least value	crest value	unit
operating ambient temperature	Ta	0	+35	℃
Storage temperature	Tstg	-10	+70	℃
Storage humidity	Tstr	0	95%	RH
Work protection voltage	Vcc	4.4	11.2	V

supply current	I <sub>max</sub>	0	3	A
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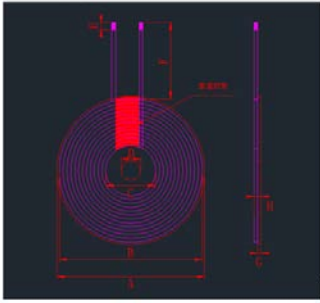
### 5、Mobile phone wireless charging conversion efficiency

输入电压/电流	输出功率	效率	备注
9V/685mA±50mA	5W	80%	5W治具
9V/1050mA±50mA	7.5W	79%	7.5W治具
9V/1350mA±50mA	10W	82%	10W治具
9V/2050mA±50mA	15W	83%	15W治具

### 6、Description of coil size

Mobile phone coil: diameter 44, the sense value must reach between 6.5 uH and 7.1 uH (central value is 6.8 uH) double groove hole belt back tape, lead length 20mm, tin immersion 3mm, the distance between the coil to the magnetic plate about 1.5MM coil in the middle

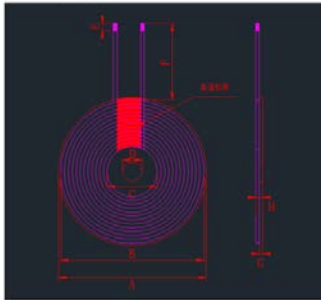
尺寸 DIMENSION:(mm)



A	44.0±0.5
B	41.0±0.5
C	13.5±0.5
D	5±0.3
E	3±1
F	20±2
G	1±0.2
H	2.2±1

Headphone coil: magnetic suction coil, diameter 43, sense value 6.5 uH ± 10%, double groove with hole, with back glue, lead length 15mm, tin immersion 3mm

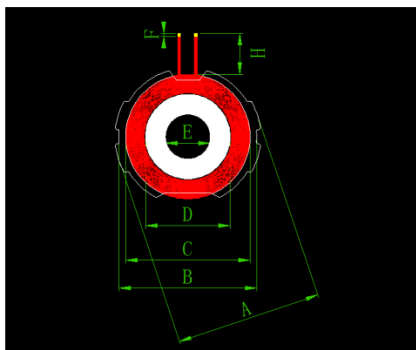
尺寸 DIMENSION:(mm)



A	43.0±0.5
B	41.0±0.5
C	20±0.5
D	5±0.3
E	3±1
F	15±2
G	1±0.2
H	1.8 max

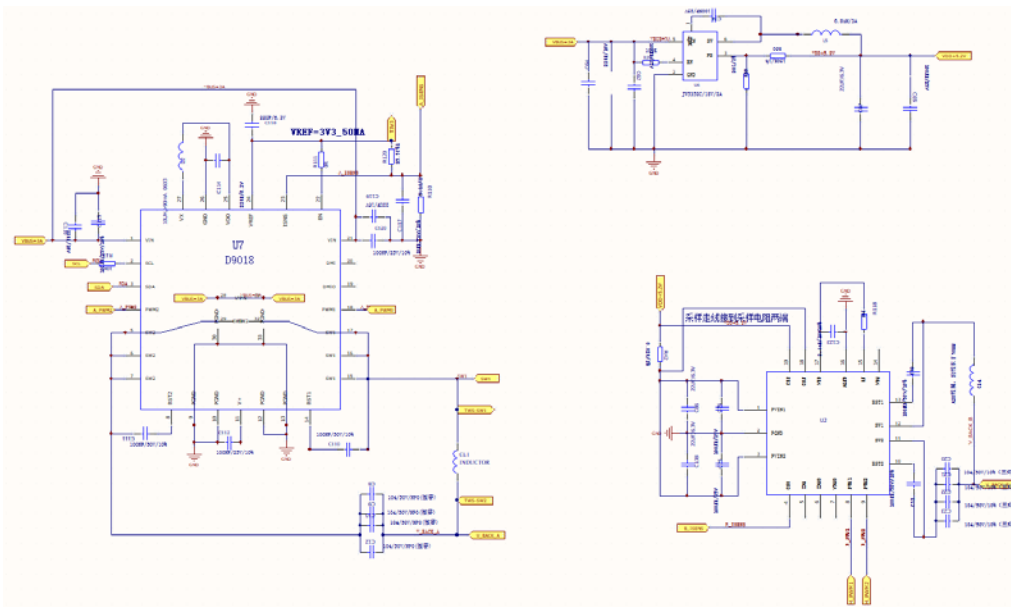
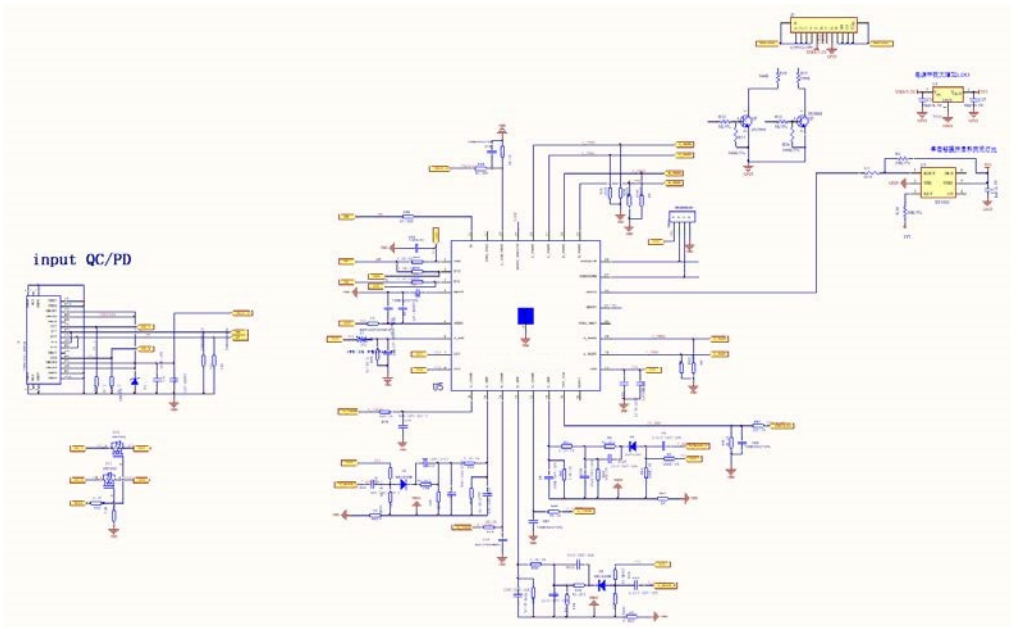
Apple watch soft magnetic coil: sense value 8.1 uH, lead length 55mm, with back glue, magnet value 2900-3100, tin immersion 3mm

尺寸 DIMENSION:(mm)



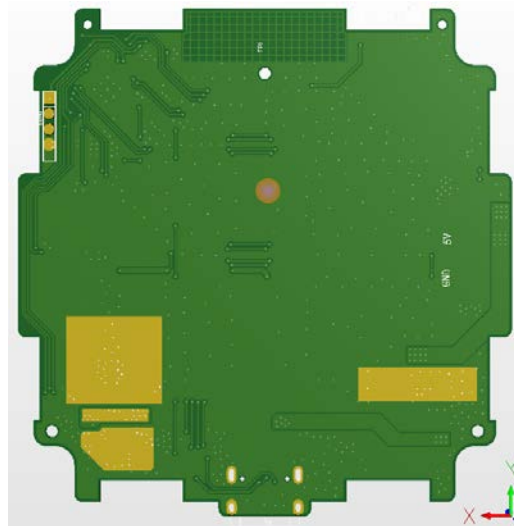
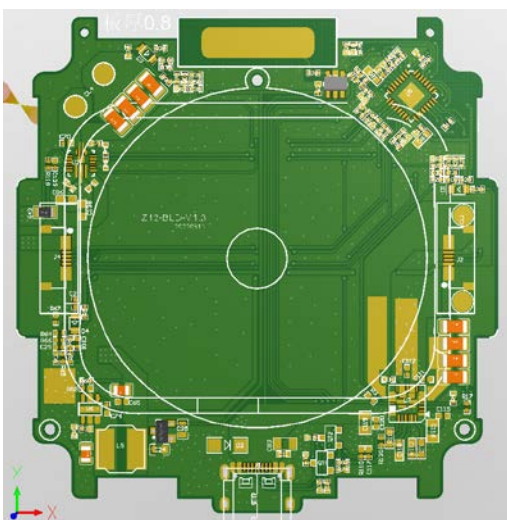
A	25±1
B	23.6±0.5
C	21.5±0.5
D	14.5±0.3
E	7.7±0.05
F	3±2
H	10±2

## 7、 schematic diagram

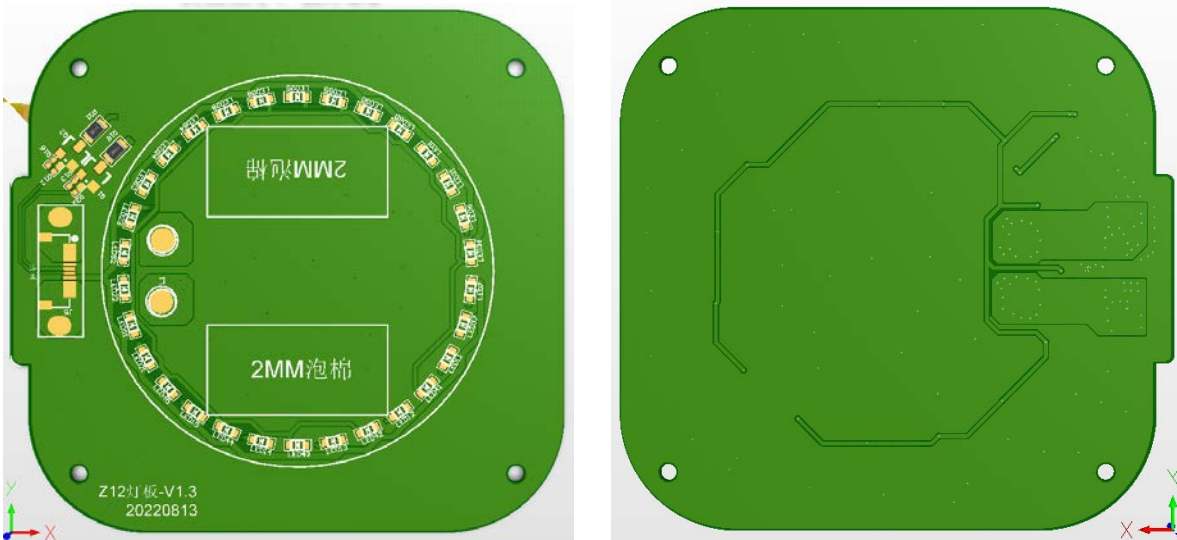


## 8、 PCB size

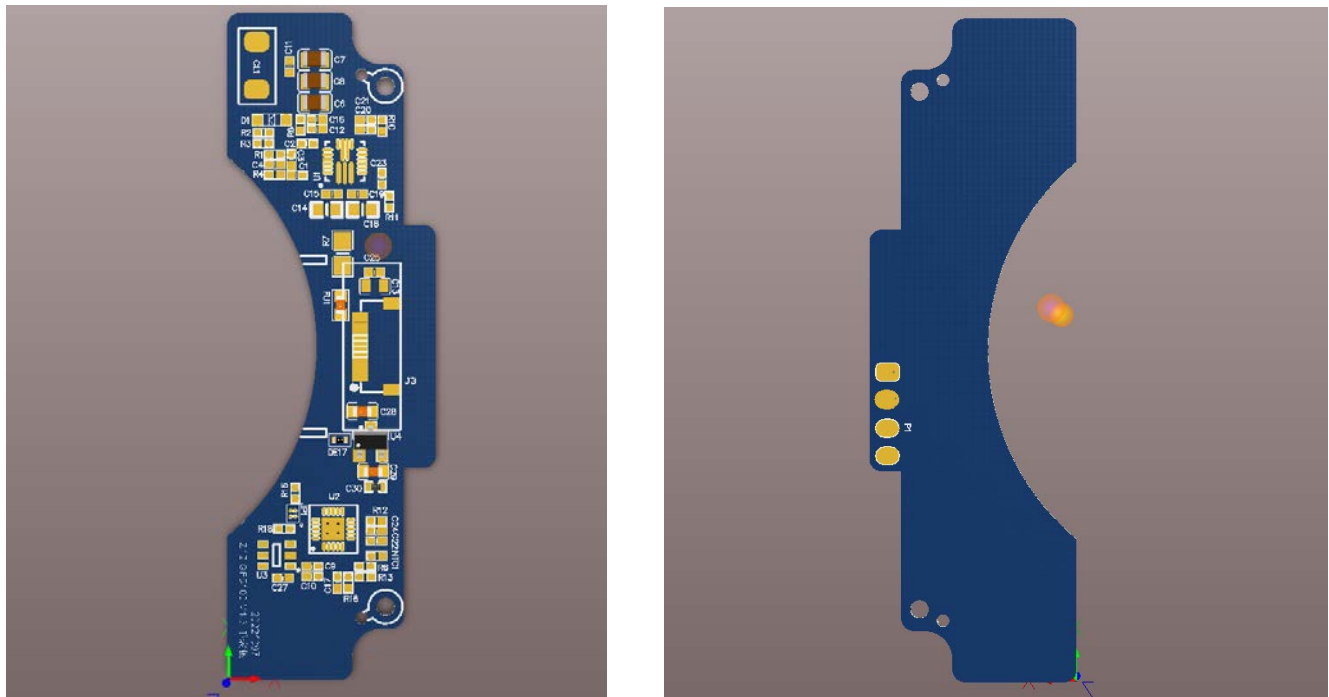
Main board: 63.5\*65.3\*0.8mm



Light board: 61.7\*58\*0.8mm



Watch board: 12.2\*58\*0.8mm



## 9、Core material

The main chip	D9610
Full bridge MOS	D9018+D9006
switch MOS	无
Harmonic capacitance	Mobile phone: 104 / 50V / micro-capacity NPO * 4
Resistor brand	Guoju / Housheng / Lizhi
Capacitor brand	Samsung / Murata / Huako / Micro 容
Anti-pressure chip	JW5352C

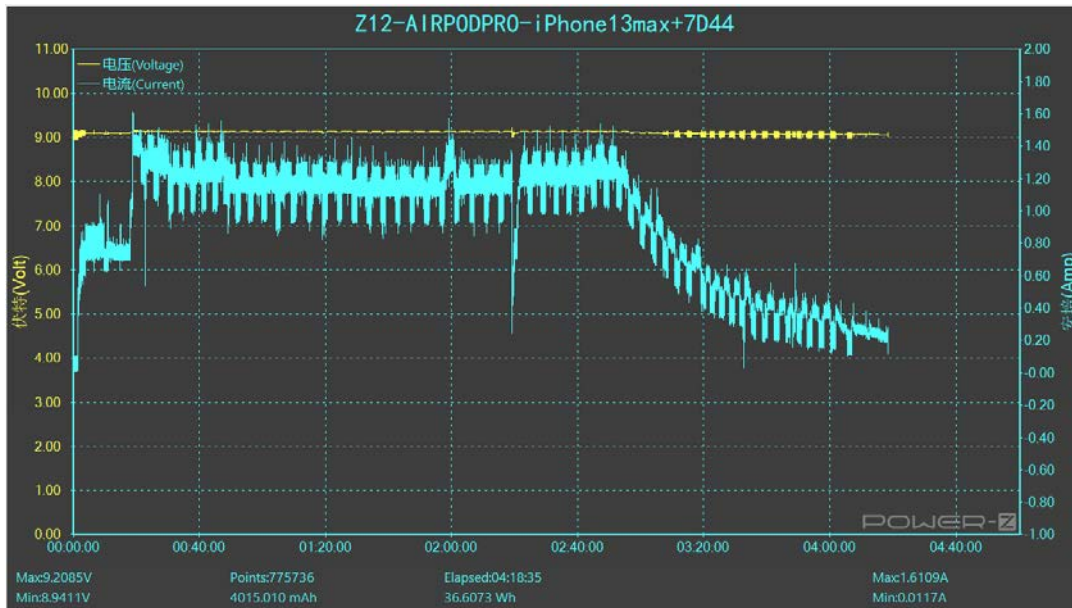


## 10、 Summary of wireless mobile phone charging tests

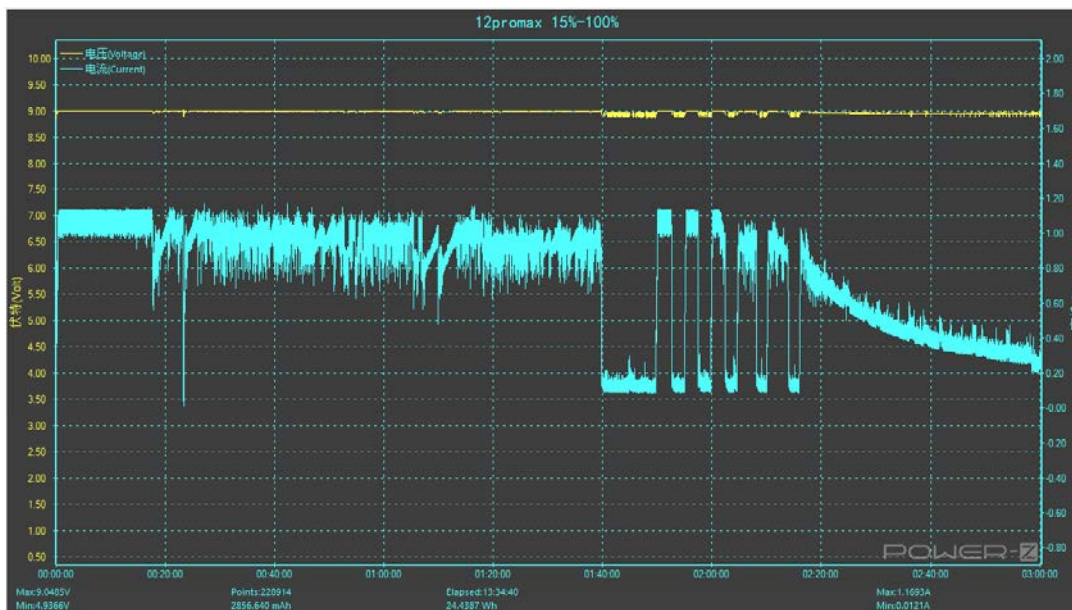
phone model	ambient	Charging time (0-100%)
Iphone13MAX+AIRPODPRO	27	4h20min
iphone12MAX	27	3h
Iphone14pro+AIRPODPRODPRO	27	4h20min
Iphone13pro+AIRPODPROD2	27	3h40min

Note: The wireless charging time is easily affected by the environment. When the surface temperature of the mobile phone is high, the mobile phone will automatically send the limited power receiving command to limit the excessive power sent by the transmitting board. The above test materials are for reference only, and the charging time shall prevail according to the actual test.

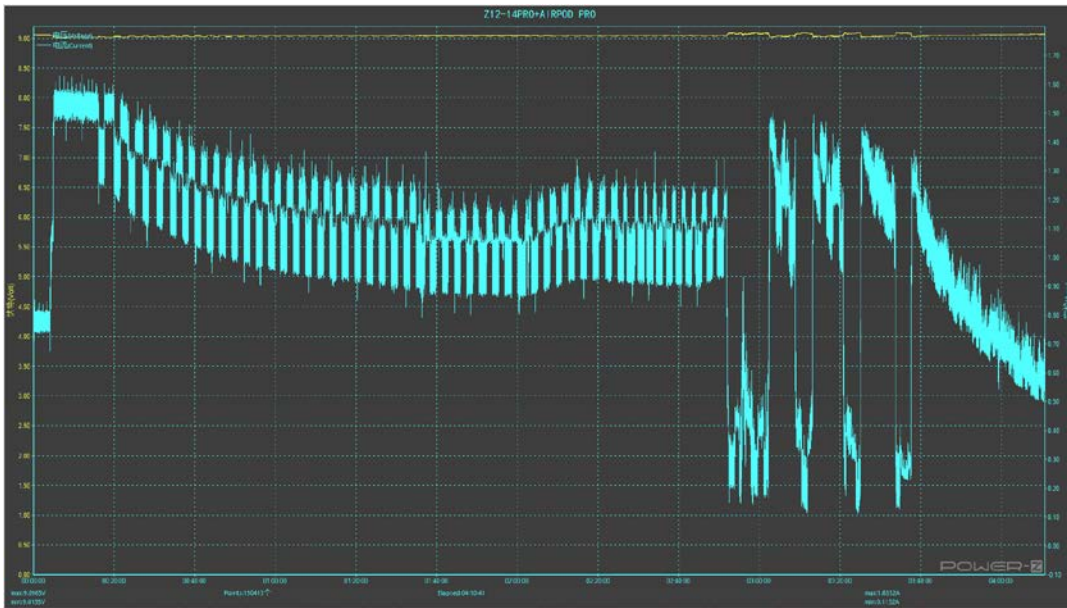
- iphone13MAX + AIRPODPRO charging curve diagram, filling time: 4h20min, ring temperature 27°C



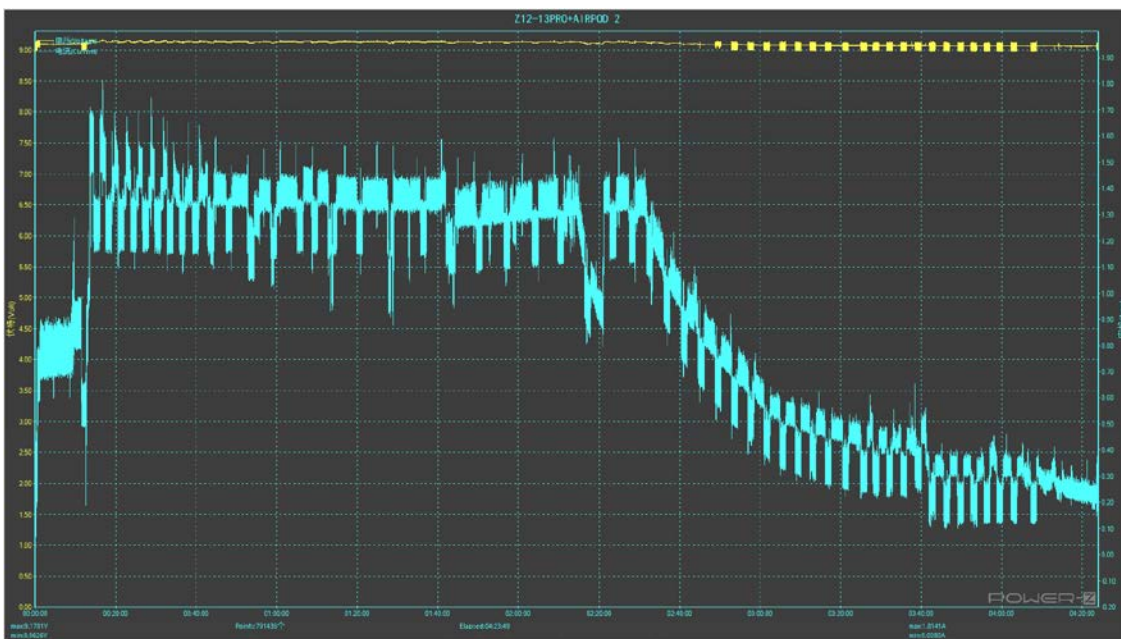
iphone12MAX Charging curve diagram, filling time: 3H ring temperature of 27°C



● iphone14pro + AIRPODPRO charging curve diagram, filling time: 4h20min, ring temperature 27°C



iphone13pro + AIRPOD2 charging curve diagram, filling time: 3h40min, ring temperature of 27°C





## Z12S-9610-V1.3-Main board BOM (Z12S version)

PCB silk-screen	Z12-BLD-V1.3	date updated: 20221019		
name of material	Parameter specifications	package	quantity	item
chip resistor	0R/1%	R0402	2	R62, R63
chip resistor	0R/1%	R0603	1	R111
chip resistor	0.02R/1%	R0805	1	R42
chip resistor	1K/1%	R0402	3	R19, R33, R90
chip resistor	1.2K/1%	R0402	1	R55
chip resistor	3K/1%	R0402	1	R10
chip resistor	4.7K/1%	R0402	2	R2, R54
chip resistor	5.1K/1%	R0402	7	R14, R15, R22, R36, R56, R82, R110
chip resistor	10K/1%	R0402	7	R17, R27, R34, R38, R61, R91, R118
thermal resistor	NTC103J/B3950	R0402	1	RT
chip resistor	15K/1%	R0402	1	R85
chip resistor	20K/1%	R0402	3	R53, R59, R75
chip resistor	25.5K/1%	R0402	1	R120
chip resistor	51K/1%	R0402	5	R21, R26, R35, R58, R74
chip resistor	100K/1%	R0402	7	R3, R4, R8, R9, R23, R37, R39
chip resistor	150K/1%	R0402	1	R60
chip resistor	200K/1%	R0402	2	R20, R28
chip capacitor	5.6nF/562/50V/10%	C0402	2	C30, C34
chip capacitor	4.7nF/472/50V/10%	C0402	1	C77
chip capacitor	10nF/103/50V/10%	C0402	5	C17, C18, C80, C88, C117
chip capacitor	15nF/153/50V/10%	C0402	6	C32, C33, C38, C39, C100, C105
chip capacitor	100nF/104/16V/10%	C0402	3	C1, C13, C84
chip capacitor	100nF/104/25V/10%	C0402	9	C11, C62, C65, C74, C75, C76, C112, C115, C120
chip capacitor	100nF/104/50V/10%	C0402	4	C70, C71, C110, C111
chip capacitor	100nF/104/50V/NPO (微容厚)	C1206	4	C8, C9, C10, C12
chip capacitor	100nF/104/50V/10% (三环)	C1206	4	C20, C21, C22, C23
chip capacitor	1uF/105/6.3V/20%	C0402	2	C5, C42
chip capacitor	2.2uF/225/10V/10%	C0402	1	C123

chip capacitor	10UF/106/6. 3V/20%	C0603	2	C24, C25
chip capacitor	10UF/106/16V/20%	C0805	1	C83
chip capacitor	22UF/226/6. 3V/20%	C0603	7	C64, C69, C81, C86, C114, C118, C138
chip capacitor	22UF/226/6. 3V/20%	C0805	1	C67
chip capacitor	22UF/226/16V/20%	C0805	2	C116, C119
Power inductance	10uH/90mA/0603 (50mA)	0603	1	L2
Power inductance	6. 8uH/3A/6028	6028	1	L5
Patch magnetic beads	BLM15AG102SN1D	0402	1	FB
Patch diode	BAV21WS (科信)	SOD-323	2	D1, D3
TVS diode	SMF15A (萨瑞微)	SOD-123	1	D2
ESD tube	SURGE04B03 (SRELEICS)	0402	2	ZD1, ZD2
MOS tube	L2N7002LT1G (LRC)	SOT-23	2	Q11, Q12
LDO	UMW HT7133S (UMW)	SOT-23-7150	1	U1
Touch IC	233A (SYB73C)	SOT23-6A	1	U3
Stabilivolt IC	JW5352C/18V/2A	SOT-23-6	1	U6
The whole bridge IC	D9006	QFN19-3X3	1	U2
The whole bridge IC	D9018	D9018-QFN33	1	U7
master control	D9610 QFN32 5X5	QFN32-5X5A	1	U5
TYPE-C	TYPE-C16P/板上型/三次 MOD		1	J1
FPC jack	FPC0. 5-1H-12P (前插后压)		2	J2, J4
FPC winding displacement	FFC 0. 5 spacing 12 PIN in the same length 35mm, with plastic hard pieces at both ends		2	
Headphone coil	Magnetic suction coil, with 44 diameter, sense value of 6. 5 uH ± 10%, double groove band hole, with back adhesive, lead length of 15mm, tin immersion of 3mm		1	CL4
Headphone coil heat shrink tube	Long, 11mm, φ 1. 5mm		1	
Headphone coil heat shrink tube	Long, 10mm, φ 1. 5mm		1	
Conductive cotton	15 length * 5 width * 5 high mm		1	
PCB	63. 6*65. 4*0. 8mm, White oil and black words, plate thickness of 0. 8, FR 4, 1 oZ		1	

## Z12S-9610-V1. 3-手表板 (GF5100 版本) - BOM

PCB 丝印	Z12-GF5100-V1. 3-手表板		更新日期: 20221021
<b>name of material</b>	<b>Parameter specifications</b>	<b>package</b>	<b>quantity</b>
			<b>item</b>

chip resistor	0R/1%	R0402	1	DE17
chip resistor	0R/1%	R0603	1	FU1
chip resistor	0.033R/1%	R0805	1	R7
chip resistor	1K/1%	R0402	2	R15, R18
chip resistor	2.2K/1%	R0402	2	R1, R11
chip resistor	10K/1%	R0402	1	R4
chip resistor	20K/1%	R0402	1	R16
chip resistor	22K/1%	R0402	1	R2
chip resistor	33K/1%	R0402	1	R3
chip resistor	47K/1%	R0402	1	R13
chip resistor	100K/1%	R0402	1	R12
chip capacitor	472/X7R/10%/50V	C0402	2	C2, C3
chip capacitor	103/X7R/10%/50V	C0402	2	C4, C23
chip capacitor	223/NPO/50V	C0805	3	C6, C7, C8
chip capacitor	104/X7R/10%/16V	C0402	10	C10, C12, C15, C17, C19, C20, C22, C24, C25, C30
chip capacitor	105/X5R/20%/16V	C0402	1	C9
chip capacitor	225/X5R/20%/16V	C0402	1	C1
chip capacitor	475/X5R/20%/16V	C0402	1	C27
chip capacitor	106/X5R/20%/16V	C0603	5	C13, C14, C18, C28, C29
diode	IN4148 (萨瑞微)	SOD323	1	D1
LDO	HT7133	SOT-23	1	U4
All bridge IC	SC5001	QFN19L	1	U1
master control IC	9240	WQFN3X3_20	1	U2
master control IC	513F	SOT23-6	1	U3
master control IC	GW30	BGA4*2	1	JP1
FFC jack	FPC0.5-1H-12P (前插后压)		1	J3
Assembly:, watch coil	Apple watch soft magnetic coil, sense value 8.1 uH, lead length 55mm, with back glue, magnet value 2900-3100, tin immersion 3mm		1	CL1
Watch coil casing	The heat shrink tube length is 50mm*0.8mm, two coils out of a single casing		2	
PCB	18*58*0.8mm, 白油黑字, 板厚 0.8, FR4, 1oZ		1	

## Z12-9610-V1.3-灯板 BOM

PCB silk-screen	Z12 lamp board-V1.3			date updated: 20220914
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name of material	Parameter specifications	package	quantity	item
chip resistor	100R/1%	R0805	2	R18, R31
chip resistor	1K/1%	R0402	2	R12, R32
chip resistor	100K/1%	R0402	2	R13, R16
The patch triode	2N3904	SOT-23	2	Q1, Q2
paste LED	GREEN	LED0603	15	LED1, LED6, LED7, LED11, LED12, LED13, LED14, LED15, LED21, LED22, LED23, LED24, LED28, LED29, LED30
paste LED	BLUE	LED0603	15	LED31, LED36, LED37, LED41, LED42, LED43, LED44, LED45, LED51, LED52, LED53, LED54, LED58, LED59, LED60
FPC jack	FPC0.5-1H-12P (front insertion and back pressure)		1	J5
Cell phone coil	Diameter 44, the sense value must be between 6.5 UH and 7.1 UH (center value is 6.8 UH), lead length 20mm, tin immersion 3mm, the distance between the coil to the magnetic sheet is 1.5MM and the coil is center		1	L1
PCB	61.6*58*0.8mm, White oil and black words, plate thickness of 0.8, FR 4, 1 oZ		1	