



深圳华科生数字科技有限公司

Shenzhen Huakesheng Digital Technology CO.,LTD

Product Specification Report

Company Telephone Number: 0755-23761449

Report Number:

Customer Number:		SYJ-A011C-15W	
Customer Material Number:			
Product Name:		Power bank PCBA	
Product Type:		SYJ-A011C-15W	
Date Prepared:		2025-8-4	
Supplier Confirmation		Customer Confirmation	
WOLD Approval		Customer's Approval	
Formulation	Approved	Auditing	Approved
Development	Approved	Checked	Approved

**Note: "Customer Part Number" is a required field and must be filled in by the customer.

I. PCBA Key Performance Parameters:

Project	Parameter Name	Min	Typ	Max	Unit	Note
Lithium Battery Protection Section	Overcharge Protection Voltage	4.375	4.425	4.475	V	
	Overcharge Protection Release Voltage	4.2	4.25	4.3	V	
	Overvoltage Protection Voltage	2.3	2.4	2.5	V	
	Overcurrent Protection Release Voltage	2.9	3.0	3.1	V	
	Discharge Overcurrent Protection Current	12	18	24	A	
	Discharge Overcurrent Protection Delay	5	10	20	ms	
	Discharge Short-circuit Protection Current	40	80	120	A	
	Discharge Short-circuit Protection Delay	50	150	600	us	
	0V Battery Charging	Support				
IP5353 Charging Section	Input Voltage (VBUS/VIN)	4.5	5/9/12	13	V	
	Input Overvoltage Voltage (VBUS/VIN)	13	13.5	14	V	
	Constant Voltage Charging Voltage (4.35V)	4.33	4.37	4.39	V	
	Constant Current Charging (VBUS=5V)(Input Current)	2.2	2.5	2.8	A	
	Constant Current Charging (VBUS =9V) (Input Current)	1.7	2.0	2.3	A	
	Constant Current Charging (VBUS =12V) (Input Current)	1.3	1.5	1.7	A	
	Trickle Charging (VBAT<2.5V)	50	75	100	mA	
	Trickle Charging (2.5V<VBAT<3.0V)	100	200	300	mA	
	Trickle Cut-off Voltage	2.9	3.0	3.1	V	
	Charge Termination Current	250	400	550	mA	
IP5353 Discharge Section	Recharge Threshold	4.05	4.10	4.15	V	
	Battery Operating Range	3		4.4	V	
	No-load Voltage 5V	4.85	5.05	5.25	V	

No-load Voltage 9V	8.8	9	9.3	V	
No-load Voltage 12V	11.8	12	12.45	V	
Load Voltage 5V/1A	4.75	5.05	5.25	V	
Load Voltage 9V/1A	8.6	9	9.3		
Load Voltage 12V/1A	11.5	12	12.45		
Load Ripple Voltage 5V3A		200	250	mVp-p	When carrying a 5V 3A load, Vbat=3.70V
Efficiency	88%	90%	92%		When carrying a 5V 3A load, Vbat=3.70V (board end voltage)
Output Load 5V		3.1		A	
Output Load 9V		2.22		A	
Output Load 12V		1.67		A	
Output Overcurrent Protection 5V	3.4	4	4.4	A	
Output Overcurrent Protection 9V	2.25	2.6	2.9	A	
Output Overcurrent Protection 12V	1.7	1.9	2.2	A	
Overcurrent Protection Time		30		ms	
Short-circuit Protection Current		4.4		A	
Short-circuit Protection Time	150		200	uS	
Automatic Shutdown Load Current	40	80	120	mA	
No-load Automatic Shutdown Delay	25	32	44	s	
Multi-port Light Load Shutdown Detection Time	14	16	18	V	
D+Voltage (USB1)	2.7	3.0	3.3	V	Standby Voltage
D-Voltage (USB1)	2.7	3.0	3.3	V	

Complete Machine	Standby Current	110	150	350	uA	All Movements Stopped.
	Short-circuit Protection		Yes			Stop 5V Output
	Charge And Discharge Simultaneously		Yes			Output During Charging

Wireless Charging Parameters:

- Compliant with the WPC (Wireless Power Consortium) international wireless charging alliance WPC 1.2 version Qi standard .
- OCP(Over Current Protection) overcurrent protection.
- DPL(Dynamic Power Limiting) Supports dynamic power limiting function.
- Foreign Object Detection (FOD), PMOD enhanced parasitic metal detection, thereby preventing power loss caused by the incorrect placement of metal objects in the wireless power transmission field.
- Input voltage: 9V, input current: 0.5A~2A.
- Output current 0.35A~1A.
- Display charging status mode, fault indication.
- Supports Samsung, Huawei fast charging

Note:

- ① Once wireless charging is turned on, if there is no load for 12 seconds, the wireless charging output will automatically shut down. If you need to turn it on again, you will need to click the switch.
- ② Complies with the WPC 1.2 standard, but does not have a certification ID.

I. Display Mode and Switch Function:

1. Display mode:

Digital tube display:

- ① Small 188 with fast charging indicator and wireless charging indicator:

When charging, the battery level digits flash until fully charged, at which point all digits remain lit;

When discharging, the battery level digits flash as an alarm when the battery level drops below 5%, and remain lit when above 5%;

Both fast charging input and output display the fast charging indicator.

Wireless charging indicator displays when there is a load, turns off when there is no load, and flashes to indicate foreign objects;

Note: Please select the corresponding model and display according to actual conditions. The fast charging indicator can be any of the following characters: PD, Fast Charging, Lightning, etc.

1. Button operation:

Single click:

- ① Click to turn on wireless charging, long press to turn off discharging;

② Click while on standby to turn on wireless charging, and the battery level will be displayed on the screen. If the battery is out of power, 00 will be displayed and then the screen will turn off.

If the motherboard is powered on but not activated for charging, the current battery level will be displayed and then the screen will turn off.

Double-click:

- ① Equivalent to two single clicks;

Long press:

- ① Turn off boost in boost mode;
- ② Long press has no effect in other modes.

III. Port input and output current:

1、 Port input/output (individual port use);

USBA output: 5V3A/9V2A/12V1.5A/10V2.25A

USBC input: 5V2.6A/9V2A/12V1.5A

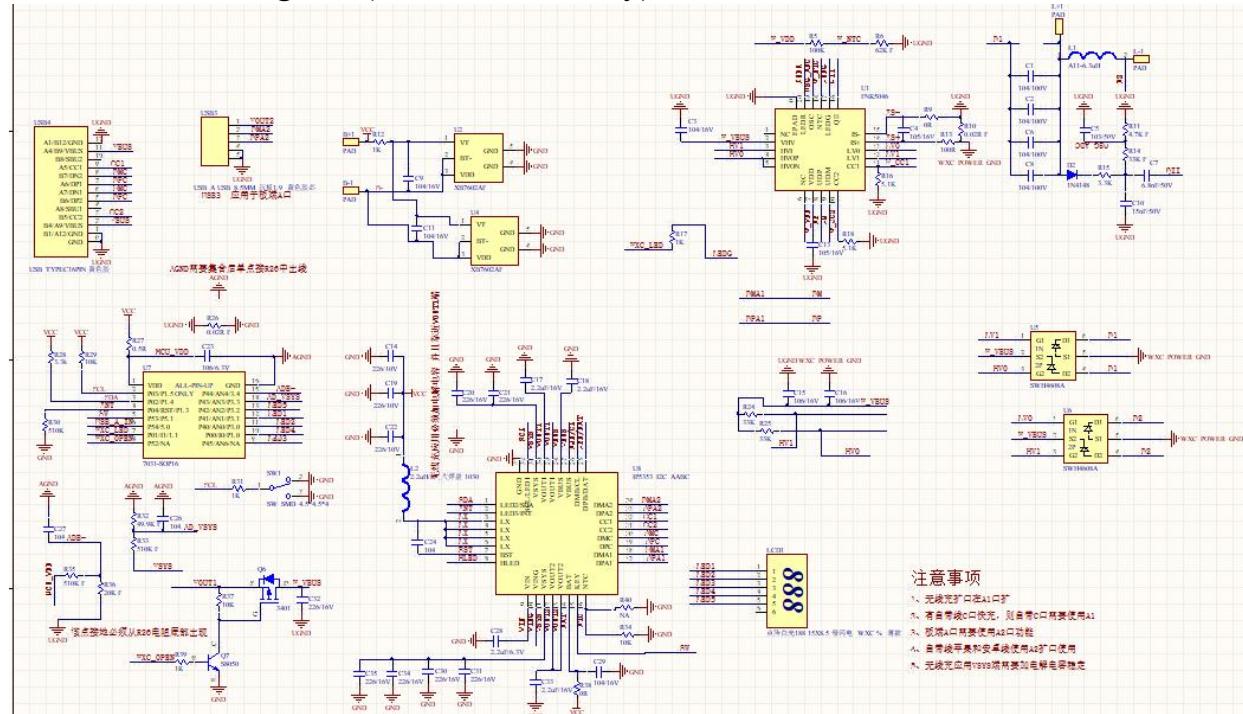
USBC output: 5V3A 9V2.22A/12V1.67A

Wireless charging output: 5W/10W/15W

2、Multiple outputs: shared 5V3A；

3、When charging and discharging simultaneously at 5V, if the output load exceeds $500\text{mA} \pm 100\text{mA}$, priority is given to charging the load.

IV. Schematic diagram (for reference only)



V. PCB Parameters

PCB material and process: FR-4,

PCB dimensions: 65 x 24 x 1.0 mm (length x width x thickness).

Length and width deviation: ± 0.3 mm; thickness deviation: ± 0.1 mm.

VI. BOM List (For Reference Only):

No.	物料编码	物料名称	物料规格	用量	位号
1	DR.TP.100K65AO	贴片电容	100nF 10% 50V 1206 X7R(厚度0.85MM)	4	C1, C2, C6, C8
2	DR.TP.100K63A3	贴片电容	100nF 10% 50V X7R 0603	4	C3, C9, C11, C24
3	DR.TP.1UFK32AO	贴片电容	1uF 10% 16V X5R 0402	1	C4
4	DR.TP.10NK62AO	贴片电容	10nF 10% 50V X7R 0402	1	C5
5	DR.TP.6N8K63AO	贴片电容	6.8nF 10% 50V X7R 0603	1	C7
6	DR.TP.15NK63AO	贴片电容	15nF 10% 50V X7R 0603	1	C10
7	DR.TP.1UFK43AO	贴片电容	1uF 10% 25V X7R 0603	1	C13
8	DR.TP.22UK24AO	贴片电容	22uF 10% 10V X5R 0805A	3	C14, C19, C22
9	DR.TP.10UK33AO	贴片电容	10uF 10% 16V X5R 0603	2	C15, C16
10	DR.TP.2U2K33AO	贴片电容	2.2uF 10% 16V X5R 0603	3	C17, C18, C33
11	DR.TP.22UK34AO	贴片电容	22uF 10% 16V X5R 0805 Taiyou	7	C20, C21, C30, C31, C32
12	DR.TP.10UK23A1	贴片电容	10uF 10% 10V X5R 0603A (输出)	1	C23
13	DR.TP.100K32AO	贴片电容	100nF 10% 16V X7R 0402	3	C26, C27, C29
14	DR.TP.2U2K22AO	贴片电容	2.2uF 10% 10V X7R 0402	1	C28
15	DZ.TP.100KJ2A1	贴片电阻	100KΩ, 0402, 5%	1	R5
16	DZ.TP.62KRF2A1	贴片电阻	62KΩ, 0402, 1%	1	R6
17	DZ.TP.00R0J3A1	贴片电阻	0Ω, 0603A, 5%	2	R9, R38
18	DZ.TP.002RF5A1	贴片电阻	0.02Ω, 1206, 1%	1	R10
19	DZ.TP.04K7F3A1	贴片电阻	4.7KΩ, 0603A, 1%	1	R11
20	DZ.TP.01K0J3A1	贴片电阻	1KΩ, 0603A, 5%	2	R12, R31
21	DZ.TP.100RJ3A1	贴片电阻	100Ω, 0603A, 5%	1	R13
22	DZ.TP.33KRF3A1	贴片电阻	33KΩ, 0603A, 1%	1	R14
23	DZ.TP.03K3J3A1	贴片电阻	3.3KΩ, 0603A, 5%	2	R15, R28
24	DZ.TP.05K1J2A1	贴片电阻	5.1KΩ, 0402, 5%	2	R16, R18
25	DZ.TP.1KROJ2A1	贴片电阻	1KΩ, 0402, 5%	2	R17, R39
26	DZ.TP.33KRJ2A1	贴片电阻	33KΩ, 0402, 5%	2	R24, R25
27	DZ.TP.002RF6A1	贴片电阻	0.02Ω, 1210, 1%	1	R26
28	DZ.TP.00R5J3A1	贴片电阻	0.5Ω, 0603, 5%	1	R27
29	DZ.TP.10KRJ3A1	贴片电阻	10KΩ, 0603A, 5%	2	R29, R37
30	DZ.TP.510KJ3A1	贴片电阻	510KΩ, 0603A, 5%	1	R30
31	DZ.TP.49K9F2A1	贴片电阻	49.9KΩ, 0402, 1%	1	R32
32	DZ.TP.510KF2A1	贴片电阻	510KΩ, 0402A, 1%	1	R33
33	DZ.TP.10KRJ2A1	贴片电阻	10KΩ, 0402, 5%	1	R34
34	DZ.TP.510KF3A1	贴片电阻	510KΩ, 0603, 1%	1	R35
35	DZ.TP.20KRF3A1	贴片电阻	20KΩ, 0603A, 1%	1	R36
36		电感	2.2uH, 一体电感, 1030 (SMT底部点红胶) 大焊盘	1	L2
37	ES.TP.IN414803	贴片二极管	1N4148 SOD123(1206)	1	D2
38	MO.TP.34010000	MOS管	3401, SOT23大体积	1	Q6
39	ES.TP.S8050001	贴片三极管	S8050, SOT23	1	Q7
40	MO.TP.46080001	MOS管	SWH4608B, SOT23-6	2	U5, U6
41	IC.TP.50460001	IC	FNK5046 QFN20_3X3 弹窗	1	U1
42		MCU	7031-SOP16 校验码待定	1	U7
43	IC.TP.IP535302	IC	IP5353_I2C_AABC, QFN32 5*5	1	U8
44		180数码管	KGW2342-5D(5脚白光) 针脚3MM 贴膜丝印:绿闪电 绿无线充 %图标 188字体为虚线下脚位 长15*宽 8.5*厚3.2mm	1	LCD1
45	KG.TP.00000012	贴片开关	贴片开关4.5*4.5*4.0H	1	SW1
46	JK.AK.A8U54001	USB接口	沉板短体8.5mm 直边(黄胶芯) 镀足1U	1	USB3
47	JK.CK.C1630001	USB接口	USB 3.1 C TYPE 母头 L=7.3 单排 16PIN SMT 四脚 插座 有拉(基胶芯不接触)	1	USB4
48		PCB	四层板(含工艺边和拼版间距) 65*24*1 绿油白字	1	
49		保护IC	XB7602G-4.35V CPC5封装	2	U2, U4

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VII. Production precautions

- Circuit boards contain static-sensitive components. Power outlets and soldering irons on the production line must be reliably grounded.
- Production operators must take anti-static measures to prevent damage.
- Mainboards must not be stacked or collided with to prevent damage to resistors and capacitors.
- During the board separation process, please pay attention to the force and method used to prevent deformation or stretching that could damage resistors and capacitors;
- PCBA boards with soldered batteries must not be stacked together on the production line to avoid contact that could cause voltage spikes or high currents damaging components;
- Battery capacity resistors are specified by the customer; the BOM and schematic diagram are for reference only.

VIII. FCC Caution

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.

NOTE: 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.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.