Product specification

Customer	Annella	Customer Model	TN-1S8AT
Product Name	1S 6A	Project Name	TN-1S8AT
Main configuration	LifePo4	Customer Material NO.	
Controlled Revision	V0	Issued Date	2023/11/30
YUN YI			
		Client Approval： ☐OK ☐NG	
Prepared by/Date		Checked by/ Date	
QA Checked by/ Date		QA Checked by/ Date	
Approved by / Date		Approved by / Date	

1.History of revisions

Edition	Description	Prepared by	Date	Remarks
V0	new	Lu Young	2023/11/30	

2. Product Specifications

2.1 Sphere of application

This specification is applicable to the 1-cell lithium-ion battery protection board developed and manufactured by SHEN ZHEN YUN YI TECHNOLOGY CO.,LTD，model TN-1S8AT

2.2 Environmental request/环保要求

☑ RoHS 2.0 ☐ HF 无卤素 ☐ REACH ☐ 其它

2.3 Functional description

1） Over-charge voltage protection

2） Over-discharge voltage protection

3） Over current protection

4） Short circuit protection

2.4 Mechanical characteristics

1） PCM size：L 50(±0.15mm)×W 7(±0.1mm)×T 3.5 mm(MAX)

2） PCB MATERIA/PCB：FR-4, 1.5 oz,1.0±0.1mm

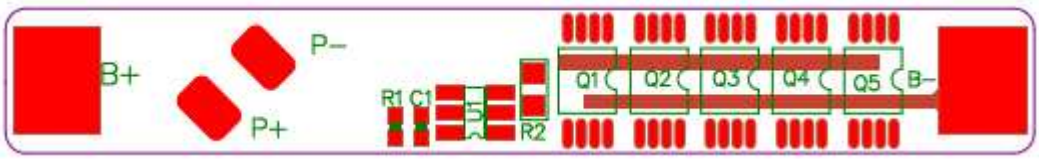
3） LAYER：2Layers

4） Plating Method：HASL-LF

5） PSR INK：Green

6) SILK INK：White

2.5 Connecting description

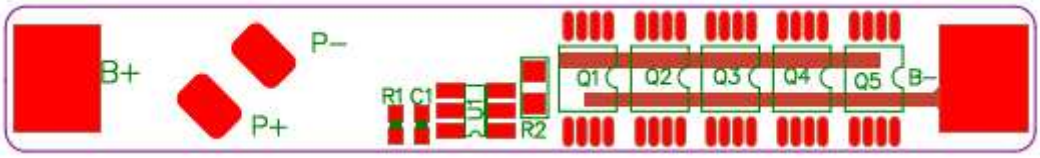


Symbol	Description	Symbol	Description
P+	Battery output/charging positive pole	B+	Cell positive pole
P-	Battery output/charging negative pole	B-	Cell negative pole

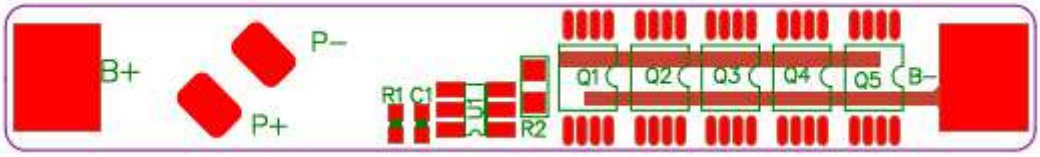
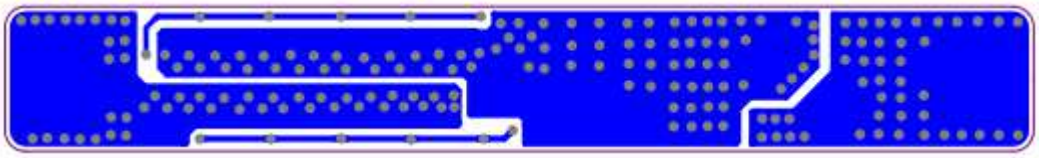
2.6 Electrical characteristic (Ta=25℃)

Contents	Min.	Type	Max.	Tolerance	Unit
Absolute Maximum Rating					
Input Charging Voltage		3.65			V
Input Charging Current			6		A
Output Discharging Voltage	2.10	3.20	3.75		V
Continuous Output Discharging Current			6		A
Ambient Condition					
Operating Temperature	-20		+65		℃
Humidity (No Water-Drop)	0%		80%		RH
PCM Storage Condition/PCM					
PCM Storage Temperature PCM	-55		+125		℃
Humidity (No Water-Drop)	45%		85%		RH
Protection Parameters					
Over-Charge Voltage Protection (OVP)	3725	3750	3775	±25	mV
Over-Charge Voltage Protection Release	3550	3600	3650	±50	mV
Over-Charge Voltage Protection Delay Time	1000	1300	1600		mS
Over-Discharge Voltage Protection (UVP)	2050	2100	2150	±50	mV
Over-Discharge Voltage Protection Release	2250	2300	2350	±50	mV
Over-Discharge Voltage Protection Delay Time	115	145	175		mS
Over-Current Charge Protection Detection Voltage	-240	-200	-160		mV
Over-Current Charge Protection (OCC)	14	20	26		A
Over-Current Charge Protection Delay Time	6	8	20		mS
Over-Current Discharge Protection Detection Voltage	185	200	215		mV
Over-Current Discharge Protection （OCD）	15	20	25		A
Over-Current Discharge Protection Delay Time	9	12	20		ms
Short Circuit ProtectionDetection voltage (SCP)	550	850	1150		mV
Short Circuit Protection Delay Time	200	300	500		uS
Short Circuit Protection Release	Remove Load Or Connect Charger				
Current Consumption					
Normal Mode		3.0	6.0		uA
Other Parameters					
Impedance （B-&P-）	5	25	50		mΩ
Impedance （B+&P+）			5		mΩ
ID Resistor ID		/			KΩ
NTC Resistor NTC		/			KΩ
0V Battery Charge Function 0V	Available				
ESD Protection Function ESD	/				

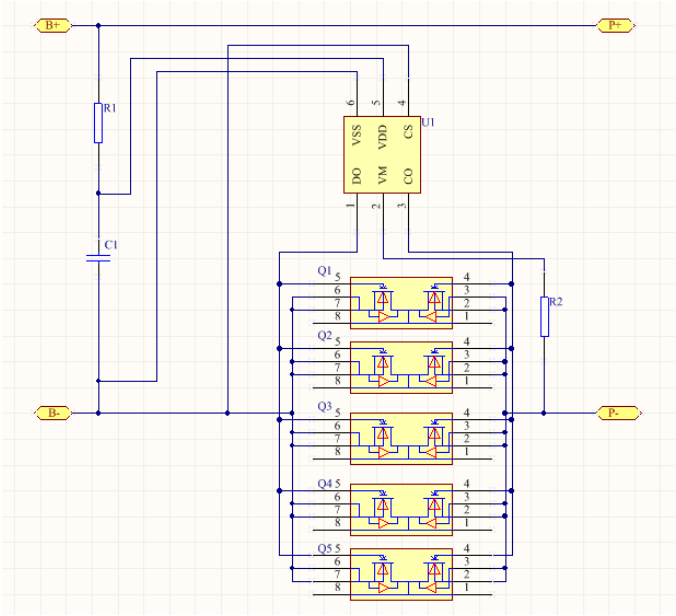
4. SMT Diagram

Top layer	

5.PCB Layout / PCB

Top layer	
Top over layer	
Bottom layer	
Bottom over layer	

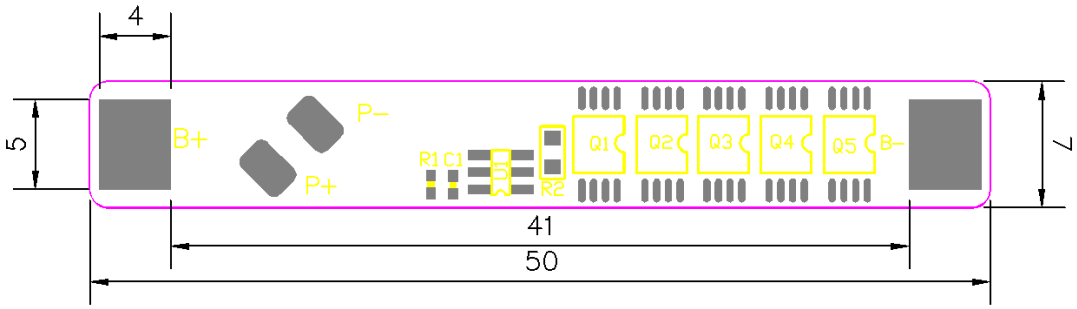
6.Electrical Schematic



7.Special Requirements

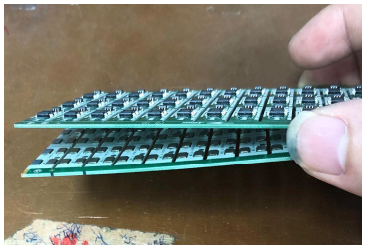
NO.		
1		
2		
3		

8.PCB diagram / PCB

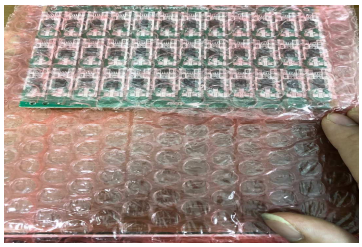


9.Packing、Storage And Transportation

9.1 Packing guide ／ 包装指引



① 两片拼板背靠背叠整齐



②用防静电气泡卷隔开包装

② 装入防静电袋

④用胶布封口，贴标签

⑤连同产品合格证放入外箱内

⑥外箱贴标签后封箱

9.2 Storage

9.2.1 Storage Temperature：23±5℃

9.2.2 Storage Humidity ：45±15% RH

9.2.3 Should pay attention to ESD

9.3 Transportation

9.3.1 Delivery to your storhouse by express or our deliveryman.

9.3.2 Should pay attention to moisture, moisture, avoid extrusion, impact, etc., to prevent damage to the PCM during transportation.

10. Attachment

10.1 Sample test data

NO.	Test Project	Test standard	Testing Value					Judgment
			1	2	3	4	5	
1	Overcharge protection voltage	3.75±0.25V	3.752	3.749	3.750	3.751	3.752	OK
2	Overcharge protection delay time	MAX 1600ms	1030	1041	1045	1051	1028	OK
3	Over discharge protection voltage	2.10±0.08V	2.100	2.108	2.110	2.106	2.107	OK
4	Over discharge	MAX175ms	146	147	148	149	150	OK

	protection delay time							
5	Discharge over current protection current	15-25A	16.2	16.4	16.7	16.0	16.5	OK
6	Over discharge current protection delay time	MAX20ms	12.7	13.8	13.7	13.6	13.5	OK
7	Static current	≤6.0 uA	3.5	3.6	3.5	3.6	3.5	OK
8	Impedance（B-&P-）	≤50mΩ	17	15	16	16	16	OK

10.2 Environmental Requirements

The specification subjects to the EU Directive about RoHS 2.0, and the hazardous substance conforms to the following standard.

Hazardous substance	Standard（mg/KG）	Remarks
(Cd)	<100	
(Pb)	<1000	
(Hg)	<1000	
(Cr6+)	<1000	
(PBBs)	<1000	
(PBDEs)	<1000	
(DBP)	<1000	
（BBP）	<1000	
(DIBP)	<1000	
(DEHP)	<1000	

Declaration: the above standard is the requirements of EU RoHS 2.0 Directive, we will base on the customer’s requirements when it is stricter than the EU standard.