

PRODUCT SPECIFICATIONS
CONFIDENTIAL

Spec. No.	Samsung ICR18650-26J 3S1P	Version No.	0.0
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SPECIFICATION OF

Battery Type: Samsung ICR18650-26J 3S1P

Approved by	Checked by	Prepared by
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Feb. 26 th 2020		

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1. Scope.

The specification shall be applied to Li-ion rechargeable battery pack of Samsung ICR18650-26J 3S1P. The product is ROHS compliant.

2. Battery Pack Datasheet:

NO	Items	Criteria	Remarks
2.1	Typical Capacity	2600mAh	Discharge:1300mA Cut-off voltage:8.25V
	Rated Capacity	2550mAh	
2.2	Energy	28.86Wh	
2.3	Nominal Voltage	10.8V	
2.4	Open Circuit Voltage	10.2~11.1V	
2.5	Internal Impedance	Cell: $\leq 100\text{m}\Omega$	AC 1KHz after standard charge
		Battery pack: $\leq 300\text{m}\Omega$	
2.6	Charge voltage	12.6V	
2.7	Charge Time (Std.)	3 hours	
2.8	Standard charge current	1300mA	Ambient temperature 25°C
2.9	Standard discharge current	520mA	Ambient temperature 25°C
2.10	Max. discharge current	5200mA	Ambient temperature 25°C
2.11	Discharge cut-off voltage	8.25V	
2.12	Storage Temperature	-20°C ~+60°C	Less than 1 month
		-20°C ~+45°C	Less than 3 months
2.13	Weight	Max. 185g	
2.14	Size(mm) Max.	(L)72.0*(W)60.0*(T)23.0	

3. Battery pack configuration

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NO	Item	Criteria	Remarks
3.1	Cell	ICR18650-26J /2600mAh (3S1P)	Samsung cell
3.2	PCM	EVVA-Li03S8	
	PCB	UL VM-1	
3.3	Wire	UL 1007 AWG22	
	Connector	JST-VH-3P	
3.4	Fuse	0251010	Littelfuse
3.5	PVC	Black	

4. Battery Performance Criteria

4.1 Appearance

There shall be no such defect as scratch, bur and other mechanical scratch, and the connector should be no rust dirt. The structure and dimensions see attached drawing of the battery.

4.2 Measurement Apparatus

(1) Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

(2) Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance not less than 10 K Ω /V.

(3) Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01 Ω .

(4) Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (AC 1kHz LCR meter).

4.3 Standard Test Condition

Test should be conducted with new batteries within one month after shipment from our factory and the cells shall not be cycled more than five times before the test. Unless

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otherwise defined, test and measurement shall be done under temperature of $20\pm5^{\circ}\text{C}$ and relative humidity of 45~85%.

4.4 Rest Period

Unless otherwise defined 30min, rest period after charge 30min, rest period after discharge.

4. Handling precaution and prohibitions of lithium Ion rechargeable batteries

Inaccurate handling of lithium ion and lithium ion polymer rechargeable battery may cause leakage, heat, smoke, an explosion, or fire.

This could cause deterioration of performance or failure. Please be sure to follow instructions carefully.

1.1 Storage

Store the battery at low temperature (below 25°C is recommended), low humidity, no dust and no corrosive gas atmosphere.

1.2 Safety precaution and prohibitions

To assure product safety, describe the following precautions in the instruction manual of the application.

[**Danger!**]

■ Electrical misuseage

Use stipulated charger.

Use or charge the battery only in the stipulated application.

Don't charge the battery by an electric outlet directly or a cigarette lighter charger.

Don't charge the battery reversely.

■ Environmental misuseage

Don't leave the battery near the fire or a heated source.

Don't throw the battery into the fire.

Don't leave, charge or use the battery in a car or similar place where inside of temperature may be over 60°C .

Don't immerse, throw, wet the battery in water / sea water.

■ Others

Don't fold the battery cased with laminated film such as pouch and polymer.

Don't store the battery in a pocket or a bag together with metallic objects such as keys, necklaces,

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hairpins, coins, or screws.

Don't short circuit (+) and (-) terminals with metallic object intentionally.

Don't pierce the battery with a sharp object such as a needle, screw drivers.

Don't heat partial area of the battery with heated objects such as soldering iron.

Don't hit with heavy objects such as a hammer, weight.

Don't step on the battery and throw or drop the battery on the hard floor to avoid mechanical shock.

Don't disassemble the battery or modify the battery design including electric circuit.

Don't solder on the battery directly.

Don't use seriously scared or deformed battery.

Don't put the battery into a microwave oven, dryer or high-pressure container.

Don't use or assemble the battery with other makers' batteries, different types and/or models of batteries such as dry batteries, nickel-metal hydride batteries, or nickel-cadmium batteries.

Don't use or assemble old and new batteries together.

[Warning!]

Stop charging the battery if charging isn't completed within the specified time.

Stop using the battery if the battery becomes abnormally hot, order, discoloration, deformation, or abnormal conditions is detected during use, charge, or storage.

Keep away from fire immediately when leakage or foul odors are detected. If liquid leaks onto your skin or cloths, wash well with fresh water immediately.

If liquid leaking from the battery gets into your eyes, don't rub your eyes and wash them with clean water and go to see a doctor immediately.

If the terminals of the battery become dirty, wipe with a dry cloth before using the battery.

The battery can be used within the following temperature ranges. Don't exceed these ranges.

The operating temperature is based on the cell surface temperature in hottest position in pack.

Charge temperature ranges : 0°C ~ 50°C.

Discharge Temperature ranges : -20°C ~ 75°C.

Store the battery at temperature below 60°C.

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6. Protection Circuit

6.1 Electrical characteristics

Item	Symbol	Content	Criterion
Over charge protection	VDET1	Over charge detection voltage	4.35±0.025V
	tVDET1	Over charge detection delay time	<1.5s
Over discharge protection	VDET2	Over discharge detection voltage	2.4±0.1V
	tVDET2	Over discharge detection delay time	<150ms
Over current protection	VDET3	Over current detection voltage	0.15±0.025V
	IDP	Over current detection current	7-11 A
	t DIOV1	Detection delay time1	Max.15ms
	t DIOV2	Detection delay time2	2ms
		Release condition	Cut load
Short protection		Detection condition	Exterior short circuit
	tSHORT	Detection delay time	100-600us
		Release condition	Remove the Load
Current consumption		Normal mode	30uA

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6.2 PCM BOM

Name	Brand	Quantity	Reference	Part
Capacity	Samsung	5	C2, C3, C4, C5, C6	0603/0.1uF/±10%/50V
Capacity	Samsung	1	C8	0805/2.2uF/+80%-20%/25V
Resistor	Yageo	7	R4,R5,R6,R7,R9,R10,R12	0603/1KΩ± 5%/1/10W
Resistor	Yageo	1	R1	0603/1MΩ± 5%/1/10W
Resistor	Yageo	2	R2, R3	0603/5.1KΩ± 5%/1/10W
Resistor	Yageo	1	R14	0805/51Ω± 5%/1/8W
Resistor	TA-I	2	R002, R003	2512/33mΩ/±1%/2W
IC	Seiko	1	U1	S-8254AAJFT
MOSFET	AOS	4	Q1, Q2, Q3, Q4	AO4407A
PCB	ASSOON	1	EVVA-LI03S8-012	50.0*16.0mm

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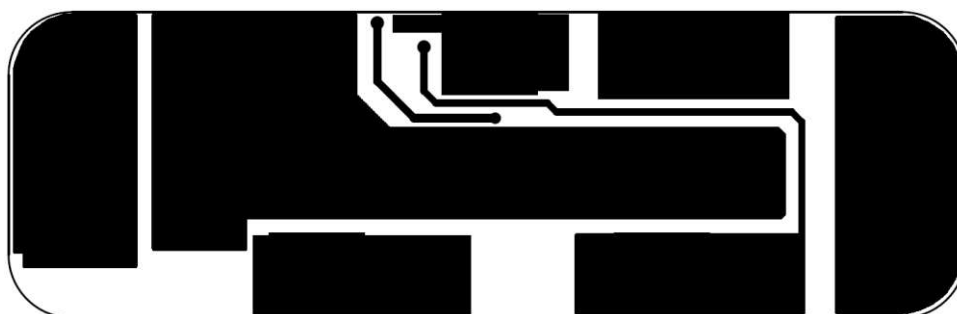
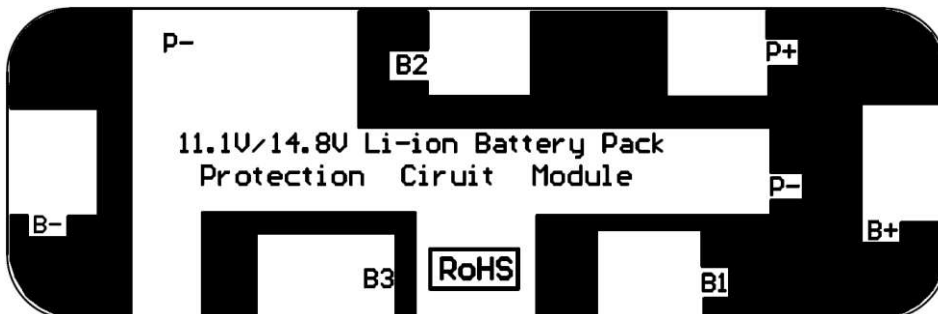
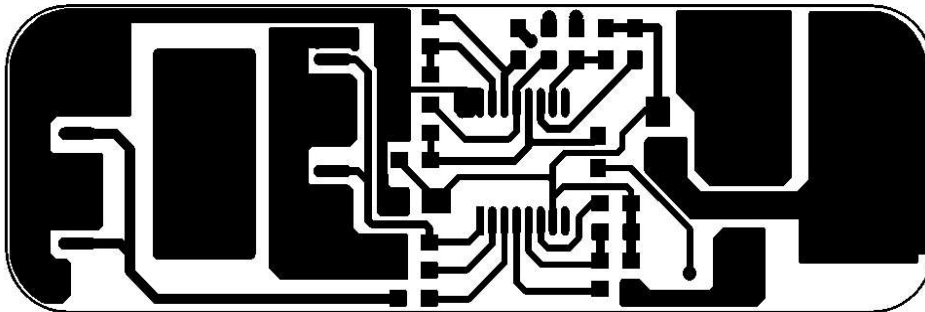
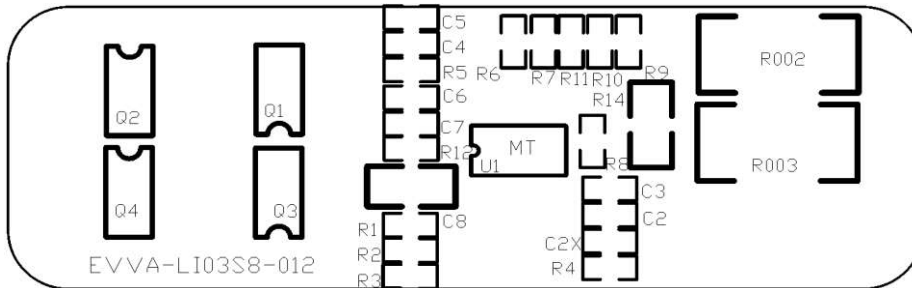
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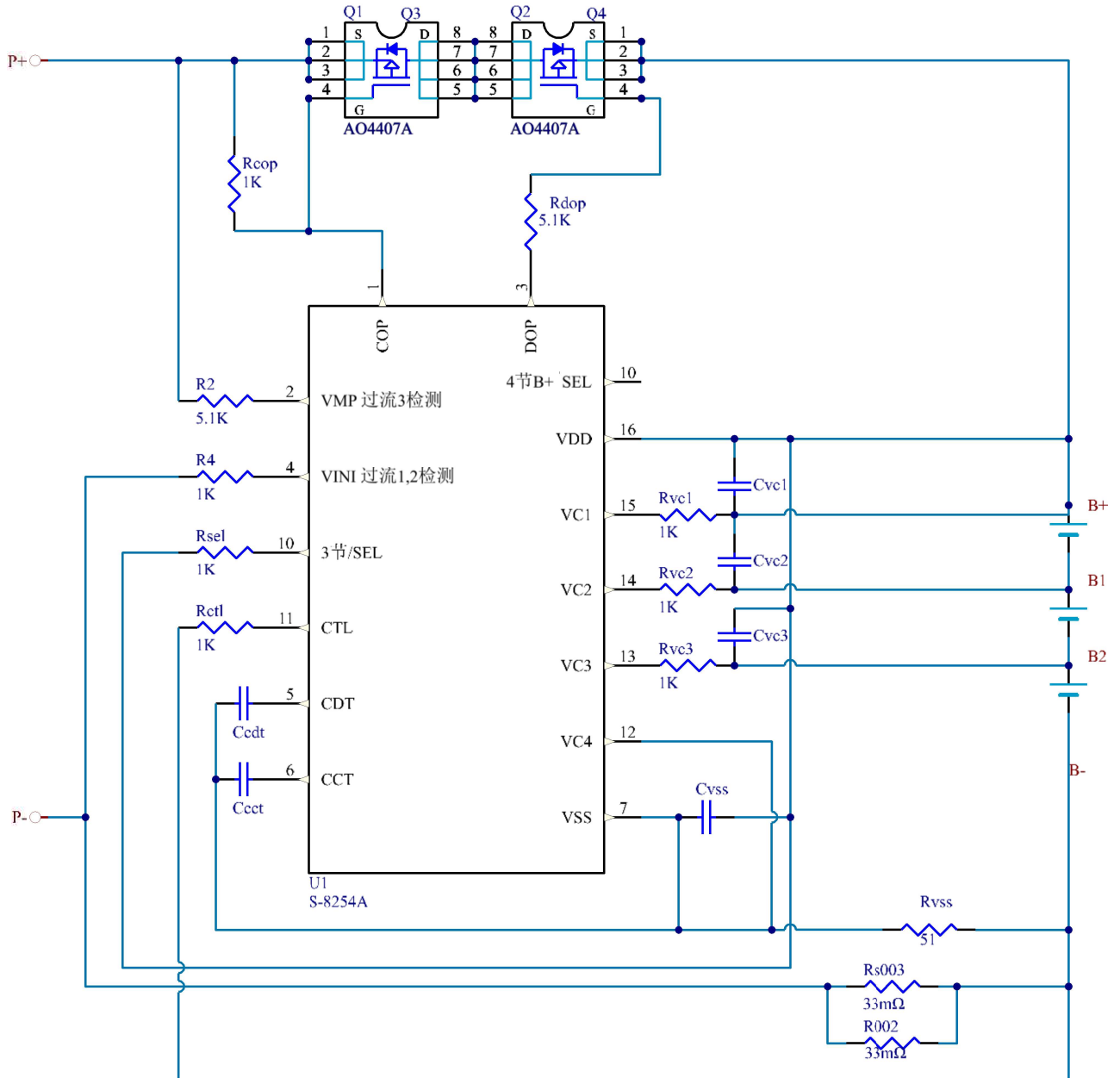
6.3 PCB Layout



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6.4 Circuit Diagram



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7.Assembly Drawing.

