1. Revision History

NO.	Date	Revision	Remark
1	Feb,18,2013	R0A	Initial Specification
2	Mar,05,2013	R0B	Change Specification

2. Scope

This product specification covers the requirement for the rechargeable lithium ion battery pack with protection circuit for detecting function of overcharge, overdischarge and current over discharge pack.

3. Battery Pack Specification

ITEMS	SPECIFICATION	REMARK
Model	P11204920	
Relative Voltage	14.8V	
Charging Voltage	16.8V	
Nominal Capacity	8800mAh	
Internal Resistance	≤300mΩ	
Adaptable for	/	
Cell Type	18650/2200mAh(4S4P)	
Dimension	35.5×84.5×137mm	
Wire	UL1007-20# / 100(±5)mm	
Connector	Molex 43645-0200	
Color	BLUE	
Weight	730g (Max)	

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4. Standard Test Conditions

ITEM		REGISTER
Standard charge		CC/CV model, relative voltage 16.8V, relative current 0.2C，end current 0.01C
General charge.		CC/CV model, relative voltage16.8V, relative current 0.5C，end current 0.01C
Apace charge		CC/CV model, relative voltage16.8V, relative current 1C，end current 0.01C
Standard discharge		Relative current 0.2C,end voltage2.75×N V
General discharge		Relative current 0.5C,end voltage 2.75×N V
Apace discharge		Relative current 1C,end voltage 2.75×N V
Environmental temperature	Charge	0 -- +45℃
	Discharge	-20℃ -- +60℃
	Storage temperature	Short time one month -20℃～+55℃
		Three months -20℃～+45℃
		Long time one year -5℃～+30℃
	General temperature	25℃±5℃
	Relative humidity	86 -- 106Kpa
	Atmospheric Pressure	

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5. Appearances

ITEMS	TEST CONDITION	REQUIRE
APPEARANCES	Under light lamp 40W	Shall be free noticeable flaws breaks, age, Discoloration, deformation, uneven, and other Defects which impair the value of the commodity

6. Electrical Characteristics

ITEMS	TEST CONDITION	REQUIRE
Complete Charge	The battery is charged with constant current 0.5C mA and constant voltage 16.8V until the charging current is less than 0.01CmA.	
Initial capacity	The capacity measured after the battery is discharged with constant current 0.2C until the voltage reaches 2.75×N V cut-off in one hour after complete charge.	⩾8700mAh
Cycle life	The capacity measured after 300 cycles of complete charge and discharge at 1C current to 2.75×N V cut-off.	Capacity more than 80% of Initial capacity
Impedance	Internal resistance measured at 1KHz after complete charge.	⩽300mΩ

7. Temperature Adaptability

ITEMS	TEST CONDITION	REQUIRE
High temperature discharge	After complete charge .at (60±2)℃ , discharge current 0.2C to 2.75 × N V-END discharge.	No explosion, fire, or smoke. Discharge efficiency ⩾85%.
High temperature cycle	At (50±2)℃ , discharge current 0.5C mA and charge constant voltage 16.8V cycle test three times	No explosion, fire, or smoke. Charge efficiency ⩾90%
Low temperature discharge	After complete charge. At (-20±2)℃, discharge current 0.2C to (2.75 × N) V-END discharge.	No explosion, fire, or smoke. Discharge efficiency ⩾80%.
Low temperature cycle	At (-20±2)℃ , discharge current 0.5C mA and charge constant voltage 12.6V cycle test three times	No explosion, fire, or smoke. Charge efficiency ⩾85%

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8. Destroy Adaptability

ITEMS	TEST CONDITION	REQUIRE
E.S.D TEST	To apply 330Ω resistance and stasis Electricity energy of 150PF capacitor. To All terminals (+, -, TH) apply the below for 10 times each, Contact :±8KV ； Air : ±15KV	No malfunction. No damage.
Vibration Test	Subject to 1 hour 10-55Hz 3.5mm amplitude Vibration for any direction at shipment (Complete packing) state. Then test discharge and rated charge at 25±2℃.	No explosion. fire ,or Smoke. No leakage or damage and Battery Condition good.
Drop Test	Drop test battery 1.0m above steel board of more than 10mm thickness. One time drop each for 6 surface,4 ride direction of a battery pack	No leakage or damage and Battery Condition good. No explosion, fire or Smoke. Discharge time Less than 50 minute.

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9. PCM Specification

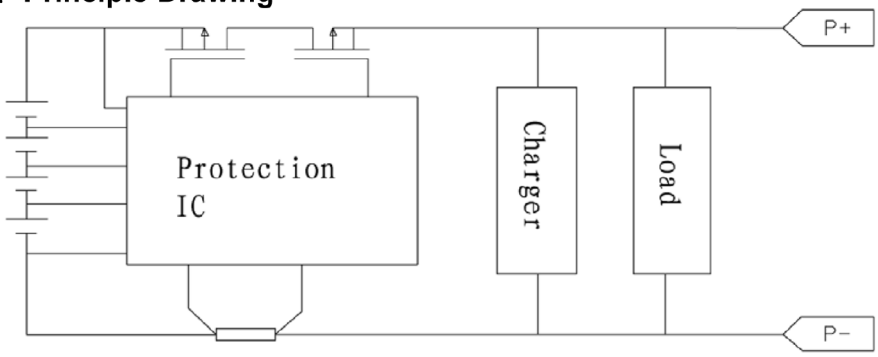
9.1、 PCM Performances

ITEMS	TEST CONDITION
Over charge protection	A battery charge with a charging condition of less than 15V/1C and the charging shall be shut off when the internal cell Voltage becomes more than specified protection voltage.
Over discharge protection	When battery discharge with a discharging condition of 1C, The discharging shall be shut off when the internal cell voltage Becomes less than specified protection voltage.
Short protection	After rated charge, (+) and (-) terminals are connected with 10m mental resistor or equivalent by
Current consumption	Ordinary current consumption: consumption current ofthe protection circuit when internal cell voltage reaches 3.7V(Max:6μA)
General current consumption	Shut off current consumption: consumption current of the Protection circuit when internal cell voltage reaches 2.75v(Max:3μA)

9.2、PCM Standard

Over Charge limit	4.25±0.025V
Over Charge release	Remove charger and discharging
Over Discharge limit	2.5±0.025V
Over Discharge release	Charging
Over Discharge Current Protection	4.5±1.0A
Persistent current of Discharge	≤3.5A
Over Charge delay time	1±0.5S
Over Discharge delay time	100±50mS
Over Current delay time	10±5mS
Short circuit delay time	＜600μS
Maximum current consumption	30μA

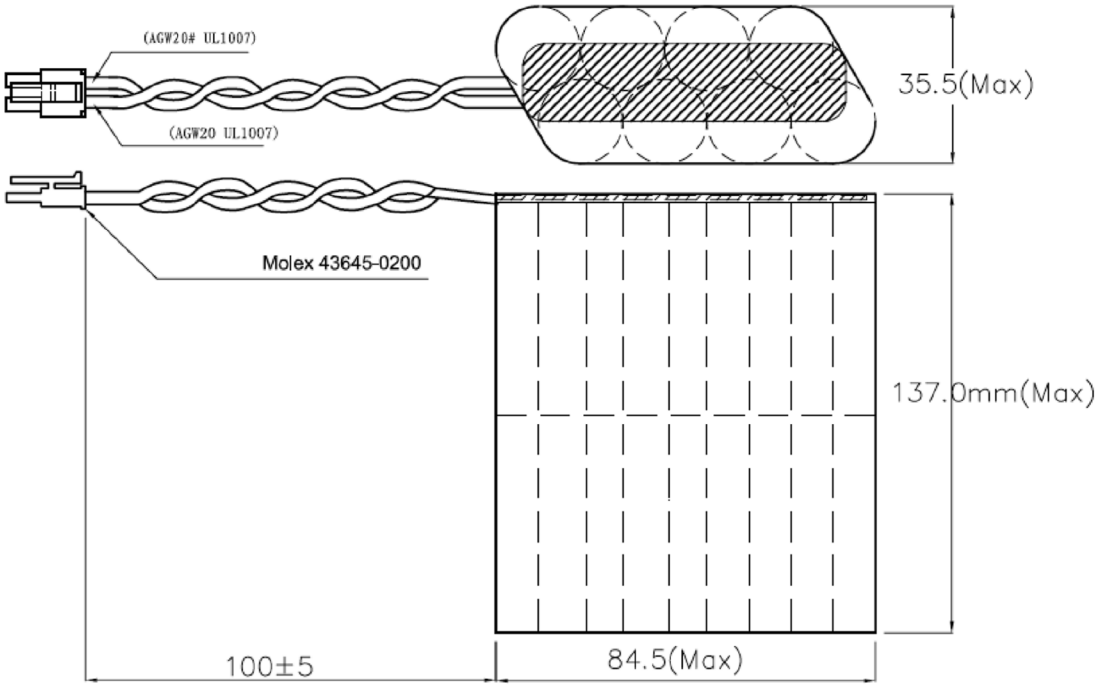
9.3、Principle Drawing



9.4、Board Connection

Name	I/O	Description
B+	Power	Connect to positive terminal of cell
B-	Power	Connect to negative terminal of cell
P+	Power	DC input power for charging battery or DC output power for discharging battery
P-	Power	DC input power ground

10. Dimension Drawing



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11. Caution In Use

To ensure proper use of the battery please read the manual carefully before using it.

. **Handling**

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different make, type, or model batteries.
- Keep out of the reach of children.

. Charge and discharge

- Battery must be charged in appropriate charger only.
- Never use a modified or damaged charger.
- Do not leave battery in charger over 24 hours.

. Storage

- Store the battery in a cool, dry and well-ventilated area.

. **Disposal**

- Regulations vary for different countries. Dispose of in accordance with local regulations.

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