Battery Specification Confirmation Sheet

Of

Amperex Technology Limited

Ningde Amperex Technology Limited

Dongguan Amperex Technology Limited

(each and collectively, "ATL")

ATL 电池产品规格书

ATL Product Part Number/ATL产品代码：GB-S02-20A6E5-010L

Pack Configuration/电池结构：1 Series 2Parallel (1S2P)

Prepared by TPM	Approved by TPM	Approved by CPD	Approved by QA
WW Yin	Orang Wang	Shixi Yu	Zhou Peng

Customer Confirmation	**Authorized Signatory**		**Date**
	Signature	**Print Name**	
	Company Name Of Customer: HDK		
	Company Stamp Of Customer:		

Confidential : ( ) Level 3 Private confidential ( ) Level 2 High confidential (V) Level 1 Low confidential

AMENDMENT RECORDS/变更记录

Revision/版本	Description/描述	Originator/制作者	Date/日期
Draft1	New Release /初版	Yin WW	2025/01/08
Draft2	Update 6.1 Battery Drawing/电池图纸 Update 7 Terminal Specification/引脚定义 Update 8.1 Circuit diagram/电路图 Update 8.3 PCM Part List/保护板清单 Update8.4 PCM Parameter/保护板参数(25℃)	Yin WW	2025/01/23
Draft3	Update 6.1 Battery Drawing/电池图纸 Update 6.2 Battery Barcode Drawing/电池喷码图纸 Update 6.4 Disassembly Drawing for Pack/电池拆分图	Yin WW	2025/02/13
Draft4	Update 6.1 Battery Drawing/电池图纸	Yin WW	2025/02/18
Draft5	Update 8.2 PCM and FPC Layout/保护板和FPC布局 Update 8.3 PCM Part List/保护板清单	Yin WW	2025/03/19

Content/目录

SECTION/部分 Page/页码

1 Scope/适用范围:

The purpose of this Document ("Document") is to specify the specifications of the Lithium-ion Polymer ("LIP") rechargeable battery with ATL Part Number GB-S02-20A6E5-010L ("Product" or "Pack") to be supplied by ATL to Customer under Customer's purchase order and ATL's confirmation relevant to the Product. For the avoidance of doubt, the specifications specified herein do not apply to any Host Device, apparatus, instrument, equipment or hardware device containing Product or Cell ("Host Device").

本产品规格书描述了 ATL 依据客户采购订单生产的可充电聚合物锂离子("LIP")电池的产品性能指标，ATL 产品代码号 **GB-S02-20A6E5-010L** ("产品" 或 "电池")。为避免疑问，本产品规格书不适用于任何包含该产品或电芯的主机设备、仪器、仪表、器件、硬件设备等 ("主机")。

2 Model Name/型号:

2.1 ATL Cell Model Name: 20A6E5

2.2 NVT PRJ Name: HUQTPU2

2.3 HDK PN: TBD

2.4 HDK Battery Model Name: HQ-7636NA

HDK	classification attribute/ 分类属性	Type/ 类型	battery model /电池型号	minimum capacity/ 最小容量	typical capacity/ 典型容量	Limited charge voltage/ 充电限制电压	Cell type/电芯型号	manufacturer/ 制造商	specifications and models/ 规格型号
AX7636A	battery/电池	Li-ion battery/ 锂离子电池	HQ-7636NA	10000	10160	4.48V	20A6E5	ATL	GB-S02-20A6E5-010L

3 Standard Environmental Test Conditions/标准环境测试条件:

3.1 Unless otherwise specified, all tests stated in this Product Specification are conducted at below conditions:

除非特别指定，本产品规格书所有的测试遵循如下条件:

Temperature/温度: 23 ± 2°C ("Temperature Condition" /温度条件)

Humidity/湿度: 65 ± 20% RH ("Humidity Condition" /湿度条件)

3.2 Throughout this Document, numeric criteria annotated by "*" means such criteria are only applicable to fresh unused Product within 30 days from manufacture by ATL. Products either have been used or stored for a period longer than 30 days by Customer and/or its customer may exhibit an inferior numeric parameter than such criteria. Customer agrees that such occurrence does not constitute nonconformance of specification.

本产品规格书中，所有标有"*"的项目是指仅适用于"未使用的且从ATL制造日起30天内的产品"。如果产品已被客户使用或存储时间超过30天，可能表现出低于标准规格，客户同意并接受产品不构成不符合规格。

4 Detailed Specifications/详细规格:

The specifications listed in this Section 4 shall be the detailed specifications for the Product ("**Detailed Specifications**").

列在第 4 部分的规格作为产品的详细规格。

No.	Items/项目	Specifications/规格	Remark/备注
4.1	*Minimum Capacity (C_{min}) / Rated Capacity 额定容量	10000mAh /38.90Wh	Standard capacity measure method: 0.2Cmin CC (constant current) charge to (4.48*1Series)V, then CV (constant voltage

4.2	Nominal Capacity / 典型容量	10160mAh/39.53Wh	(4.48*1Series)V) charge till charge current decline to 0.02Cmin, then with 0.2Cmin CC (constant current) discharge to (3.0*1Series)V cut-off. 标准容量测试方法：先用0.2Cmin恒流充电至(4.48*1Series)V，再恒压充电直至充电电流≤0.02Cmin，然后用0.2Cmin 恒流放电至(3.0*1Series)V
4.3	* Nominal Voltage / 标称电压	(3.89*1Series)V	
4.4	Limited Charging Voltage / 充电限制电压	(4.48*1Series)V	
4.5	End of Discharge Voltage /放电终止电压	(3.0*1Series)V for capacity measure	Stop discharge when one cell reaches (3.0*1Series)V 任一颗电芯放电到(3.0*1Series)V后停止放电
4.6	Charge/Discharge 充电/放电	Cell Surface Temperature 电芯表面温度	Charge Current and Voltage 充电电流和电压
	Charge/充电	0~15 ℃	0.2Cmin CC to 4.48V, then CV to 0.05Cmin / 0.2Cmin充电到4.48V，然后CV到0.05Cmin
		15~45 ℃	6A CC to 4.48V, then CV to 0.05Cmin / 6A充电到4.48V，然后CV到0.05Cmin
		45~60 ℃	6A Max to 4.2V, then CV to 0.05Cmin / 6A充电到4.2V，然后CV到0.05Cmin
	Discharge/放电	-20°C to 0°C	0.35Cmin Max to 3.0V / 0.35Cmin Max放电至3.0V
		0°C to 60°C	5A Max to 3.0V / 5A Max放电至3.0V
4.7	Storage Condition/ 存贮条件	Temperature/温度: within 3 months/3个月内 -20°C ~ + 45°C; over three months/超过3个月 25±3°C； Humidity/湿度: ≤75%RH	The battery voltage should be kept in the range of (3.7*1Series)V to (4.0*1Series)V by charging batteries if batteries are stored more than 3 month/电池存储超过 3 个月长期存储电压维持在(3.7*1Series)V to (4.0*1Series) V
4.8	*Initial resistance 初始内阻	TBD mΩ Max	Internal resistance measured at AC 1KHz after charge to shipment voltage. 充电到出货电压后，测量其 AC 1KHz 下的交流阻抗
4.9	*Pack Voltage(as of shipment)	3.90V~4.05V	NO air transport (非空运)

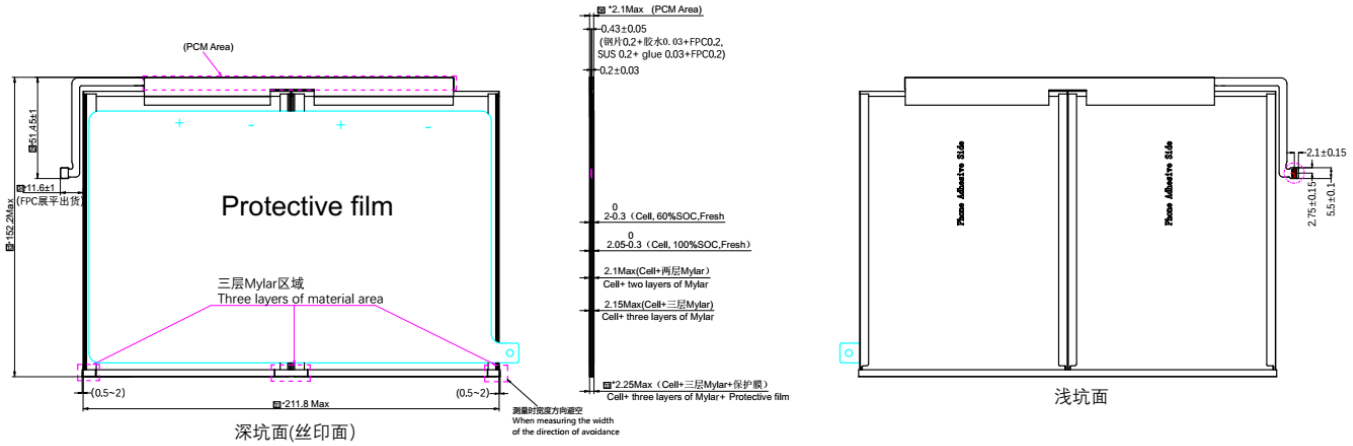
	电池电压（出货状态）	NA	Air transport (IATA require shipping SOC<=30%)/空运（IATA 要求出货 SOC <=30%)
4.10	Pre-charge current 预充电流	0~1.2V Prohibit charging 1.2~3V Pre-charge current:0.1Cmin max (Scheme1 Pack only support charging above 1.5V)/ 0~1.2V 禁止充电 1.2~3V 预充电流：最大 0.1Cmin (电池仅在 1.5V 以上支持充电)	The voltage corresponding to the precharge current is the B+/B- terminal voltage of the cell rather than the P+/P- terminal voltage of the battery/ 预充电电流对应的电压是电芯 B+/B-端电压而非电池 P+/P-端电压
4.11	Battery weight 电池重量	TBD g	Only for reference/仅供参考
4.12	*RT Cycle life/常温循环寿命（25°C±3°C）	Charge battery with current: 1~100cls: 6A CC to 4.48V,CV to 0.05Cmin(0.5A) 101~200cls: 6A CC to 4.44V,CV to 0.05Cmin(0.5A) 201~1000cls: 6A CC to 4.40V,CV to 0.05Cmin(0.5A) Discharge battery with current: 5A discharge to 3.0V Record remained capacity of 500th and 1000th cycle. 使用以下电流对电池充电： 1~100 循环： 6A 恒流到 4.48V，恒压到 0.05Cmin(0.5A) 101~200 循环： 6A 恒流到 4.44V，恒压到 0.05Cmin(0.5A) 201~1000 循环： 6A 恒流到 4.40V，恒压到 0.05Cmin(0.5A) 使用以下电流对电池放电： 5A 放电到 3.0V 记录第 500 循环和 1000 循环的剩余容量；	≥83% of Cmin at 500th cycle ≥80% of Cmin at 1000th cycle

5 Warranty period/保质期：

The warranty period of Battery is 12Months after the manufacture date. /电池保质期为从生产日期算起12个月。

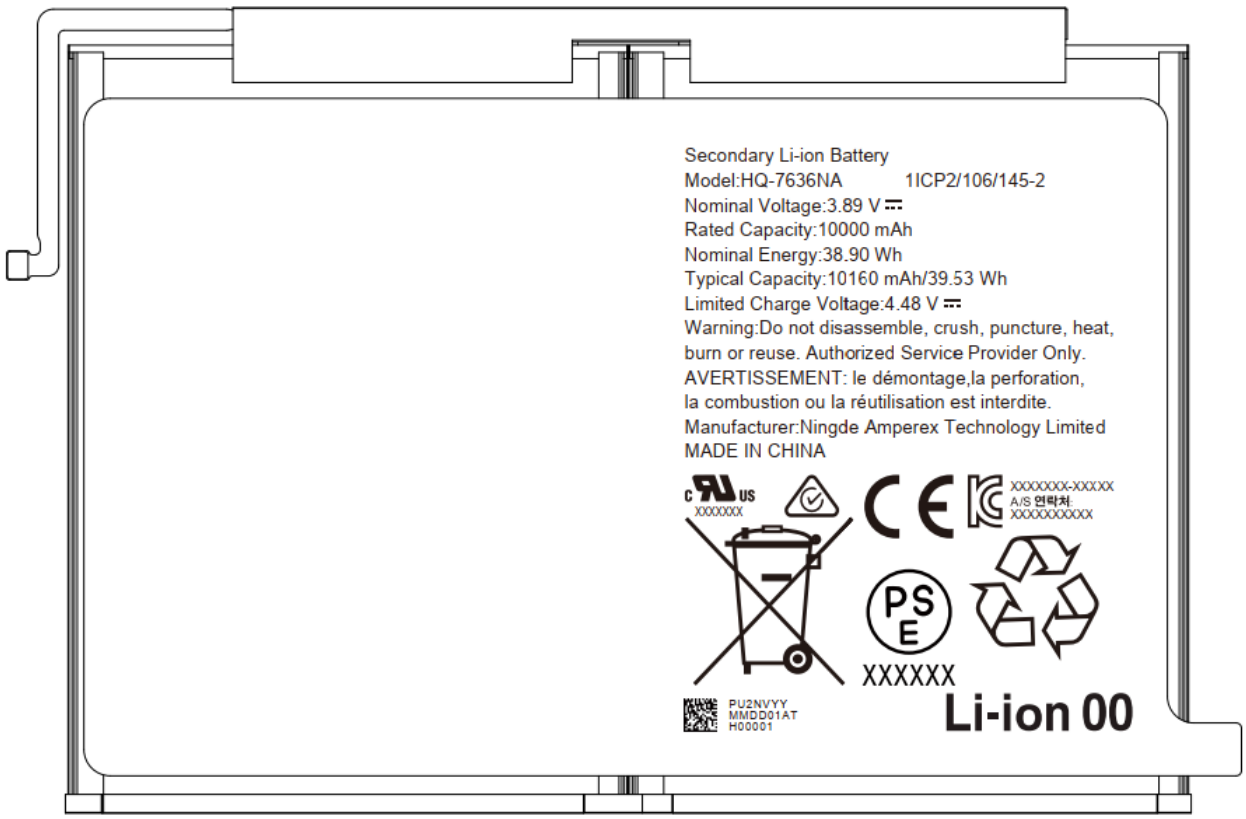
6 Assembly Drawing (all unit is mm, not in scale) /电池图纸（单位：mm）

6.1 Battery Drawing/电池图纸



技术要求:
Technical Requirements:
1.环保要求：欧盟RoHS+REACH+HF+电池指令+WEEE法规指令;
Environment requirements:RoHS+REACH+HF+Battery Directive+WEEE;
2.带"*"尺寸为重点管控尺寸;
The dimensions marked with "*" are key dimensions;
3.未注尺寸公差为±0.2mm; 带（）尺寸为参考尺寸;
The tolerance without any marks is ±0.2mm;
The dimensions marked with () are reference dimensions;
4.长宽厚尺寸使用PPG进行测量：长度和宽度300±50gf，厚度1400±50gf（或长度和宽度使用go-no-go治具进行检测）；
The length, width and thickness are measured by PPG: length and width 300±50gf and thickness 1400±50gf. (Or the length and width are tested using a go-no-go fixture）；
5.连接器&FPC满足:可手工将其矫正到基准位置,且矫正不会带来结构和电气性能损伤,
连接器的位置要求go-no-go治具100%检测.
Connector &FPC: it can be corrected manually to the reference position without structural and electrical damage. The position of the connector requires 100% inspection of the go-no-go fixture.
6.FPC覆铜要求使用无胶压延铜或无胶电解铜,FPC能够经受至少30 cycles弯折,弯折半径不大于R0.5mm。(正向、反向各弯折180度算1cycle),弯折判定标准为大铜皮内阻变化量≤15%，信号线不断线。
FPC copper cladding requirement:using glueless calendered copper or glueless electrolytic copper The FPC can withstand bending for at least 30 cycles with a bending radius of no more than r0.5mm .(180 ° for each forward and reverse bending is 1cycle), the bending criterion is that the change in internal resistance is less than 15%, and the signal line is not broken.
7.丝印、外观要求:丝印颜色一致,字体清晰无脏污,电池无刮伤等外观不良.
Screen printing, appearance requirements: printing the same color, the font clear dirt, batteries, no scratch etc. Bad appearance.
8.电池正面要求能够承受0.2MP压力(压板及垫板都为平整面),保持一分钟。
Batteries required to withstand 0.2 MP positive pressure (pressure plate and the plate is flat and level surface), maintain a minute.
9. 达因值要求:达因笔（Arcotest）32Dyne，在电芯表面划两条20mm的线，判定标准4s内凝聚面积＜20%即合格。
Dyne value requirements:Dyne Pen （Arcotest）32Dyne, Draw two 20mm lines on the cell surface,requirment:4 seconds condensation area ＜20%.
10.电芯铝塑膜铝层与整机P-导通会发生电腐蚀问题，主机端与电芯铝塑膜之间需要做好绝缘保护
Electrical corrosion can occur after the battery cell aluminum foil contact with P- SET.Therefore,insulation protection is required between SET and battery aluminum foil.

6.2 Battery Barcode Drawing/电池喷码图纸



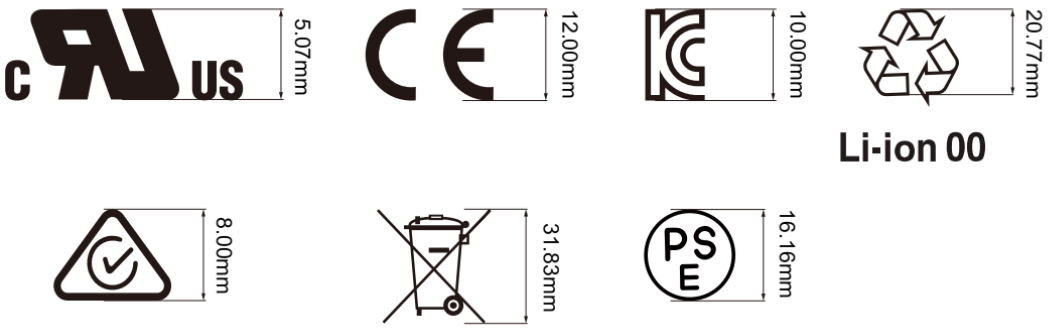
PU2NVYY
MMDD01AT
H00001

Spray printing area or pad printing area / 喷印或移印区域（实线本身不印刷）

Inkjet printing area / 喷码区域（实线本身不印刷）

二维码采用DM码6.0*6.0±0.5;可读等级>C级
Two dimension code size :6.0*6.0±0.5mm;
The scan level of DM code is C or above;
明码二维码规则如下:
Plain code two dimension code definition
第1~3位:PU2，为NVT项目代码，固定不变
1~3 bit:PU2,item number in NVT
第4~5位:NV，为PACK厂商简称，表示NVT;
4~5 bit:NV,battery supplier code("NV" stands for "NVT")
第6~7位:YY，为生产年份，用年份最后两位数表示，如22表示2022年
6~7 bit:YY,production year,for example:"22" stands for "2022"
第8~9位:MM，为生产月份，用数字表示，如07表示7月份;
8~9 bit:MM,production month
第10~11位:DD，为生产日期，用数字表示，如07表示07日;
10~11 bit:DD,production day.
第12~13位:01，拉线代码，用数字表示。(01、02、03...99，拉线由PMC定义)
12~13 bit:01,ine number.(01、02、03....99 ,Defined by PMc)
第14-15位:AT，为电芯厂商简称，表示ATL;
14~15 bit:AT,Cell supplier,("AT" stands for "ATL").
第16位:H，固定不变(H表示60%SOC电量)
16 bit: H, Fixed code (H is 60% SOC)
第17~21位:00001，为流水码，十进制。
17~21 bit:00001,serial number,decimalism
(备注:DM码与明码距离为2.5±0.5mm)
(Note: The distance between DM code and plain code is 2.5±0.5mm)

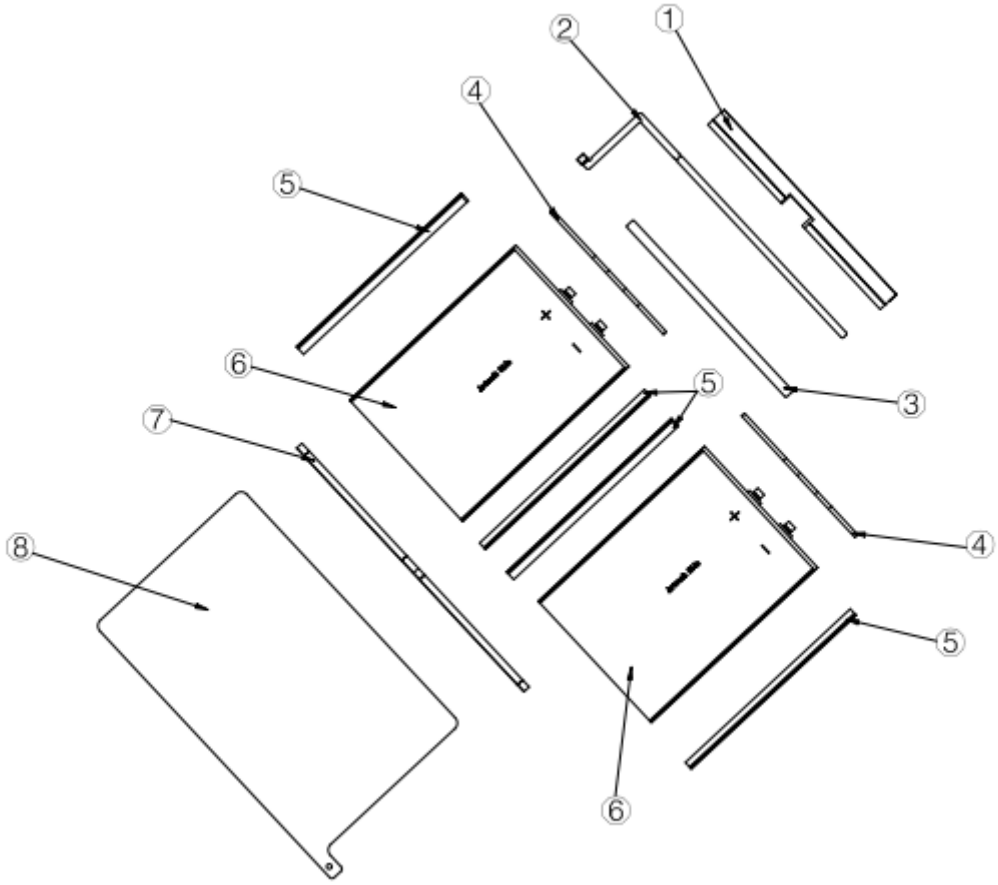
暗码二维码规则如下
Secret code two dimension code definition ;
第1~11位:XXXXXXXXXXX，取客户料号后11位数字，固定;(客户料号:HQXXXXXXXXXXX)，
1~11 bit: XXXXXXXXXXX,take the customer material number after 1l digits, fixed;
(Customer Part Number:HQXXXXXXXXXXX)
第12~14位:PU2，为NVT项目代码，固定不变;
12~14 bit:PU2 ,item number in NVT
第15~16位:NV，为PACK厂商简称，表示NVT;
15~16 bit:NV,battery supplier code("NV" stands for "NVT")
第17~18位:YY，为生产年份，用年份最后两位数表示，如22表示2022年
17~18 bit:YY,production year,for example:"22" stands for "2022"
第19~20位:MM，为生产月份，用数字表示，如07表示7月份;
19~20 bit:MM,production month
第21~22位:DD，为生产日期，用数字表示，如07表示07日;
21~22 bit:DD,production day.
第23~24位:01，拉线代码，用数字表示。(01、02、03...99，拉线由PMC定义)
23~24 bit:01,line number.(01、02、03....99 ,Defined by PMC)
第25~26位:AT，为电芯厂商简称，表示ATL;
25~26 bit:AT,Cell supplier,("AT" stands for "ATL").
第27位:H，固定不变(H表示60%SOC电量)
27 bit: H, Fixed code (H is 60% SOC)
第28~32位:00001，为流水码，十进制。
28~32 bit:00001,serial number,decimalism



6.3 Battery Photos/电池图片

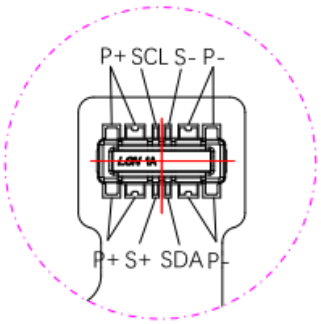
Actual battery sample front side photo/ 电池实物正面照片 TBD	Actual battery sample back side photo / 电池实物反面照片 TBD

6.4 Disassembly Drawing for Pack/电池拆分图



PARTS LIST						
Item	Part name	Specification	Fire rating	Amount	Unit	
1	Mylar-1 (麦拉-1)	PI,T=0.05 基材厚度0.025	V-0	1	PCS	
2	PCBA	T=1.0(PCB)	UL94V-0	1	PCS	
3	Nomex(杜邦纸)	T=0.1	NA	1	PCS	
4	Mylar-2 (麦拉-2)	PI,T=0.05 基材厚度0.0175	VTM-0	2	PCS	
5	Mylar-3 (麦拉-3)	PI,T=0.05 基材厚度0.0175	VTM-0	4	PCS	
6	Soft cell(软包电芯)	NA	NA	2	PCS	
7	Mylar-4 (麦拉-4)	PI,T=0.05 基材厚度0.0175	VTM-0	1	PCS	
8	Protective film (保护膜)	PET,T=0.15	NA	1	PCS	

7 Terminal Specification/引脚定义



连接器型号(connector)：乾德BAM04-08073-0414

连接器与FPC间X/Y方向的剪切力≥2.0kgf

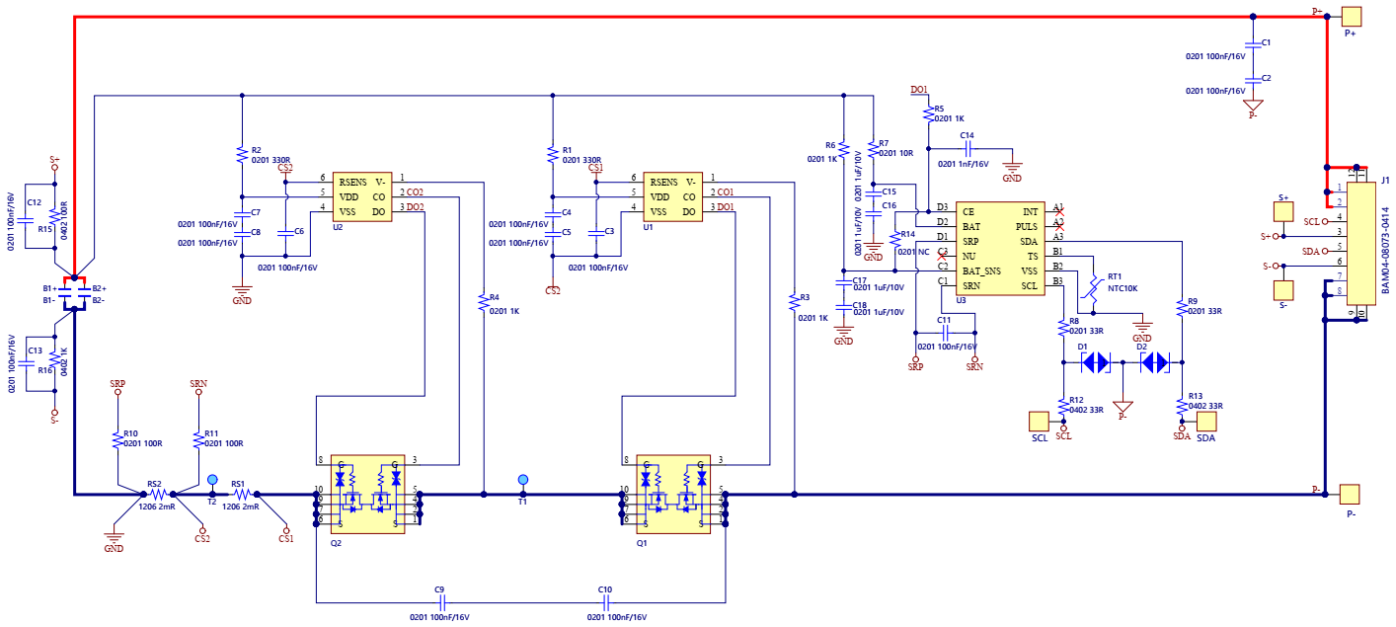
Shear force in X/Y direction between connector and FPC ≥2.0kgf

Detail A Scale 4:1

Name/名称	Function/功能	Remark/ 备注
P+	Battery positive terminal for charge & discharge 电池正极端，充放电用	Pack+
P-	Battery negative terminal for charge & discharge 电池负极端，充放电用	Pack-
SDA	Battery communication data pin 电池 I2C 通讯 Data 引脚	
SCL	Battery communication clock pin 电池 I2C 通讯 Clock 引脚	
S+	Cell voltage positive 电芯电压采样正端	
S-	Cell voltage negative 电芯电压采样负端	

8 PCM Specifications/保护板规格

8.1 Circuit diagram/电路图

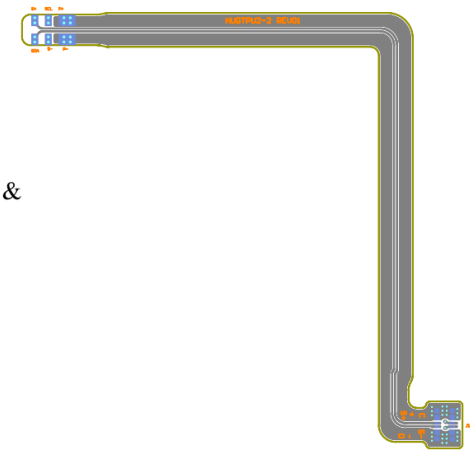


8.2 PCM and FPC Layout/保护板和FPC布局

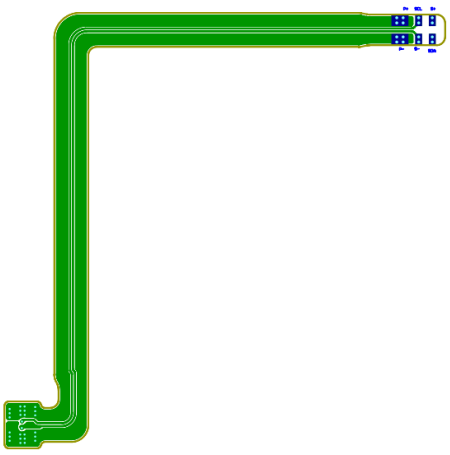
8.2.1 PCM Layout/保护板布局

8.2.2 FPC Layout/FPC布局

Top Overlay &
Top Paste



Bottom overlay &
Bottom Paste(mirror)



8.3 PCM Part List/保护板清单

No. 序号	Items/项目	Specifications/规格	QTY 数量	Remark/ 备注
1	PCB/PCB 空板	FR4,6-Layers,OSP, RoHS+REACH+HF	1	PCB
2	FPC/FPC 空板	PI,2-Layers,OSP, RoHS+REACH+HF	1	FPC
3	Protection IC	SMD;DFN1814-6C;RoHS+REACH+HF; Nisshinbo;R5612L127AL-TR	1	U1
		SMD;DFN1814-6C;RoHS+REACH+HF; Nisshinbo;R5612L128JG-TR	1	U2
4	Gauge IC	WLCSP-12;-40 to +85℃;RoHS+REACH+HF;Eastsoft;NFG1000A	1	U3
5	MOS	JSCJ;CSPC3015-10; RoHS+REACH+HF; CJ8208SP-A	1	Q1
		WLCSP 2.98mm×1.49mm×0.11mm-10L;RoHS+REACH+HF; Awinic;AW401005S	1	Q2
6	Resistor	1206;2mR;±1%;1W;Mn-Cu alloy;RoHS+REACH+HF; Walter;MSTC1206M1W0R002FLV	2	RS1,RS2
		1206;2mR;±1%;1W;Mn-Cu alloy;RoHS+REACH+HF; SART;SMB12A1FR002T01		
7	Resistor	0201;330R;±5%;1/20W;Thick film;GP+HF	2	R1,R2
8	Resistor	0201;1K;±5%;1/20W;Thick film;GP+HF	4	R3~R6
9	Resistor	0201;10R;±5%;1/20W;Thick film;RoHS+REACH+HF	1	R7
10	Resistor	0201;33R;±5%;1/20W;Thick film;RoHS+REACH+HF	2	R8,R9
11	Resistor	0201;100R;±5%;1/20W;Thick film;GP+HF	2	R10,R11
12	Resistor	0402;33R;±5%;1/16W;Thick film;RoHS+REACH+HF	2	R12,R13
13	Resistor	0402;100R;±5%;1/16W;Thick film;RoHS+REACH+HF	1	R15
14	Resistor	0402;1K;±5%;1/16W;Thick film;RoHS+REACH+HF	1	R16
15	Capacitance	0201;100nF;±10%;16V;X5R;GP+HF	13	C1~C13
16	Capacitance	0201;1nF;±10%;16V;X7R;RoHS+REACH+HF	1	C14
17	Capacitance	0201;1uF;±20%;10V;X5R;GP+HF	4	C15~C18
18	NTC	SMD;0402;10K;±1%;B(25/50℃)=3380K;±1%;RoHS+REACH+HF; TDK;NTCG103JF103F	1	RT1
		SMD;0402;10K;±1%;B(25/50℃)=3380K;±1%;GP+HF; Murata;NCP15XH103F03RC		
19	TVS	DFN0603-2L;5V;100W;RoHS+REACH+HF; Wayon;WE05DMS-BH_W033010168B	2	D1~D2
		DFNWB0.6×0.3-2L;5V;RoHS+REACH+HF; JSCJ;ESDBL5V0AE1-PL		
20	Connector	SMD;8Pin;RoHS+REACH+HF;Linkconn;BAM04-08073-0414	1	J1
21	Nickel plate_L	镍片;Ni;L shape;L1×L2×H×T=8×3×3×0.13mm;GP+HF;	4	B1+,B1-, B2+,B2-

8.4 PCM Parameter/保护板参数(25℃)

No.	Item/项目	Min./ 最小值	Typ./ 典型值	Max./ 最大值	Unit/单位
1	1st Over charge protection voltage 1st 过充保护电压	4.505	4.525	4.545	V
	2nd Over charge protection voltage 2nd 过充保护电压	4.535	4.550	4.565	V
2	1st Delay time for over charge protection 1st 过充保护延迟时间	0.768	1.024	1.331	S
	2nd Delay time for over charge protection 2nd 过充保护延迟时间	0.768	1.024	1.280	S
3	1st Release voltage for over-charge 1st 过充恢复电压	4.280	4.325	4.370	V
	2nd Release voltage for over-charge 2nd 过充恢复电压	4.305	4.350	4.395	V
4	1st Over discharge protection voltage 1st 过放保护电压	2.565	2.600	2.635	V
	2nd Over discharge protection voltage 2nd 过放保护电压	2.265	2.300	2.335	V
5	1st Delay time for over discharge protection 1st 过放保护延迟时间	48.0	64.0	83.2	mS
	2nd Delay time for over discharge protection 2nd 过放保护延迟时间	96.0	128.0	166.4	mS
6	1st Release voltage for over-discharge 1st 过放恢复电压	2.745	2.800	2.895	V
	2nd Release voltage for over-discharge 2nd 过放恢复电压	2.445	2.500	2.575	V
7	1st Over discharge current protection current1 1st 放电过流保护电流 1	6.37	7.25	8.00	A
	2nd Over discharge current protection current1 2nd 放电过流保护电流 1	6.37	7.25	8.00	A
8	1st Over discharge current protection current2 1st 放电过流保护电流 2	8.58	10.00	11.48	A
	2nd Over discharge current protection current2 2nd 放电过流保护电流 2	8.58	10.00	11.48	A
9	1st Over discharge current protection delay time1 1st 放电过流保护延迟时间 1	2688.0	3584.0	4838.4	ms
	2nd Over discharge current protection delay time1 2nd 放电过流保护延迟时间 1	2688.0	3584.0	4838.4	ms
10	1st Over discharge current protection delay time2 1st 放电过流保护延迟时间 2	11.2	16.0	22.4	ms
	2nd Over discharge current protection delay time2 2nd 放电过流保护延迟时间 2	22.4	32.0	44.8	ms
11	1st Over charge current protection current 1st 充电过流保护电流	9.07	10.00	10.97	A

	2nd Over charge current protection current 2nd 充电过流保护电流	9.07	10.00	10.97	A
12	1st Over charge current protection delay time 1st 充电过流保护延迟时间	11.90	17.00	23.80	ms
	2nd Over charge current protection delay time 2nd 充电过流保护延迟时间	23.10	33.00	43.40	ms
13	1st Short protection current 1st 短路保护电流	17.16	20.00	22.96	A
	2nd Short protection current 2nd 短路保护电流	17.16	20.00	22.96	A
14	1st Short protection delay time 1st 短路保护延迟时间	175	280	420	us
	2nd Short protection delay time 2nd 短路保护延迟时间	318	530	742	us
15	Operating Current consumption 工作消耗电流	/	60	80	uA
16	Current consumption (Sleep mode) 睡眠模式消耗电流	/	20	30	uA
17	0V Battery Charge Function (Inhibition) 0V 电池充电功能(禁止)	0.9	1.2	1.5	V
18	PCM breakover Impedance 保护板导通阻抗	/	/	TBD	mΩ
19	E.S.D. Susceptibility Test equipment/ 抗静电等级	±8			KV(Contact)
		±15			KV(Air)
20	Working Current 工作电流	Continuous Discharge: 5A Max			
		Continuous Charge: 6A Max			

Remark/备注: 1. IC 0V battery charge function is prohibit/IC 0V 充电功能为 0V 禁充
2.Battery can pass LPS /电池能过 LPS

9 Battery Packing requirement/电池包装要求:

9.1 Cell Packing method/电芯包装方式

TBD

9.2 Pack Packing method/电池包装方式

TBD

9.3 Package Drawing/包装示意图

TBD

10 Appendix Handling Precautions and Guidelines for LIP Rechargeable Batteries:

附录 聚合物锂离子充电电池操作指示及注意事项

Foreword/前言

These *Handling Precautions and Guidelines for LIP Rechargeable Batteries* shall apply to the Product.

本文件《聚合物锂离子充电电池操作指示及注意事项》仅适用于新能源科技有限公司生产的电池。

Statement (1):

Customer is requested to contact ATL in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

声明（1）：客户若需要将电池用于超出文件规定以外的设备，或在文件规定以外的使用条件下使用电池应事先联系 ATL，因为需要进行特定的实验测试以核实电芯在该使用条件下的性能及安全性。

Statement (2):

ATL will take no responsibility for any accident when the Product is used under other conditions than those described in this Document.

声明（2）：对于在超出文件规定以外的条件下使用电池而造成的任何意外事故，ATL 概不负责。

Statement (3):

Customer shall implement the requirements of this Document by setting up corresponding control measures and protection devices on charger, terminal Charger IC, etc. ATL will take no responsibility for any consequences arising from Customer's failure to implement the requirements of this Document.

声明（3）:客户应当在充电器、终端 Charger IC 等方面落实执行本产品规格书的要求，设置相应的控制措施和保护装置。对于客户未落实执行本产品规格书要求而产生的任何后果，ATL 将不予承担任何责任。

- Use specified charge/discharge conditions/使用指定的充放电条件。
- Specified product use only/仅用于指定产品。
- Do not immerse in water pour/禁止投入水中。
- Do not heat or throw in fire/禁止加热或投入火中。
- Do not attempt to crush or drop/禁止尝试挤压或跌落。
- Do not attempt to modify/禁止任何修改。
- Leave in cool places/存放在阴凉处。
- Do not put it in microwave oven, oven or pressure container/禁止放在微波炉，炉子或压力容器里。
- Do not use battery if not recover during conditions above/假如在上述条件下电池不能恢复请不要继续使用。
- During assembly, charging, normal use and storage of battery pack, such as change of color, mechanical are detected do not use/在组装，充电，正常使用和存储中，如有变色或机械损伤，请不要继续使用。
- In case of leakage or smells remove from thermal conditions, Also wash off with clean water/万一有漏液或气味，要从热源移除，并且用清水清洗干净。
- Do not place or leave the battery and equipment in the reach of infants so that they are not able to swallow or mistreat the battery by mistake. In case of ingestion, consult with a doctor immediately/请将电池放在幼儿不宜触碰的地方，以免吞食和误处理。万一发生请立即就医。
- Do not let leaked electrolyte come into contact with eyes or skin. In such a case, immediately wash the area of contact with clean water and seek help from a doctor. If not treated soon, prolonged contact may cause serious injury/漏出的电解液远离眼睛和皮肤，万一发生立即清洗干净或就医，假如不能立即处理，可能引起严重伤害。
- Do not put the battery into a fire. Do not use it or leave it in a place near fire, heaters, or high temperature sources. In such a case, the insulator in the battery may be melted, the safety vent and structure may be damaged, or the electrolyte may catch fire, all of which may cause heat generation, explosion, or fire/不要将电池丢入火中。不要在离火源，热源或高温源近的地方使用或放置。在这种情况下，电池中的绝缘保护可能融化，安全阀等结构可能会被毁坏，这样可能会过热，爆炸或起火。

- Do not submerge the battery in water, or wet the battery. If the protecting device assembled in the battery is damaged, the battery may be charged with an abnormal current and voltage and may cause a chemical reaction within the battery, which may result in the cause of heat generation, explosion, or fire of the battery/禁止浸泡或弄湿电池，如果电池保护装置被损坏，电池可能会被异常电流和电压充电从而引起电池内化学变化，导致过热，爆炸或起火。
- Do not use any battery charger not specified. Incorrect charging method and charging equipment, the battery will be damaged, which may cause firing, or other problems/禁止使用非指定充电器，错误的充电方法和充电设备，可能损坏电池，导致起火或其它安全问题.
- Do not use, charge, or leave the battery near fire or in a car under the blazing sun. Such a high temperature may cause damage of the protecting device in the battery, which may result in an abnormal reaction, and then heat generation, explosion, or fire/禁止离火源很近的位置或烈日下的车中放置，使用或给电池充电，这种高温环境下可能毁坏电池中的保护机构，从而引起异常反应，发热，爆炸和起火。
- Do not connect the battery reversed in positive (+) and negative (-) terminals in the charger or equipment. In the case the battery is connected in reverse, it is charged reversibly and may cause heat generation, explosion, or fire due to an abnormal chemical reaction/禁止反接电池正负极，在这种情况下，电池被异常充电可能会导致过热，爆炸或起火。
- Do not short terminals. Do not let the battery terminals (+ and -) contact a wire or any metal (like a metal necklace or a hairpin) with which it carried or stored together. In such a case, the battery is shorted and causes an excessive current, which may result in heat generation, explosion, or fire/禁止短接，禁止直接用导线或任何金属（比如金属项链或发卡）连接电池正负极。这种情况下，电池外短路引起过电流，有可能导致过热，爆炸或起火。
- Do not connect the battery directly to an electric outlet or cigarette heater socket in car. With a high voltage applied, the battery may overheat, explode, or cause fire/车上禁止直接连接到电源插座和点烟器上，因为高压下，电池可能会过热，爆炸，或起火.
- Do not throw or drop the battery. Strong impact may damage the protecting device, which may cause an abnormal chemical reaction during its charge and result in heat generation, explosion, or fire of the battery/禁止抛扔或跌落电池，强的重力冲击可能破坏保护机构，可能引起异常化学反应导致发热，爆炸或起火.
- Do not drive a nail in, hit with a hammer, or stamp on the battery. In such a case, the battery may be deformed and shorted, which may cause heat generation, explosion, or fire of the battery/禁止针刺，砸锤或邮戳电池，这种情况下，电池可能变形和短路，从而导致过热，爆炸，起火.
- Do not solder the battery directly. Heat applied during soldering may damage the insulator of the safety vent and mechanism, which may result in heat generation, explosion, or fire of the battery/禁止锡焊电池，可能破坏安全阀，以及机构的绝缘保护措施，导致过热，爆炸，起火。
- Do not disassemble or alter the battery. The battery employs a safety mechanism and a protecting device in order to avoid any danger. If these are damaged, heat, explosion or fire may be caused/禁止拆解或更换电池，电池安置了安全机构和保护机构避免安全隐患，假如损坏，可能导致过热，爆炸或起火。
- Do not put the battery in a microwave oven or a pressure cooker. Sudden heat may damage the seal of the battery and may cause heat generation, explosion, or fire of the battery/禁止将电池放在微波炉或压力锅内，极速的热可能导致过热，爆炸或起火。
- Do not leave the battery in a charger or equipment if it generates an odor and/or heat, changes color and / or shape, leaks electrolyte, or causes any other abnormality. In such a case, immediately take the battery out of the charge or equipment and keep it away from fire, otherwise, the battery might overheat, explode, or cause fire/如果电池已经发出气味或发热，颜色和/或外形有变化，电解液露出或任何不正常的现象，请不要再将电池放到充电器或设备里。这种情况下，应立刻将电池从充电器或设备中取出并远离火源，否则电池可能过热，爆炸或起火。
- Discontinue charging after specified charging time even if the charge is not complete, otherwise, the battery might cause heat generation, explosion, or fire/规定时间内不能完成充电不要继续充电，否则可能导致过热，爆炸或起火。
- Do not use the battery in the place where the static electricity (more than the limit of the manufacturer's guarantee) occurs. Otherwise, the protecting device in the battery might be damaged and cause heat generation, explosion, or

fire/禁止将电池搁置在超出制造商定义的静电区，否则保护机构可能损坏导致过热，爆炸或起火。

- Do not use the battery in other than the conditions specified; otherwise, the battery might cause heat generation, damage, or deterioration of its performance/禁止在超出规定条件下使用电池，否则可能导致过热，损坏，恶化电池电性能。
- Read the instructions of your equipment regarding the battery installation and removal from the equipment so as not to mishandle and waste the battery/阅读设备和电池关于安装和拆卸指导书，避免误操作导致浪费。
- In case young children use the battery, instruct them on the contents of the instructions and ensure the battery is correctly used by them at all times/如果小孩使用电池，务必指导他们正确操作，确保电池正确使用。
- The battery was manufactured and inspected carefully before shipment to conform with the specification. However, in the case any abnormality of bad smell or heat, etc. arises after purchase, bring the battery back to the retail shop where you bought it/电池制造和出厂前检查是满足本规格的，万一购买后发现像气味，热等任何异常，去购买处退回处理。
- The battery was charged a little before shipment for temporary use by an end user. In case your equipment does not operate with the battery or in the case of a long use, charge the battery with a specified charger once/出厂前电池充了一点电，购买后使用不能工作或使用一段时间后，需要规定的充电器充电。
- Do not charge the battery over the specified time described in the instructions, otherwise, the battery performance might deteriorate/禁止用超出规格书规定的充电时间，否则可能恶化电池电性能。
- Turn off your equipment power switch after use, otherwise, the performance of the battery might deteriorate/设备使用后请关掉电源，否则可能恶化电池电性能。
- The battery after long storage might not be sufficiently charged for use/电池长期存储不用可能导致电量不足。
- Prolonged standing or storage, PACK must be stored after removal from the host (disconnect the electrical properties of contacts); PACK need to conduct a test at least once in half of year. If necessary, the PACK needs to supplement electricity. PACK shall be kept for at least 40% capacity after a path to storage.
- 长时间搁置或储存，电池必须从主机上拆卸下储存（断开电子器件的接触）；电池至少在半年需要进行测试一次，如有必要，电池需要补充电力，保持至少 40%的容量。
- If the PACK cannot removed from the host , the PACK need to be set to the lowest power consumption mode before the storage, and arrangements the PACK supplementary charge regularly and performance testing according the Consumption rate (recommendation: supplementary charge to 60 - 70% every two months), adjustment depending on the system actual storage conditions and power consumption. With Smart-Gauge products, it is strongly recommended to set Shipping Mode of the PACK after storage.
- 如果电池无法从主机上拆卸，电池需要被设置为最低功耗模式存储，并安排定期补充电和性能测试，根据自耗电率（建议：每 2 个月补充电至 60-70%），根据系统的实际存储条件和耗电调整。带有智能电量计的产品，强烈建议储存设置为电池出货模式。
- In the case the battery terminals are dirty, clean the terminals with a dry cloth before use, otherwise, the contact with equipment might cause insufficiency, and power failure or charge failure/万一电池金手指脏污，请清洁干净后使用，否则连接设备后可能引起一些异常，甚至可能导致电源或充电失效。
- Despite being rechargeable, the battery has a limited life span, Replace when usage time between charges becomes short/尽管可充电，电池有极限使用寿命，当满充后使用时间明显变短需要更换电池.
- Keep the handling instructions and your equipment instructions in a suitable place for future reference/确保操作指导书和设备指导书在合适的位置为进一步参考。

11 Disclaimer/免责声明

11.1 The Customer hereby agrees that it has carefully read and understand any and all terms and conditions, safety precautions and measures set forth in this Document, furthermore, the Customer agrees to bear full responsibilities of these risks and responsible for any accidents, injury to persons, or property damage that may occur, Customer further agrees to waive claiming any liability against ATL.

客户在此确认并同意，其已认真阅读并理解本产品规格书中所阐明的条款、所有安全规范及措施，并且将完全地对可能因此产生的任何意外事故、人身伤害及财产损失等风险承担责任而不会向 ATL 主张任何责任。

11.2 The Product is produced and supplied to Customer with B2B nature, and is not for direct consumer use. Customer should verify the fitness for a particular purpose of such Product described hereof under certain application. Except as provided in the Specifications, ATL makes no representation or warranty of any kind, whether express or implied, including with respect to any warranty as to merchantability, compatibility, fitness for use or for any particular purpose. The parameters provided in this Document may vary in different applications and performance may vary from time to time. All operating parameters, including typical parameters, must be validated for each customer application by the Customer's technical experts.

本产品是基于企业对企业(B2B)的交易模式所向客户制造及供应，非供终端消费者之直接使用。客户应当验证本规格书定义的产品在客户特定终端（或应用）满足特定用途的适用性。 除规格书中有明确规定的情况外，ATL 不作任何明示或暗示的陈述或保证，包括关于适销性、兼容性、适用性或任何特定目的的任何保证。本产品规格书中提供的参数在不同的应用中可能会有所不同，并且性能可能随时间而变化。客户的技术专家必须就每次应用对所有操作参数（包括典型参数）进行验证。

11.3 The parties agree that ATL shall have no liability or obligation with respect to any infringement, claim or action which is based upon:

双方同意对于下列的侵权、索赔或诉讼，ATL 无须承担任何责任：

11.3.1 ATL's incorporation or use of materials, designs, technology or intellectual property designed, designated or instructed by Customer, its affiliates, contract manufacturers, customer, or end user into the products;

ATL 在其产品上结合或使用客户、客户之关联方、分包方、客户或终端用户的设计、指定或指示的材料、设计、技术或知识产权；

11.3.2 the combination, assembly, operation, or use of the products with materials, devices, parts, or software not supplied by ATL;

客户将 ATL 的产品与非 ATL 提供的材料、设备、组件或软件进行结合、组装使用/运行；

11.3.3 modifications, disassembly, repair, and rework to the products made by Customer or any third party without the prior written consent of ATL;

未经 ATL 授权(包括甲方或其他第三人)而对 ATL 的产品进行的修改、拆解、维修或重工；

11.3.4 ATL's modification of the products in compliance with the design, specification, requirements, or instructions of Customer;

ATL 依照客户的设计、规格、要求或指示而对其产品进行的修改；

11.3.5 the claim or action arising from non-compliance with the requirements for use, storage, delivery, assembly, and disposal of the products designated by ATL;

客户或任何第三方未依据 ATL 指定的产品使用方式对 ATL 的产品进行使用或未按照 ATL 指定的标准对产品进行安置、贮存、运输、组装或处理而导致的任何侵权或索赔事项；

11.3.6 use of the products outside the scope of intended use under this Document; or

客户或任何第三方未依据本产品规格书中约定的使用范围对 ATL 的产品进行使用；或

11.3.7 any defect that may exist before ATL's product enters the market or any defect that is unable to be detected by the existing technology at the time ATL's product enters market.

ATL 未投入流通的产品或 ATL 产品在投入流通时引起损害发生的缺陷尚不存在或投入流通时的技术水平尚不能发现缺陷的存在的。

11.4 ATL shall have no liability or obligation with respect to any Products which have been subjected to abuse, misuse, improper use, negligence, accident, alternation, repair or rework performed by any unauthorized persons or entities other than ATL.

对于任何未经授权的个人或非 ATL 实体滥用，滥用，不当使用，疏忽，意外，改动，修理或返工的产品，ATL 概不承担任何责任或义务。

11.5 Neither party shall be liable for any indirect, special, incidental, punitive or consequential damages of any kind (including lost profits), regardless of the form of action, whether in contract, tort (including negligence), strict liability or otherwise, even if informed of the possibility of such damages in advance.

即便对方已提前通知一方下述损失发生的可能性，双方同意并确认，任何一方均不对任何间接的、特别的、附带的、惩罚性的或结果性的损失（包括可得利益损失）承担赔偿责任，无论是基于任何诉讼方式、无论是基于合同或侵权之债（包含过失侵权行为）、无论是否基于严格责任。

11.6 The maximum overall liability of each party, alone or in the aggregate with respect to all claims of any kind, if any, whether in contract, tort (including negligence), strict or product liability, damages, reimburse, indemnification or otherwise, shall not exceed two times of the goods price allocable to the specific Product upon which the claim is directly based.

任一方所应承担的全部责任，无论是基于合同、侵权（包括过失）、严格责任或产品责任、损害、补偿、赔偿或其他任何原因，单次及累计金额应不超过引发该索赔的特定产品的货款的两倍。

12 Miscellaneous/其他

12.1 For civil use only, and shall not be used for weapon or military purpose.

本产品仅供民用，不得用于武器或者军事目的。

12.2 In the event of any conflict, ambiguity or discrepancy between the Chinese version and English version of this Document, both parties agree that the Chinese version of this Document shall prevail.

本产品规格书之中文文本与英文文本如有任何矛盾，歧义或者不一致之处，双方同意应以中文文本优先适用。

13 Certified list of cell and batteries/电芯和电池的认证清单

13.1 Certified list of cell/电芯认证请单

国家/地区	认证项目

13.2 Certified list of batteries /电池认证请单

国家/地区	认证项目