



PRODUCT SPECIFICATION

DOC NO.: PS-GB-27A299-03

REV. : A

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ECN NO. :

Battery Specification Confirmation Sheet

Of

Amperex Technology Limited**Dongguan NVT Technology Co., Ltd.****Dongguan Amperex Technology Limited****(each and collectively, “ATL”)**

电池产品规格书

Product Part Number/产品代码: GB-S10-27A299-030L/H**Customer: LEN, PN:SB18E53735****Model: L24D1P33****Pack Configuration/电池结构: 1Series 1parallel (1S1P)**

Prepared by TPM	Approved by TPM	Approved by CPD	Approved by QA
XXX	XXX	XXX	XXX

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

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

Form No.: QF-T-PS-01F

AMENDMENT RECORDS/变更记录

Revision/版本	Description/描述	Originator/制作者	Date/日期
A	New release/新发行		2024/09/05

Content/目录

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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 Part Number GB-S10-27A299-030L/H (“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 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，产品代码号 GB-S10-27A299-030L/H (“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: L24D1P33

MTO Model Name/MTO 型号: L24D1P33

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: $23 \pm 2^{\circ}\text{C}$ (“Temperature Condition” /温度条件)

Humidity/湿度: $65 \pm 20\% \text{ RH}$ (“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/ Rated Capacity 额定容量	5000mAh/19.55Wh	Standard capacity measure method: 1A CC (constant current) charge to 4.5V, then CV (constant voltage 4.5V) charge till charge current decline to 0.25A, then with 1A discharge to 3.0V cut-off 标准容量测试方法：先用1A恒流充电至 4.5V，再恒压充电直至充电电流 $\leq 0.25\text{A}$ ， 然后用1A放电至3.0V
4.2	Typical Capacity/ 典型容量	5100mAh/19.95Wh	
4.3	* Nominal Voltage/ 标称电压	3.91V	
4.4	Limited Charging Voltage/ 充电限制电压	4.5V	
4.5	End of Discharge Voltage/放电终止电压	3V	
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
		0~15 $^{\circ}\text{C}$	Method 1(Normal For MP):



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			方式一 (Normal用于量产): 1.5A CC to 4.5V, CV to 0.25A 1.5A 充电到4.5V, 然后CV到0.25A Method 2 (FFC For MP): 方式二 (FFC用于量产): 1.5A CC to 4.25V, CV to 1A, 1A CC to 4.52V,CV to 0.545A 1.5A 充电到4.25V, 然后CV到1A, 1A 充电到4.52V,然后CV到0.545A
		15°C~45°C	Method 1(Normal For MP): 方式一 (Normal用于量产): 6A CC to 4.25V,CV to 4.5A,4.5A CC to 4.5V,CV to 0.25A 6A 充电到4.25V, 然后CV到4.5A, 4.5A 充电到4.5V,然后CV到0.25A Method 2 (FFC For MP): 方式二 (FFC用于量产): 6A CC to 4.25V,CV to 4.5A, 4.5A CC to 4.52V,CV to 0.725A 6A 充电到4.25V, 然后CV到4.5A, 4.5A 充电到4.52V,然后CV到0.725A
		45°C ~50°C	2.5A CC to 4.25V, CV to 0.25A 2.5A 充电到 4.25V, 然后 CV 到 0.25A
	Discharge/放电	-20°C ~60°C	5A Max to 3.0 V 5A Max 放电到 3.0 V
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 3.6V to 3.95 V by charging batteries if batteries are stored more than 3 months/电池存储超过 3 个月需要给电池充电维持电压在 3.6V to 3.95V
4.8	*Initial resistance 初始内阻	70mΩ 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) 电池电压 (出货状态)	NA	Non air transport /非空运
		3.73~3.81V	Air transport (IATA require shipping SOC<=30%)/空运 (IATA 要求出货 SOC <=30%)
4.10	*RT Cycle life/常温循环寿命 (23°C±2°C)	Charge Cell with charge method specified in the Detailed Specifications, and discharge cell with 5A discharging current until battery voltage reaches 3.0V.	≥80% of Cmin

		Repeat to 1000cycles, record remained capacity of 1000th cycle.	
4.11	Pack Weight/电池重量	66.2g(ref)	For Reference 供参考

5 Warranty period/保质期:

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



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6.2 Battery Barcode Drawing/电池喷码图纸

Lenovo

型号/型號/Model/Model Baterai: L24D1P33
可充式锂离子电池组/可充式锂离子电池组 Rechargeable Li-ion Battery/Baterai isi ulang Li-ion
标称电压/標稱電壓/Nominal Voltage/Tegangan nominal: 3.91VDC
充电限制电压/Limited Charge Voltage/Batas tegangan pengisian: 4.5VDC
额定容量/額定電容量/Rated Capacity/Kapasitas baterai: 5000mAh
典型容量/Typical Capacity: 5100mAh 11CP3/102/99
额定能量/Nominal Energy: 19.55Wh 典型能量/Typical Energy: 19.95Wh

For use with Lenovo personal computer Perhatian: Lihat petunjuk penggunaan/Gunakan pengisi daya asli
警告: 禁止拆解、撞击、挤压或投入火中。若出现严重鼓胀, 请勿继续使用。请勿置于高温环境中。电池浸水后禁止使用!
Warning: Do not disassemble, puncture, crush, heat, or burn.
AVERTISSEMENT!
Pour réduire le risque d'incendie ou de brûlures, abstenez-vous de démonter, d'écraser, de perforez, de jeter dans l'eau ou dans le feu une batterie, ou encore de court-circuiter ses connecteurs externes.
中国制造/中國製造/Made in China/Buatan China 执行标准: GB 31241-2022
生产厂: 东莞新能德科技有限公司 MFR: Ningde Ampere Technology Limited

PS 3.91V 5.0Ah
レノボ・ジャパン 合同会社

ATL ICT

5

R3E316

TIS 2217-2548
Importer: Lenovo (Thailand) Limited

RECYCLE
RBR
1-800-822-8837
Li-ion

US & Canada Only

XXXXXXXX-XXXXX
모델명 L24D1P33
전지의 종류 리튬이온 2차전지
제조자명 Ningde Ampere Technology Limited
수입자명 한국레노버
제조국명 중국(China)
A/S 연락처 1670-0088

CE

廢電池請回收

Li-ion 00
使用後はリサイクルへ

Date : 20240109
8SSB18E53735CADG4190001



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二维条码规则说明如下 (QR Code, Size: 6x6±0.5mm) :



二维码明码规则 : (字体大小 : SIN07118)

第一行 : Date : 20240109

Date : -----固定值 ;

2024-----制造年份 ;

01-----制造月份 ;

09-----制造日期 ;

第二行 : 8SSB18E53735CADG4190001 (与暗码内容一致)

第1~2位 : 固定值 "8S"

第3~12位 : "SB18E53735" 产品料号 (10位物料
号为固定不变 ;)

第13位 : 电芯代码为C, 为固定值 ,

第14~16位 : 供应商代码为ADG,为固定值 , 表示新能源 ,

第17位 : 年份 (年份取最后一位数字)

第18位 : 月份 (1~9月按数字1到9表示 , 10月用A表示 , 11月用B表示 , 12月用C表示)

第19位 : 日期 (1~9日按数字1到9表示 , 10~31日按字母A.....Z表示 , I,O,Q,U除外)

第20~23位 : 四位生产流水号4位系列号 , 可以为数字或字母 , 可由我司自行定义 , 数字按16进制来安排。

二维码暗码规则 :

二维码扫描显示为 : 8SSB18E53735CADG4190001

第1~2位 : 固定值 "8S"

第3~12位 : "SB18E53735" 产品料号 (10位物料
号为固定不变 ;)

第13位 : 电芯代码为C, 为固定值 ,

第14~16位 : 供应商代码为ADG,为固定值 , 表示新能源 ,

第17位 : 年份 (年份取最后一位数字)

第18位 : 月份 (1~9月按数字1到9表示 , 10月用A表示 , 11月用B表示 , 12月用C表示)

第19位 : 日期 (1~9日按数字1到9表示 , 10~31日按字母A.....Z表示 , I,O,Q,U除外)

第20~23位 : 四位生产流水号4位系列号 , 可以为数字或字母 , 可由我司自行定义 , 数字按16进制来安排。



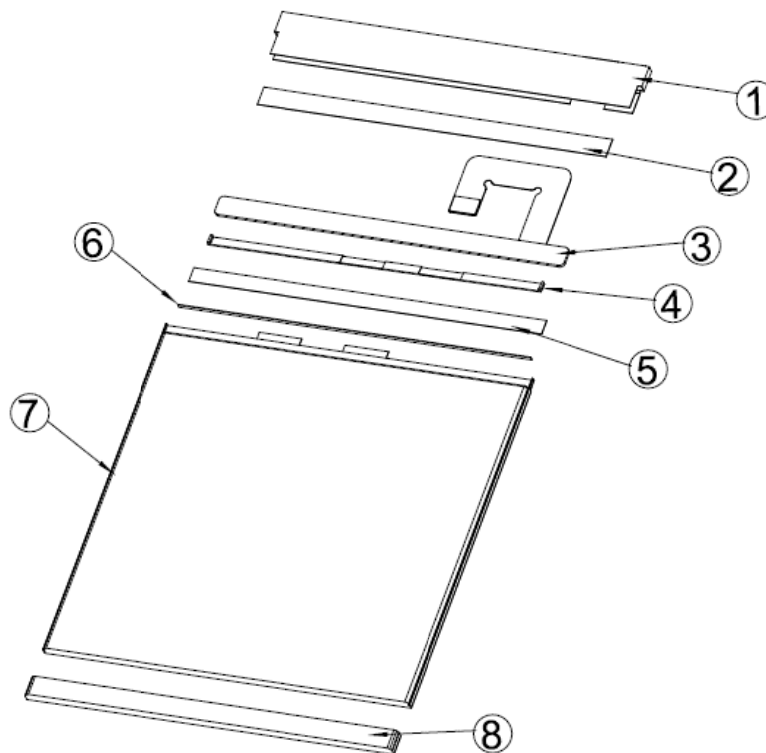
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6.4 Disassembly Drawing for Pack/电池拆分图



Item/项目	Specification/规格	Qty/数量	Remark/备注
Mylar-1	PI;Black;One side gum;VTM-0;RoHS+REACH+HF	1pcs	1
Mylar-2	PI;Black;One side gum;VTM-0;RoHS+REACH+HF	1pcs	2
PCBA	PCBA; Master board; RoHS+REACH+HF		3
Mylar-3	PI;Black;One side gum;VTM-0;RoHS+REACH+HF	1pcs	4
Nomex	T464;White;Double side gum;No fireproof;RoHS+REACH+HF	1pcs	5
Silicone	Silicone;Gray;60±5HA;One side gum;VTM-0 or V-0;RoHS+REACH+HF	1pcs	6
Cell	Soft-shell cell;Square;5010mAh;3.91V; ATL;27A299	1pcs	7
Mylar-4	PI;Black;One side gum;VTM-0;RoHS+REACH+HF	1pcs	8



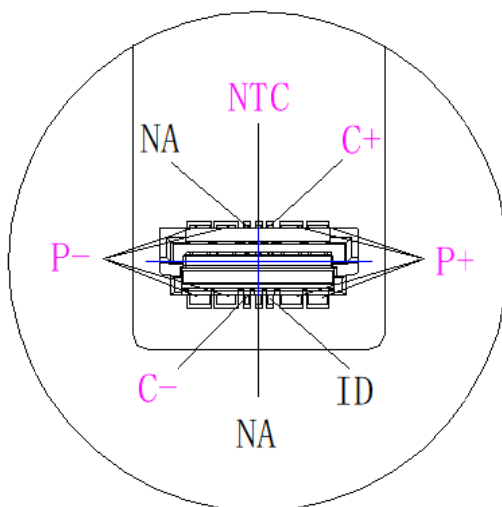
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7 Terminal Specification/引脚定义



Name/ 名称	Pin No./ 引脚编号	Function/功能	Remark/ 备注
P+		Battery positive terminal for charge & discharge/电池正端用于充电和放电	-
P-		Battery negative terminal for charge & discharge/电池负端用于充电和放电	-
C+		Battery positive sense terminal connect to B+ with a 10Ω resistor/正端侦测端，通过一个 10Ω电阻连接到 B+	
C-		Battery negative sense terminal connect to P- with a 10Ω resistor/负端侦测端，通过一个 10Ω电阻连接到 P-	
NTC		NTC terminal connect to P-(100K±1%,B=4250K±1%)/NTC 侦测端，连接到 P-	
ID		ID terminal connect to P-(100K±1.5%)/ID 侦测端，连接到 P-	
NA		No connection/无连接	



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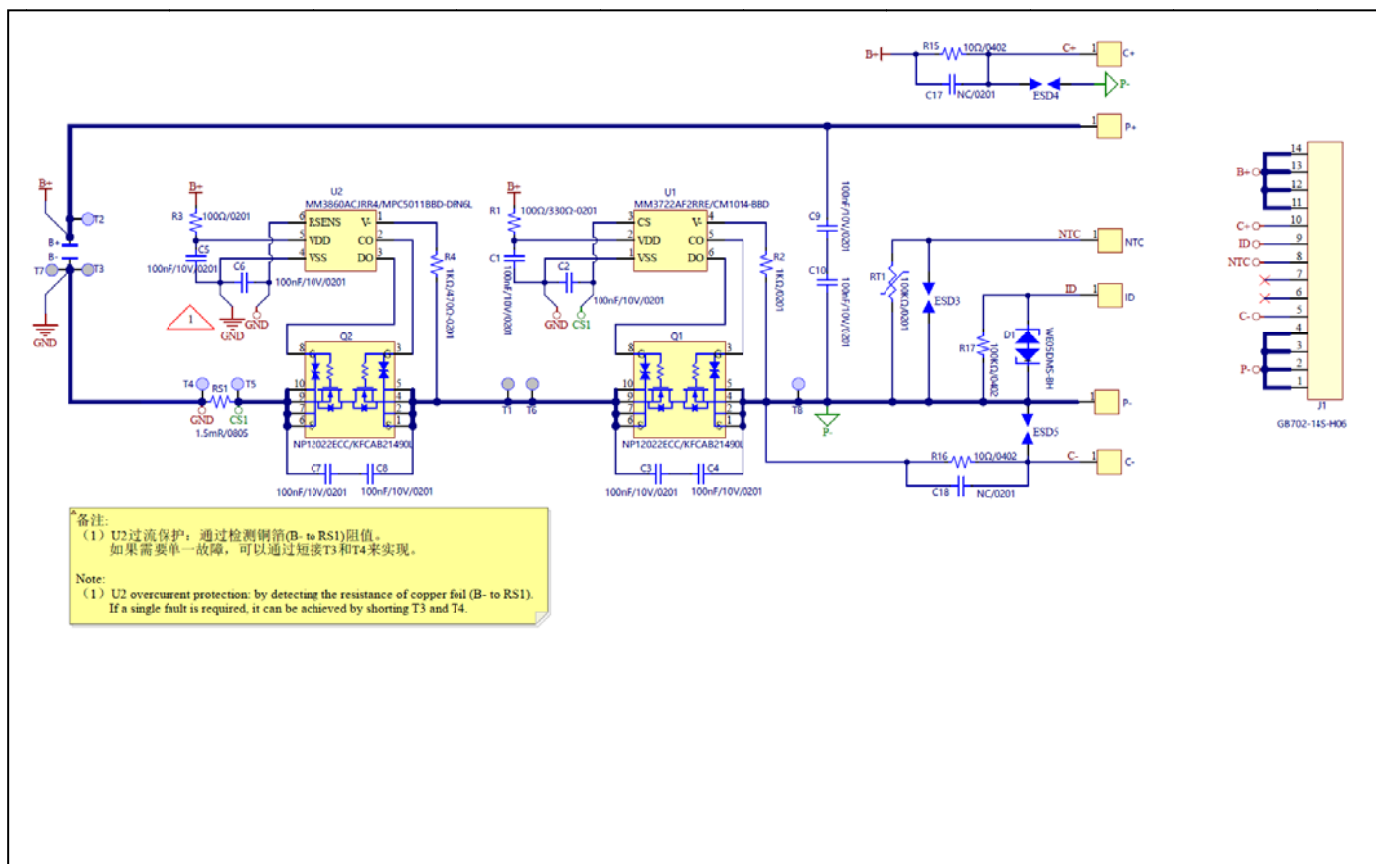
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8 PCM Specifications/保护板规格

8.1 Circuit diagram/电路图





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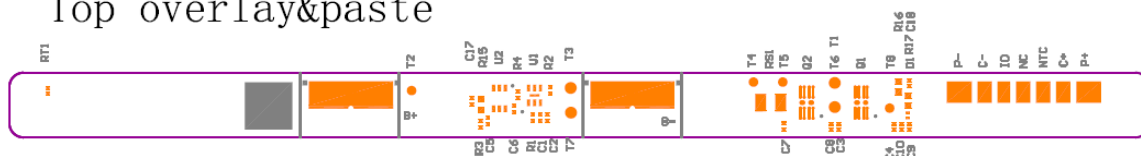
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8.2 PCM and FPC Layout/保护板和FPC布局

Top overlay&paste



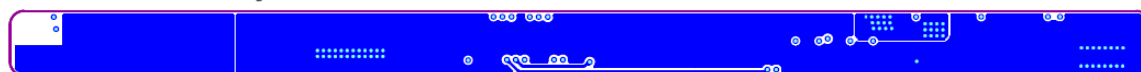
Top layer



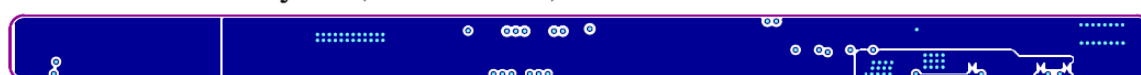
Mid-1 layer



Mid-2 layer



Bottom layer (Mirrored)

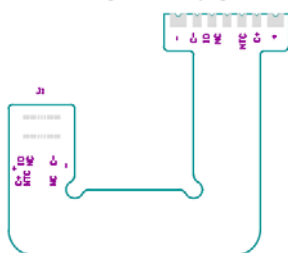


Bottom overlay&paste (Mirrored)

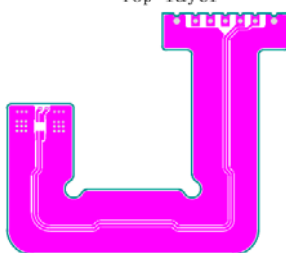


E302
E303
E304

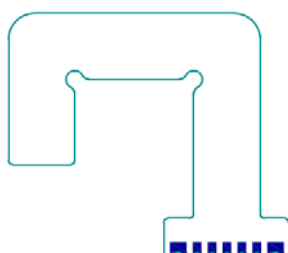
Top overlay&paste



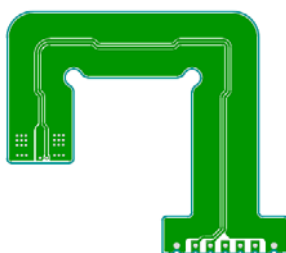
Top layer



Bottom overlay&paste (Mirrored)



Bottom layer (Mirrored)



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8.3 PCM Part list/保护板清单

Item/项目	Specification/规格	Qty /数量	Remark/备注
PCB	FR4;V-0;RoHS+REACH+HF	1	
FPC	PI;V-0;RoHS+REACH+HF	1	
Nickel plate	L-shape;L1×L2×H×T=7×2.5×2.5×0.13mm;RoHS+REACH+HF	2	B+,B-
IC_Protect	Solution1: MITSUMI;MM3722AF2RRE;RoHS+REACH+HF	1	U1
	Solution2: ICM, CM1014-BBD;RoHS+REACH+HF		
IC_Protect	Solution1: MITSUMI;MM3860ACJRR4;RoHS+REACH+HF	1	U2
	Solution2: MPC;MPC5011BBD-DFN6L;RoHS+REACH+HF		
NMOS	Solution1: Powercore;NP12022ECC;RoHS+REACH+HF	2	Q1,Q2
	Solution2: Nuvoton;KFCAB21490L;RoHS+REACH+HF		
Sampling resistor	0805;1.5mR;±1%;1/2W;RoHS+REACH+HF;Walter,YAGEO,RALE C	1	RS1
Ordinary resistor	0201;100R;±5%;1/20W;GP+HF;TA-I,YAGEO	1	R1
	0201;330R;±5%;1/20W;GP+HF;TA-I,YAGEO		
Ordinary resistor	0201;1K;±5%;1/20W;RoHS+REACH+HF;TA-I,YAGEO	2	R2
Ordinary resistor	0201;100R;±5%;1/20W;GP+HF;TA-I,YAGEO	1	R3
Ordinary resistor	0201;1K;±5%;1/20W;RoHS+REACH+HF;TA-I,YAGEO	1	R4
	0201;470R;±5%;1/20W;RoHS+REACH+HF;TA-I,YAGEO		
Ordinary resistor	0402;10R;±5%;1/16W;RoHS+REACH+HF;TA-I,YAGEO	2	R15,R16
Ordinary resistor	0402;100K;±1%;1/16W;RoHS+REACH+HF;TA-I,YAGEO	1	R17
Ceramic capacitor	0201;100nF;±10%;10V;RoHS+REACH+HF;YAGEO,Murata,VIIY ONG,SAMSUNG	15	C1,C2,C3,C4,C5,C6,C7 ,C8,C9,C10
NTC	0201;100K±1%;B(25/50°C)=4250K±1%;RoHS+REACH+HF;TDK	1	RT1
Connector	LS;GB702-14S-H06;RoHS+REACH+HF	1	J1



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8.4 PCM Parameter/保护板参数

项目 item	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit	备注 Remarks
1 st Over charge protection voltage 1 st 过充保护电压	4.540	4.580	4.610	V	-20~60°C
2 nd Over charge protection voltage 2 nd 过充保护电压	4.550	4.570	4.610	V	-20~60°C
1 st Over charge protection delay time 1 st 过充保护延迟时间	0.61	1.02	1.43	S	-20~60°C
2 nd Over charge protection delay time 2 nd 过充保护延迟时间	0.72	1.02	1.33	S	-20~60°C
1 st Release voltage for over-charge 1 st 过充保护恢复电压	4.310	4.480	4.530	V	-20~60°C
2 nd Release voltage for over-charge 2 nd 过充保护恢复电压	4.315	4.370	4.445	V	-20~60°C
1 st 过放保护电压 1 st Over discharge protection voltage	2.720	2.800	2.845	V	-20~60°C
2 nd Over discharge protection voltage 2 nd 过放保护电压	2.260	2.500	2.540	V	-20~60°C
1 st Over discharge protection delay time 1 st 过放电保护延迟时间	38.4	96.0	124.8	mS	-20~60°C
2 nd Over discharge protection delay time 2 nd 过放电保护延迟时间	14	20	83.2	mS	-20~60°C
1 st Release voltage for over-discharge 1 st 过放保护恢复电压	2.900	3.000	3.100	V	-20~60°C
2 nd Release voltage for over-discharge 2 nd 过放保护恢复电压	2.430	2.700	2.795	V	-20~60°C
1 st Over discharge current protection current 1 st 放电过流保护电流	11.65	14.67	17.87	A	-20~60°C
2 nd Over discharge current protection current 2 nd 放电过流保护电流	10	/	17	A	-20~60°C
1 st Over discharge current protection delay time 1 st 放电过流保护延迟时间	9.6	24.0	31.2	mS	-20~60°C
2 nd Over discharge current protection delay time 2 nd 放电过流保护延迟时间	44.8	64.0	166.4	mS	-20~60°C
1 st Over charge current protection current 1 st 充电过流保护电流	11.65	14.67	17.87	A	-20~60°C
2 nd Over charge current protection current 2 nd 充电过流保护电流	10	/	17	A	-20~60°C
1 st Over charge current protection delay time 1 st 充电过流保护延迟时间	4.8	8.0	11.2	mS	-20~60°C
2 nd Over charge current protection delay time 2 nd 充电过流保护延迟时间	44.8	64.0	83.2	mS	-20~60°C
1 st Short protection delay time 1 st 短路保护延迟时间	112	300	504	uS	-20~60°C



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2 nd Short protection delay time 2 nd 短路保护延迟时间	175	400	600	uS	-20~60°C
1 st 0V battery charge inhibition battery voltage 1 st 0V 禁止充电电压	0.7	1.30	1.7	V	-20~60°C
2 nd 0V battery charge inhibition battery voltage 2 nd 0V 禁止充电电压	0.6	0.9	1.2	V	-20~60°C



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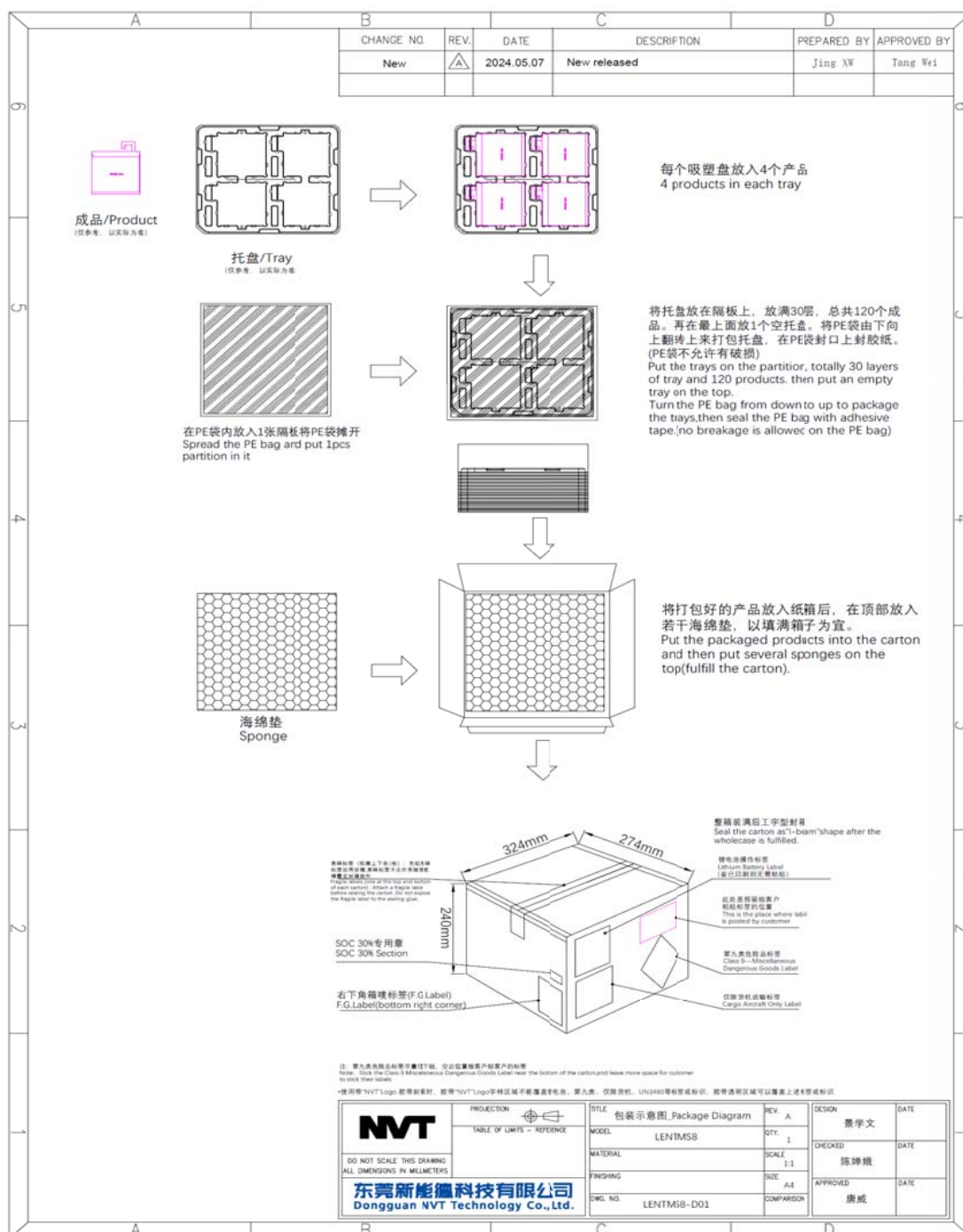
9 Battery Packing requirement/电池包装要求:

9.1 Cell Packing method/电芯包装方式

The Cells are delivered in trays with XX pcs in a tray, XXX pcs Cells are packed in a bulk package then put into the carton box. Tray dimensions are XXmm(L)*XXmm(W), Carton box dimensions are XXmm(L)*XXmm(W)*XXmm(T)./每盘吸塑盒可装 XX pcs 电芯, 每箱装 XXX pcs 电芯, 吸塑盒尺寸为 XXmm(L)*XXmm(W), 纸箱尺寸为 XXmm(L)*XXmm(W)*XXmm(T),一体化打包。

9.2 Pack Packing method/电池包装方式

The battery are delivered in trays with 4 pcs in a tray,120 pcs battery are packed in a bulk package then put into the carton box. Tray dimensions are 310mm (L) *260mm (W) , Carton box dimensions are 324mm(L)*274mm(W)*240mm(T)./ 每盘吸塑盒可装 4 pcs 电池, 每箱装 120pcs 电池, 吸塑盒尺寸为 310mm(L)*260mm(W), 纸箱尺寸为 324mm(L)*274mm(W)*240mm(T),一体化打包。





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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



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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。



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- 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, 请清理干净后使用, 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

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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

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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

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。

Safety Data Sheet

Date of Issue: Dec 13, 2024

File No.: FMT20240925WERC01

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier

Name of Product: Rechargeable Li-ion Battery

1.2 Other means of identification

Product Models: L24D1P33

Nominal Voltage: 3.91V

Nominal capacity: 5000mAh

Nominal Power: 19.55Wh

Weight: 67.5g

1.3 Recommended use of the chemical and restriction on use

Recommended Use: Rechargeable Li-ion Battery

Restriction on Use: No information available

1.4 Information Of Supplier:

Company Name: SCUD (FUJIAN) ELECTRONICS CO., LTD.

Address: No.98, Jiangbin East Avenue, Mawei District, Fuzhou, Fujian, China

Zip code: 350015

Contact person: Huang Yanying

Tel: 0591-63158888-1781

E-mail: rzzy@scudgroup.com

1.5 Emergency Telephone

+86 0591 87307703

2. Hazard(s) Identification

2.1 Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1

2.2 Label elements

2.2.1 Signal Word **Danger**

2.2.2 Hazard Statements

Causes skin irritation

Causes serious eye damage

Suspected of causing cancer

Causes damage to organs through prolonged or repeated exposure

2.2.3 Symbol



Safety Data Sheet

Date of Issue: Dec 13, 2024

File No.: FMT20240925WERC01

This product is an article which contains a chemical substance. Safety information is given for exposure to the article as solid. Intended use of the product should not result in exposure to the chemical substance, This is a battery. In case of rupture: the above hazards exist.

2.3 Precautionary Statements

2.3.1 Precautionary Statements – Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Wash face, hands and any exposed skin thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Keep away from flames and hot surface –no smoking.
Do not breath dust/fume/gas/mist/vapors/spray.
Do not eat, drink or smoke when using this product.

2.3.2 Precautionary Statements – Response

If exposed or connected: Get medical advice/attention.
Specific treatment(see supplemental first aid/instruction on this label).

Skin

If ON SKIN: wash with plenty of soap and water.
Take off contaminated clothing and water before reuse.
If skin irritation or rash occurs: get medical advice/attention if feel unwell.

Eye

If IN EYES: Rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do, Continue rinsing. Call a POISON CENTER or doctor/physician.

Inhalation

If inhalation: if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or doctor/physician.

Ingestion

If swallowed: rinse mouth, do not induce vomiting ,Call a poison center or doctor/physician if feel unwell.

2.3.3 Precautionary Statements – Storage

Store locked up

2.3.4 Precautionary Statements – Disposal

Dispose of contents/container to an approved waste disposal plant.

2.4 Hazards not otherwise classified (HNOC)

Not applicable

2.5 Unknown Toxicity

40% of the mixture consists of ingredient(s) of unknown toxicity.

2.6 Other information

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.7 Interactions with other chemicals

No information available.

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3. Composition/ Information on Ingredients

Chemical Name	CAS No.	Weigh%
Lithium Cobalt Oxide	12190-79-3	45
Graphite	7782-42-5	23
Copper	7440-50-8	5
Aluminum	7429-90-5	3
Propyl propionate	106-36-5	3
Polyethylene	9002-88-4	3
Ethyl propionate	105-37-3	3
Ethylene carbonate	96-49-1	3
Aluminum oxide	1344-28-1	3
Phosphate(1-), hexafluoro-, lithium	21324-40-3	3
Propylene carbonate	108-32-7	3
Carbon black	1333-86-4	1
Succinonitrile	110-61-2	1
1,3-Propane sultone	1120-71-4	1

4. First Aid Measures

4.1 General Advice

First aid is upon rupture of sealed battery.

4.1.1 Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area. Seek immediate medical attention/advice.

4.1.2 Skin Contact

Wash off immediately with plenty of water and soap for at least 15 minutes. Remove and isolate contaminated clothing and shoes. Get medical attention if irritation develops and persists.

4.1.3 Inhalation of Vented Gas

Remove to fresh air. Get medical attention immediately if symptoms occur. If not breathing, give artificial respiration. If breathing is difficult, (trained personnel should) give oxygen.

4.1.4 Ingestion

Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

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4.1.5 Self-protection of the first aider

Ensure that medical personnel are aware of the material(s) involved. Take precaution to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personnel protective equipment as required. Wear personnel protective clothing (see section 8).

4.2 Most important symptoms and effects, both acute and delayed

Burning sensation, Itching. Rashes. Hives, Coughing.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization of susceptible persons. Treat symptomatically.

5. Fire –Fighting Measures

5.1 Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry chemical, CO₂, water spray or regular foam. Move containers from fire area if you can do it without risk.

5.2 Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

5.3 Specific Hazards Arising from the chemical

Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization by inhalation and skin contact. Product is or contains a sensitizer.

Hazardous Combustion products

Carbon oxides

5.4 Explosion Data

Sensitivity to Mechanical Impact :None.

Sensitivity to Static Discharge: None.

5.5 Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/IOSH (approved or equivalent) and full protective gear. Move containers from fire area if you can do it without risk.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2 Environmental Precautions

Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if

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safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

6.3 Methods for containment

Prevent further leakage or spillage if safe to do so. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

6.4 Methods for cleaning up

Pick up and transfer to properly labeled containers.

7. Handling and Storage

7.1 Precaution for safe handling

In case of rupture, use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.

Incompatible products

Strong acids. Strong oxidizing agent. Strong bases.

8. Exposure Controls/Personal Protection

8.1 Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Graphite 7782-42-5	TWA:2mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Lithium Cobalt Oxide 12190-79-3	TWA:0.02mg/m ³	-	-

ACGIH TLV: American Conference of Governmental Industrial Hygienists-Threshold Limit Value

OSHA PEL: Occupational Safety and Health Administration-Permissible Exposure Limits

NIOSH IDLH Immediately Dangerous to Life or Health.

Other Exposure Guidelines:

Vacated limits revoked by the court of Appeals decision in AFL-CLO v. OSHA, 965F, 2d 962(11th Cir., 1992) See section 15 for national exposure control parameters.

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8.2 Appropriate engineering controls

Engineering Measures:

Showers、 Eyewash stations、 Ventilation systems

8.3 Individual protection measures, such as personal protective equipment

Respiratory protection : No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Eye /face protection: if splashes are likely to occur: Wear safety glasses with side shields(or goggles). None required for consumer use.

Skin protection: Wear protective gloves and protective clothing. Long sleeved clothing. Imperious gloves.

Hygiene Measure: Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use. No information available.

9. Physical and Chemical Properties

Physical State: Solid

Color: Silver

Odor: Odorless

Odor Threshold: No information available

pH: No data available

Melting/freezing point: No data available

Boiling point/boiling range: No data available

Flash Point: No data available

Evaporation Rate: No data available

Flammability (Solid, gas): No data available

Flammability Limit in Air:

Upper flammability limit: No data available

Lower flammability limit: No data available

Vapor pressure: No data available

Vapor density: No data available

Specific Gravity: No data available

Solubility: Insoluble in water

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Partition coefficient:n-octanol/water: No data available

Autoignition temperature: No data available

Decomposition temperature: No data available

Kinematic viscosity: No data available

Dynamic viscosity: No data available

10. Stability and Reactivity

Reactivity:

No data available

Chemical stability:

Stable under recommended storage conditions.

Possibility of Hazardous Reactions:

None under normal processing.

Hazardous Polymerization:

Hazardous polymerization does not occur.

Conditions to avoid:

Do not subject battery to mechanical shock. Keep away from open flames, high temperature.

Incompatible materials:

Strong acids, Strong oxidizing agents. Strong bases.

Hazardous decomposition products:

Carbon oxides

11. Toxicological Information

11.1 Information on likely routes of exposure

Product information:

Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:

Inhalation:

Specific test data for the substance or mixture is not available. Corrosive by inhalation (base on components). Inhalation of corrosion fumes/gases may cause coughing, choking, headache, dizziness and weakness for several hour. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure and increased heart rate. Inhaled corrosion substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.

Eye Contact:

Specific test data for the substance or mixture is not available. Cause burns. (based on components). Corrosion to the eyes and may cause severe damage including blindness. Cause serious eye damage. May cause irreversible damage to eyes.

Skin Contact:

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Specific test data for the substance or mixture is not available. Corrosion (based on components). Cause burns. Toxic in contact with skin. May be absorbed through the skin in harmful amounts.

Ingestion:

Specific test data for the substance or mixture is not available. Cause burns. (based on components). Ingestion cause burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite 7782-42-5	> 10000mg/kg (Rat)	-	-
Propylene carbonate 108-32-7	=29000mg/kg (Rat)	>20mL/kg(rabbit)	-

11.2 Information on toxicological effects

Symptoms:

Erythema (skin redness). May cause redness and tearing of eyes. Itching. Rashes. Hives. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Coughing and/or wheezing.

11.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization: May cause sensitization of susceptible person, May cause sensitization by skin contact. May cause sensitization by inhalation.

Mutagenic Effects: No information available.

Carcinogenicity: the table below whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt oxide 12190-79-3	A3	Group 2B		X

ACGIH (American Conference of Governmental Industrial Hygienists)

A3- Animal Carcinogen

IARC (International Agency for research on Cancer)

Group 2B- Possibly Carcinogenic to humans

NTP (National Toxicology Program) Reasonably Anticipated- reasonably anticipated to be a human Carcinogenic.

OSHA (Occupational safety and Health Administration of the US Department of Labor)

X-Present

Reproductive Toxicity: No information available.

STOT- single exposure: No information available.

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STOT- repeated exposure: Cause damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE)

Chronic Toxicity: Prolonged exposure may cause chronic effects. Repeated contact may cause allergic reactions in very susceptible persons. Contain a known or suspected carcinogen. Avoid repeated exposure. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.

Target Organ Effects: Respiratory system. Eyes. Skin. Gastrointestinal tract(GI). Blood. Central Nervous System(CNS). Kidney. Liver. Lungs. Nasal cavities.

Aspiration Hazard: No information available.

11.4 Numerical measures of toxicity product information

The following values are calculated based on chapter 3.1 of the GHS document.

ATE mix(oral): 5400 mg/kg

12. Ecological Information

Ecotoxicity:

Chemical name	Toxicity to Aglae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Propylene Carbonate 108-32-7	72h EC50: >500mg/L (Desmodesmus subspicatus)	96h LC50: >1000mg/L (Cyprinus carpio) 96h LC50: =5300mg/L (Leuciscus idus)	17h EC50: >1000mg/L	24h EC50: >5600mg/L

Persistence and Degradability: No information available

Bioaccumulation: No information available

Other adverse effects: No information available

13. Disposal Considerations

13.1 Waste treatment methods

Disposal methods:

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements. Should not be released into the environment.

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Contaminated Packaging:

Dispose of in accordance with federal, state and local regulations.

California Hazardous Waste Codes 141

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste
Lithium Cobalt Oxide 12190-79-3	Toxic

14. Transportation Information

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule)

Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "PI965-967 section II of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

DOT: NOT REGULATED

Proper Shipping Name: NON REGULATED

Emergency Response Guide Number: 147

Hazard Class: N/A

TDG: Not regulated

MEX: Not regulated

ICAO: Not regulated

IATA: Not regulated

Proper Shipping Name: Not regulated

Hazard Class: Not regulated

IMDG/IMO: Not regulated

Proper Shipping Name: NON REGULATED

Hazard Class: N/A

Ems No.: F-A, S-1

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RID: Not regulated

ADR: Not regulated

AND: Not regulated

15. Regulatory information

15.1 International Inventories

TSCA Complies

DSL All components are listed either on the DSL or NDSL.

TSCA – United State Toxic Substance Control Act Section 8(b) Inventory

DSL/NDSL – Canadian Domestic Substance List/Non-Domestic Substance List

15.2 US Federal Regulations

SARA 313: Section 313 of Title III of the superfund Amendments and Reauthorization Act of 1986(SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No.	Weight (%)	SARA313-Threshold values(%)
Lithium Cobalt Oxide	12190-79-3	15-40	0.1

15.3 SARA 311/312Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

15.4 CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

15.5 CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

15.6 US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
-	-

U.S State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Lithium Cobalt Oxide12190-79-3	x		x	x	x
Graphite 7782-42-5	x	x	x		

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15.7 International Regulations

Mexico

National occupational exposure limits

Chemical Name	Carcinogen Status	Exposure Limits
Graphite		Mexico: TWA= 2 mg/m ³

Canada

WHMIS Hazard Class

Non-controlled

16. Other Information

Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used material used in combination with any other materials or in any process, unless specified in the test.

Prepared By: Guangzhou MCM Certification and Testing Co., Ltd.

Issuing Date: July 26, 2024

Revision Date: July 26, 2024

--- End of SDS ---