

Specification of Lithium-ion Battery

锂离子电池组规格书

Battery model 电池型号: AEC503759 (UL1642 Certification=1100mAh)
Product description 产品描述: 1S1P(Cell+PCM+Wire)
Product No. 产品编码: A010744047A

AMENDMENT RECORDS

规格变更记录

Revision 版本	Description 描述	Prepared by (R&D) 编制(R&D)	Checked by (R&D) 审核(R&D)	Approved by(R&D) 批准(R&D)	Approved by(QA) 批准(QA)	Date 日期
V01	New release 新发放	W.B Xie 谢文波	Leo Xia 夏来功	Aaron Wang 王森	Miller Liao 廖贵方	2016.01.15
V02	Customer demand changes: 1. Increase the UL 2. Change the battery performance parameters of the specification 客户要求更改:1.增加UL认证 2.更 改电池性能规格参数	W.B Xie 谢文波	Leo Xia 夏来功	Aaron Wang 王森	Miller Liao 廖贵方	2016.01.18
V03	Replace the protection IC 更换保护IC	W.B Xie 谢文波	Leo Xia 夏来功	Aaron Wang 王森	Miller Liao 廖贵方	2016.02.01
V04	Modify the content according to the requirements of customers. 按客户要求修改内容	GR OuYang 欧阳桂荣	Leo Xia 夏来功	Aaron Wang 王森	Miller Liao 廖贵方	2016.04.29
V05	Update the conten PCM 更新保护板内容	GR OuYang 欧阳桂荣	Leo Xia 夏来功	Billy Li 李宝生	Miller Liao 廖贵方	2016.10.13
V06	Cancel double-sided tap on back 取消电池背面双面胶	Sven Huang	Leo Xia	Billy Li	Miller Liao	2016.11.23
V07	Add Label for KC、PSE、CQC content 增加标贴显示KC、PSE、CQC内容	Sven Huang	Leo Xia	Billy Li	Miller Liao	2017.02.22
V08	Label add BIS content 标贴增加BIS内容	Sven Huang	Leo Xia	Billy Li	Miller Liao	2017.04.10
V09	Update label content 更新&调整标贴内容	Sven Huang	Leo Xia	Billy Li	Miller Liao	2017.04.24
V10	Wire change to set of insulating tube 线头改套热缩管	Sven Huang	Leo Xia	Yu Zhi	Miller Liao	2017.10.11
V11	Double sided adhesive tape add paper for unrip 双面胶增加撕手位	Sven Huang	Leo Xia	Yu Zhi	Miller Liao	2018.11.23

Customer Approval 客户确认	Signature 签名	HS YONG 
	Date 日期	17 DECEMBER 2018
	Company Name: 公司名称:	MERRY ELECTRONICS., Co Ltd
	Company Stamp : 公司盖章:	
	Customer materiel number: 客户物料编号:	29B20000003X

Remark: This signed copy is based on AEC503759_A010744047A V10, 新增撕手位 for the double sided adhesive tape, for easy peeling

1. Scope/范围

This document describes the product specification and using condition of the Lithium-ion battery supplied by AEC (Apower Electronics Co.,Ltd.).

本文件描述了广东国光电子有限公司生产的锂离子电池组的产品性能及使用条件。

2. Product/产品

2.1 Name : Lithium-ion battery

名 称: 锂离子电池组

2.2 Cell model 电池型号: AEC503759 (UL1642 Certification=1100mAh)

Product Description产品描述: 1S1P (Cell+PCM+Wire)

PCM 保护板: PTCHF3833JJNQT

3. Specification /产品规格

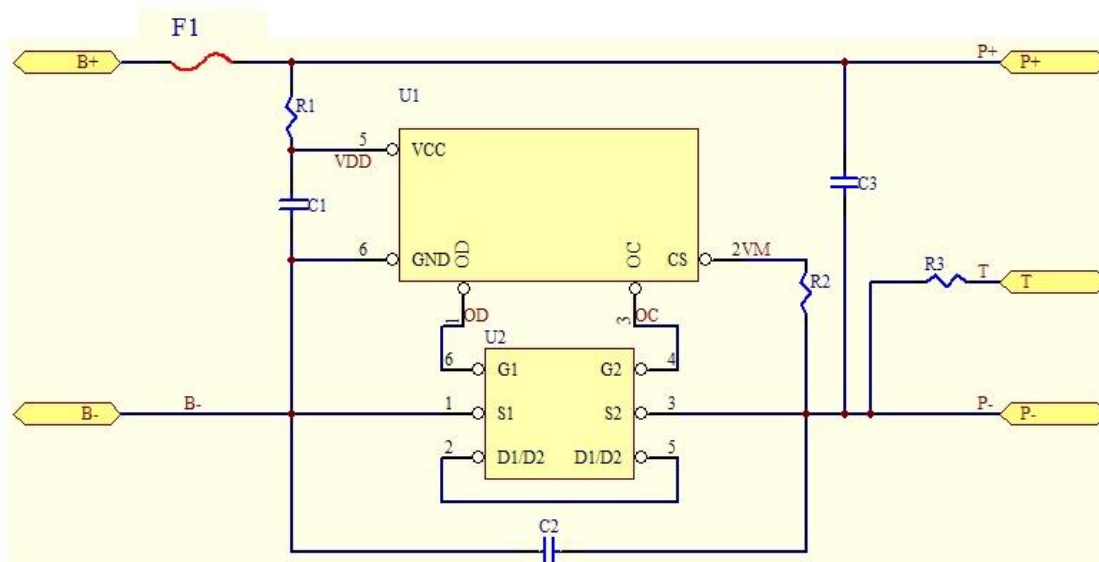
Item 项目	Specification 规格				
3.1 Nominal voltage 标称电压	3.70 V				
3.2 Minimum Capacity 最小容量	1236 mAh		Charging the battery at constant current 0.5C to 4.2V, then charging it at constant voltage 4.2V till 0.025C. Standing within 1hour, the battery will be discharged to 3.0V at 0.2C. 0.5C恒流充电至4.2V, 再4.2V恒压充电至0.025C截止. 静置不超过1小时, 再以0.2C放电至3.0V截止		
	(UL1642 Certification=1100mAh)				
3.3 Battery impedance 电池组内阻	≤	210 mΩ	The specifications include cell, PCM and wire. measured at AC 1kHz, 25±3℃. 测试条件为AC 1kHz, 25±3℃, 此参数包含电池、保护板、导线。		
3.4 Shipment voltage 出货电压	3.75~3.90 V		As of shipment. 出厂时的电压		
3.5 Limited charging voltage 充电限制电压	4.20 V		充电截止电压（Charging Cut-off Voltage）		
3.6 Maximum Charging Current 最大充电电流	Ambient temperature 环境温度	Relative humidity 相对湿度	Charging current 充电电流	Limited Charging Voltage 充电限制电压	Cut-off current of CV 恒压截止电流
	0℃ ~ 45℃	65±20%	1.0C	Max. 4.20V	0.025C
3.7 Recommendation Charging Current 推荐充电电流	0.5 C 618 mA				
3.8 Recommendation Discharging Current 推荐放电电流	0.5 C 618 mA				
3.9 Maximum Discharging Current 最大放电电流	1.0 C	1236 mA	-20℃~60℃；65±20%RH		
3.10 Discharge cut-off voltage 放电截止电压	3.0 V	Cell standard cut-off voltage/电池标定截止电压			
	2.8 V	Typical low voltage for discharge protection/欠压放电保护电压典型值			
3.11 Operating temperature Rang 操作温度范围	充电： 0~45℃				
	放电： -20℃~60℃				
3.12 Storage environment (50% state of charge) 储存环境(50%电量)	-20℃ ~ 45℃ in three months 25±3℃ over three months Humidity: 65±20%RH 储存期在3个月内：温度-20℃ ~ 45℃，湿度65±20%RH 储存期超过3个月：温度25±3℃，湿度65±20%RH				
3.13 Battery weight (Approx.) 电池组大约重量	23.5 g				

4. PCM/保护板

4.1 PCM SPECIFICATION (Testing condition: TEM=25℃, RH≤90%)/保护板规格(测试条件: 25℃, 相对湿度≤90%)

No. 序号	Items 项目	Specifications/规格		
		Min.	Typical	Max.
1	Over-charge detection voltage(V) 过充保护电压(V)	4.255	4.280	4.305
2	Over-charge detection delay time(s) 过充保护延时(s)	0.96	1.20	1.40
3	Over-discharge detection voltage(V) 过放保护电压(V)	2.75	2.80	2.85
4	Over-discharge detection delay time(ms) 过放保护延时(ms)	115	144	173
5	Over-current detection discharge current(A) 放电过流保护(A)	1.5	3.0	4.5
6	Over-current detection delay time(ms) 过流保护延时(ms)	7.2	9.0	11.0
7	Current consumption operation mode(uA) 工作时消耗电流(uA)	--	3.0	7.0
8	Current consumption power-down mode(uA) 休眠时消耗电流(uA)	--	--	0.2
9	NTC resistance at 25℃ (Ω) NTC 25℃ 阻值(Ω)	9.9K	10K	10.1K
10	0V battery charge function 0V电池充电功能	Available/允许		

4.2 PCM SCH/保护板原理图



4.3 Bill of PCM/保护板元件清单

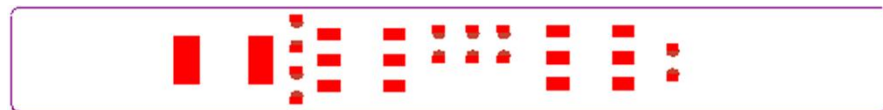
No. 序号	Description 描述	Symbol 标识	Model 型号	Vendor 厂商	Q'ty 数量
1	IC	U1	S8261-G3M	Seiko	1pcs
2	MOSFET	U2	AO6804A	Alpha&Omega	1pcs
			WNMD2179 for second source	Will	
3	Resistor	R1	470Ω	YAGEO/Skywell/ UniOhm/RALEC	1pcs
4	Resistor	R2	2kΩ	YAGEO/Skywell/ UniOhm/RALEC	1pcs
5	Capacitor	C1, C2, C3	0.1uF	YAGEO/Skywell/ UniOhm/RALEC	3pcs
6	NTC	R3	10K \pm 1% B=3435 \pm 1%	仙桥/卓英社	1pcs
7	PTC	F1	SMDT200F200SLK	PTTC	1pcs

4.4 Layout/布线图

Top Layer

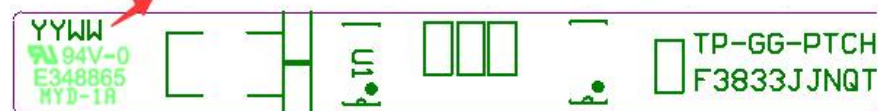


Top Solder

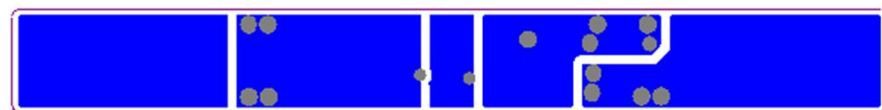


Top Overlay

YY代表年份，WW代表周。如2014年第2周，丝印为：1402。



Bottom Layer



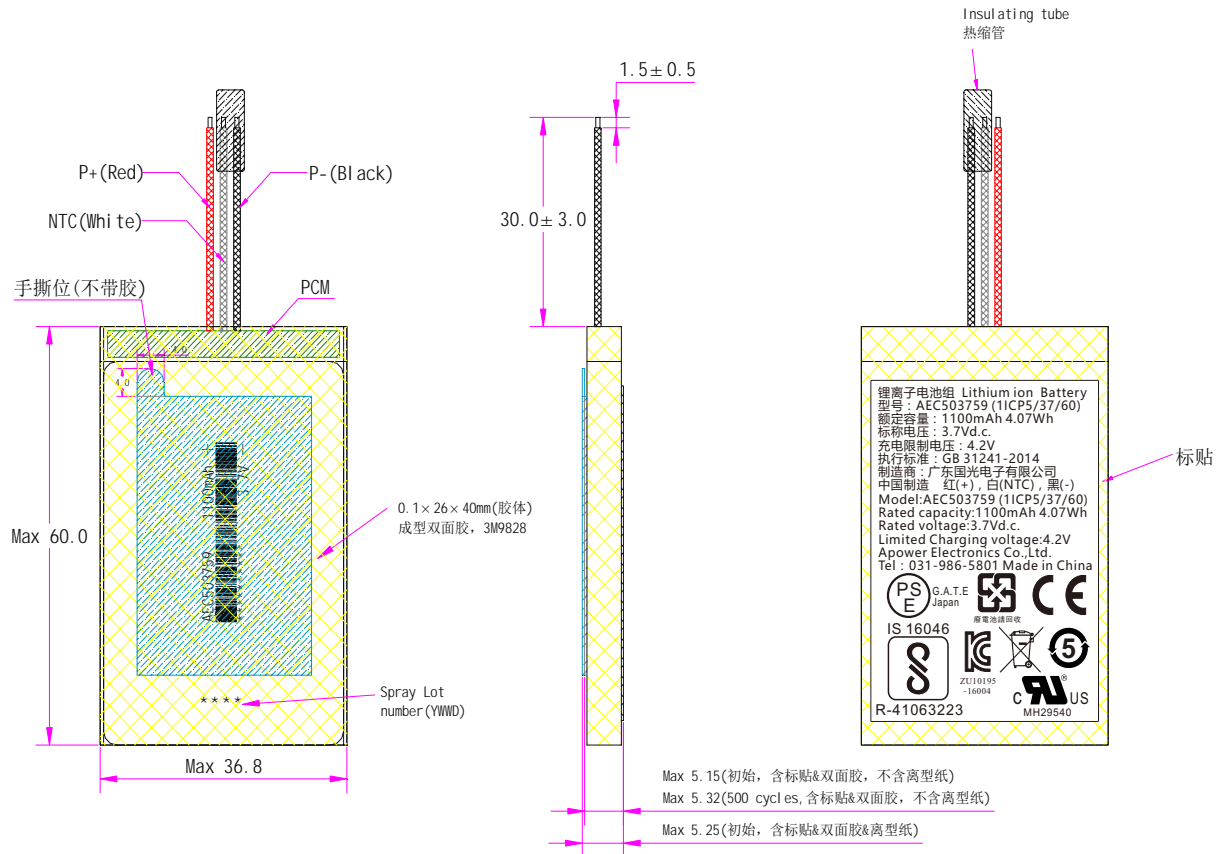
Bottom Solder



Bottom Overlay



5. Outward appearance and Dimension /外型和物理尺寸



Unit: mm

Bill of Battery/电池组清单:

Item 序号	Name 名称	Model 型号	Specification 规格描述	Quantity 用量	Remark 备注
1	Cell 电池	AEC503759	3.70 V 1236 mAh	1	
2	PCM 保护板	PTCHF3833JJNQ7	4.28V/2.8V	1	
3	Wire 电子线	UL3302 28#	UL3302, Red, White, Black	3	
4	Adhesive tape 绝缘胶带	60um	Ployimide 聚酰亚胺有机硅胶带, 茶色, 半透明		
5	Double-sided tape 双面胶	3M9828	0.1*26*40mm成型双面胶 (3M9828)	1	
6	Label 标贴	503759 Label	0.1*33*48mm	1	

6. Test method/测试方法

6.1 Standard environmental test condition/测试条件

Unless otherwise specified, all tests stated in this BATTERY SPECIFICATION are conducted at below conditions.

Temperature: $25\pm3^{\circ}\text{C}$; Relative humidity : $65\pm20\%$; Atmosphere pressure: 86kPa~106kPa.

除特别说明外，本规格书中所有测试均在以下环境中进行。

温度： $25\pm3^{\circ}\text{C}$ ；相对湿度： $65\pm20\%$ ；大气压力：86kPa~106kPa.

6.2 Measuring Equipment/测量仪表与设备要求

Requirement of voltage meter: The accuracy is not less than $\pm 0.5\%$.

测量电压的仪表准确度应不低于 $\pm 0.5\%$.

Requirement of ampere meter: The accuracy is not less than $\pm 0.5\%$.

测量电流的仪表准确度应不低于 $\pm 0.5\%$.

Requirement of time meter: The accuracy is not less than $\pm 0.1\%$.

测量时间的仪表准确度不低于 $\pm 0.1\%$.

Requirement of thermometer: The accuracy is not less than $\pm 0.5^{\circ}\text{C}$.

测量温度的仪表准确度不低于 $\pm 0.5^{\circ}\text{C}$.

Constant current resource is constantly adjustable, which alters within $\pm 1\%$.

恒流源的电流恒定可调,在充电或放电过程中,其电流变化应在 $\pm 1\%$ 范围内.

Constant voltage resource is constantly adjustable, which alters within $\pm 0.5\%$.

恒压源的电压可调,其电压变化范围为 $\pm 0.5\%$.

7. Visual Inspection/外观

There shall be no such defect as scratch,flaw,crack,and leakage,which may adversely affect commercial value of the battery.

不允许有任何影响电池性能的外观缺陷，如裂纹、裂缝、泄漏等。

8. Cell Performance Specification/电池性能规格

8.1 Cell Electrical characteristics

电性能

Items	Test Method and Condition				Criteria
8.1.1 Full charge 满充电	Charge to 4.2V with 0.5C, then go on charging with constant voltage 4.2V till charge current declines to 0.025C . 以0.5C电流恒流充至4.2V，再4.2V恒压充电至电流小于0.025C。				/
8.1.2 Rated capacity 额定容量	The capacity means the discharge capacity of the battery that was discharged to 3.0V with discharge current of 0.2C within 1h after the full charge. 电池满充电后1小时内用0.2C电流放电，放电至3.0V截止的放电容量。				$\geq 1236 \text{ mAh}$
8.1.3 RT Cycle life 常温循环寿命	Cycle life is the capacity of the battery that was repeated 500 cycles with full charge and then discharging to 3.0V with discharge current of 0.5C. 电池满充电后以0.5C放至3.0V，充放电循环500次后的放电容量。				$\geq 80\%$ Minimum capacity
8.1.4 Temperature capacity test 温度性能	Temperature capacity test is the discharging ability at 0.2C of the battery in different temperature as follow after fully charged in a temperature of 25°C ,the time between charging and discharging must beyond 3 hours. 不同温度条件下的放电容量对比，即在 25°C 常温条件下电池满充电后，在下表所示温度下以0.2C放至3.0V的容量。如果充电和放电温度不是同一温度时，温度变化的间隔时间要求是3小时。				
	Charge temperature 充电温度		Discharge temperature 放电温度		
	25 $^{\circ}\text{C}$		-10 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	25 $^{\circ}\text{C}$
			$\geq 70\%$	$\geq 80\%$	100%
					60 $^{\circ}\text{C}$ $\geq 95\%$

8.1.5 Self-discharge 自放电	The fully-charged battery stores under the conditions as Item 5 for 28 days and discharges with 0.2C till 3.0V. Testing the capacity after the discharge. 满充电后在如第5项所述的测试条件下储存28天，检测0.2C放电至3.0V的容量。				Capacity ≥80% Minimum capacity	
8.1.6 Storage characteristics 存储特性	SOC 荷电状态	The battery store at different SOC, the initial capacity VS time (25℃) 电池不同荷电状态条件下存储，初始容量随时间变化如下（25℃）：				
		Storage duration 存储时间	3 months	6 months	9 months	12 months
		Recovered capacity (%) 容量恢复率	95.00%	93.00%	91.00%	90.00%
	Approx. 50% charge state (3.80<OCV≤3.88V)	Recovered impedance (%) 内阻恢复率	120.00%	130.00%	135.00%	140.00%
		Recovered capacity (%) 容量恢复率	92.00%	88.00%	86.00%	85.00%
	Approx. 70% charge state (3.88<OCV≤4.00V)	Recovered impedance (%) 内阻恢复率	125.00%	135.00%	145.00%	150.00%
		Recovered capacity (%) 容量恢复率	90.00%	85.00%	82.00%	80.00%
	Approx. 100% charge state (4.00<OCV≤4.20V)	Recovered impedance (%) 内阻恢复率	130.00%	140.00%	150.00%	160.00%

8.2 Mechanical specification/机械特性

Items	Test method and condition	Criteria
8.2.1 Vibration test 振动	Batteries are firmly secured to the platform of the vibration machine without distorting the batteries in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. 试验电池和电池组紧固在振动机上, 所受振动为正弦波形, 频率在7Hz和200Hz之间摆动再回到7Hz的对数扫频为时15min。这一过程须在三个互相垂直的电池安装方位的每一方向都重复进行12次, 总共为时3h。其中一个振动方向必须与端面垂直。	No explosion, no fire, no leakage. 不爆炸, 不起火, 不漏液
8.2.2 Drop test 跌落	The cell is to be dropped onto concrete ground from a height of 1.2 meter six times . 电池从1.2m高处自由落于混凝土板上, 共进行6次。	No explosion, no fire 不爆炸, 不起火

8.3 Cell safety 电池安全测试

Items	Test method and condition	Criteria
8.3.1 Crush test 挤压	The pressure on the surface of the fully charged cell do not stop being raised until 17.2 Mpa when the cell is crushed by two flat surfaces.(Max. 13kN) 满充电电池被两平板挤压。挤压的最大压强为17.2Mpa,最大作用力为13kN。当达到最大值即停止。	No explosion, no fire. 不爆炸, 不起火
8.3.2 Heating test 热滥用	The temperature of the baking box which contains cell is raised to 130±2℃ at a rate of 5℃/min and remains at this temperature for 10 minutes. 满充电电池在烘箱中测试。烘箱自室温起以5℃/min的升温速率升至130±2℃, 并在130±2℃温度下保持10分钟。	No explosion, no fire . 不爆炸, 不起火

8.3.3 Short-Circuit test 短路	After full charge, the positive and negative polarities are connected together by a copper wire whose resistance is less than or equal to 0.1Ω. 满充电电池用电阻不大于0.1Ω的铜导线连接其正负极至电池体温度接近室温。	No explosion, no fire . 不爆炸, 不起火
8.3.4 Over-charge test 过充	The cell is overcharged to 4.6V with a current of 3C and then charged with constant voltage 4.6V until continuous charging time to 7 hours. 电池在3C恒流恒压下过充至4.6V, 直至持续充电时间达到7 小时。	No explosion, no fire . 不爆炸, 不起火
	The cell is overcharged to 4.8V with a current of 1C and holded for 48 hours. 电池在1C恒流恒压下过充至4.8V, 并保持48 小时。	
		No explosion, no fire . 不爆炸, 不起火

9. Charging/充电

Charging current and charging voltage should be less than specified in the BATTERY SPECIFICATION.

The charger shall be designed to comply with BATTERY SPECIFICATION.

It is dangerous that charging with higher current or voltage than Product Specification may cause damage to the battery electrical, mechanical safety performance.

充电电流和充电电压不得超出本规格书中所规定的最大值。

充电器的设计应满足本规格书的要求。

使用超出本规格书要求的电流和电压范围可能引起电池充放电性能、机械性能和安全性能的问题。

10. Warranty/品质保证

Period of warranty: 12 months after shipment;

产品保质期: 自交货期开始算起后的12个月;

Range of warranty: Operating within the specified current , voltage ranges and working temperature range, the battery performs normally without swelling, 0V and electrolyte-leaking. Battery damage cuased by misuse or incorrect storage cannot apply the Warranty.

保 质 范 围: 在规格书规定的充放电电压范围、电流范围、工作温度等正常使用及存放条件下电池可进行充放电, 无气鼓、零电压、漏液等不良现象。不当使用或存放造成电池不良不在保质范围内。

11. Liability/产品责任

Please use the Lithium-ion Polymer rechargeable batteries supplied by AEC under the product specification .It may cause fire or expansion if the cells are used incorrect .We(AEC) will not guarantee the safety unless the cells are used under the product specification.

请客户务必按照所提供的规格说明书和所附的注意事项来使用广东国光电子有限公司生产的电池。不正确地使用电池, 可能会导致电池性能异常、发热、着火或破裂现象。对于客户在超出规格说明书以外的情况下使用电池, 广东国光电子有限公司不保证其使用性能和安全性能。

12. Identification/成品电池块(组)上标识

Warnings would better be marked on the surface of the battery which is tied up by certain cells:

*Using the charger designated by the manufacturer(AEC).

*Don't throw the battery in fire or heat it .

*Don't short-circuit by connecting the positive and negative polarities together.

*Don't disassemble the battery or change its structure.

对于制作电池块(组), 请在电池块(组)上标记以下警告:

*使用(制造厂商)指定的充电器。

*禁止将电池投入火中或对电池加热。

*禁止将电池正负极短路。

*禁止拆开, 改变电池(组)结构。

13. Notice for Designing Battery / 电池组设计注意事项**13.1 Battery design**

电池组设计

13.1.1 Battery shell should be with enough mechanical strength, to protect the inner cell from mechanical shock;

电池外壳应有足够的机械强度以保证其内部电池免受机械撞击;

13.1.2 No cell movement in the battery should be allowed;

电池不得在壳内活动;

13.1.3 No Sharp edge or bulge components should be inside the pack containing the battery;

外壳内安装电池的部位不应有锋利的边角或凸起;

13.2 Avoid some components to contact the edge of packing foil of batteries ;

避免导电元件与电池包装铝箔的边缘接触;

13.3 Tab connection

电池的连接

13.3.1 Ultrasonic welding or spot welding is recommended to connect battery with PCM or other parts;

建议使用超声波焊接或点焊技术来连接电池与保护电路模块或其它部分;

13.3.2 The tab is not very firm. Don't bend the tab。especially the positive pole. It will rupture easily;

电池极耳的机械强度并非十分坚固, 弯折容易断裂, 尤其是正极耳.禁止多次弯折极耳;

13.3.3 If apply manual solder method to connect tab with PCM, below notice is very important to ensure battery performance:

如使用手工锡焊, 须注意以下事项, 以保证电池的功能:

1). The solder iron should be temperature controlled and ESD safe;

烙铁的温度可控且防静电;

2). Soldering temperature should below 350°C;

烙铁温度应该小于 350°C;

3). Soldering time should not be longer than 3s ;

锡焊时间不能超过 3 秒;

4). Soldering times should not exceed 3 times ,secondary welding should be done after the poles are cooling;

锡焊次数不能超过 3 次, 必须在极耳冷却后再进行二次焊接;

5). Heating up the cell is strictly prohibited, and the cell will be completely destroyed at 100°C.

禁止直接加热电池, 高于 100°C会导致电池损坏;

6). Don't let the electric iron contact the surface of the cell.

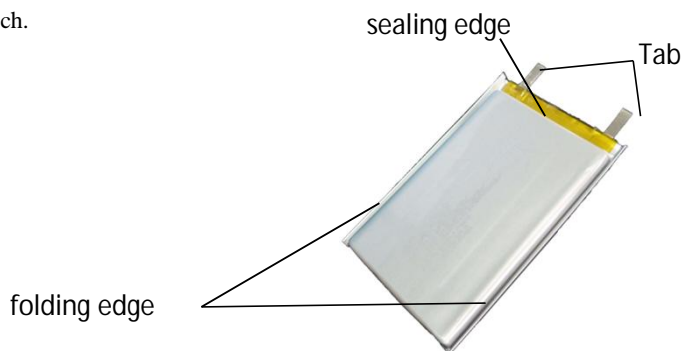
禁止电烙铁头接触电池表面。

Please use the battery according to the provisions as below ,Incorrect using of the battery may cause fire or expansion, and destroy its performance.

请仔细阅读并遵照以下条款安装使用电池，不正确的使用可能会导致电池气鼓、着火等，降低了电池的性能或破坏电池。

14. Warnings 警告

- 14.1 Don't throw the battery in fire or heat it or store it in high temperature place ;
请勿将电池放入火中，或对电池加热，请勿在高温下储存电池；
- 14.2 Don't operate or use the battery under high temperature or next to the heating material;
禁止在高温环境下或热源旁操作或者使用电池,禁止将电池加热或者投入火中；
- 14.3. Don't fix the positive and negative of the battery reversely to the electrical equipment ;
安装电池时请勿将正负极反接；
- 14.4 Don't connect the positive and negative polarities by metallic conductor such as a metallic wire;
请勿将电池正负极用金属物体（如导线）直接连接等方式造成电池短路；
- 14.5 Don't impact or scrape the surface of the battery by spiculate parts;
禁止用尖锐部件碰撞或刮擦电池表面；
- 14.6 Don't stab it with a needle,beating,treading,fold or other way;
请勿用针刺、用锤敲打、用力踩踏、弯折或其它方式对电池进行撞击；
- 14.7 Don't drop or fling the battery randomly;
禁止坠落、抛掷电池；
- 14.8 Keep the cell sealed!(Don't open or deform folding edge, don't bend or fold sealing edge,etc);
请勿破坏电池密封(包括打开折边、弯折封边等)；
- 14.9 Don't disassemble the battery or change its structure!;
请勿乱拆电池，请勿随意改变电池结构；
- 14.10 Don't throw the battery in water, please keep it from humidity.
请勿将电池放入水中，储存时注意电池不要受潮。
- 14.11 Don't connect negative potential with the pouch.
禁止负电位与铝塑膜短接。



15. Attention注意

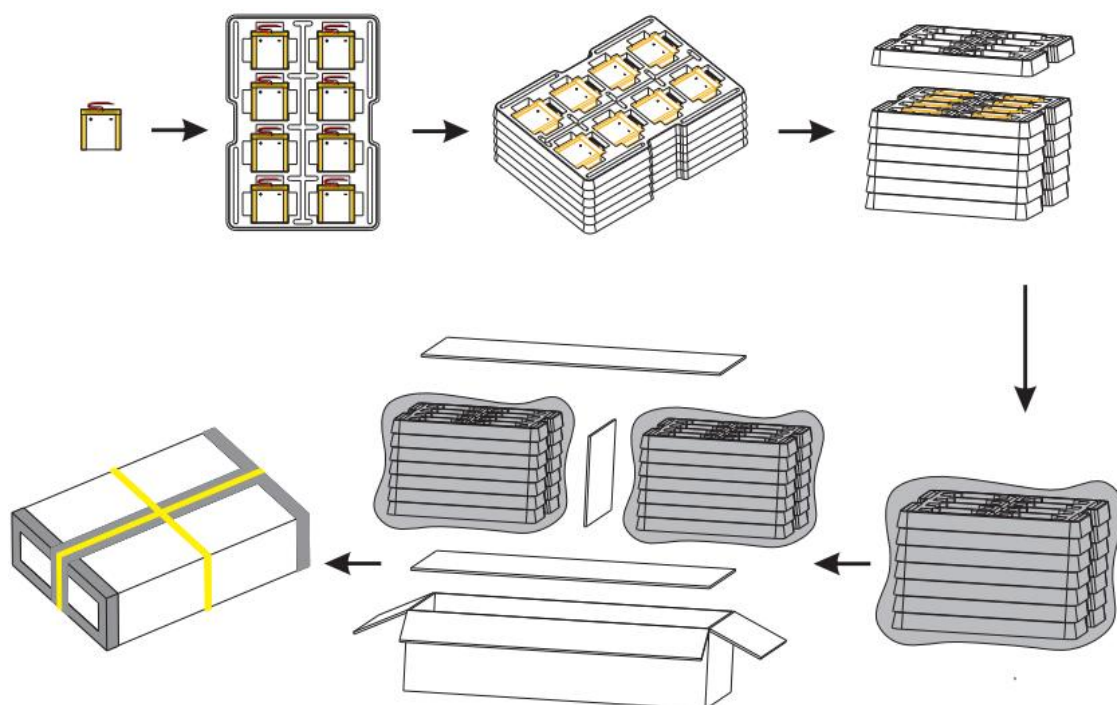
- 15.1 Please use the qualified equipment to charge and discharge the battery, and follow the right instructions.
充放电时请勿用不合格设备，并遵循正确的使用说明。
- 15.2 Don't use batteries of different types or batteries supplied by different manufacturer together. Don't use the old and new batteries together.
请勿将不同厂家或不同种类、型号的电池以及新旧电池混用。
- 15.3 Don't charge or discharge the hot, inflation, distorted or electrolyte-leakage battery.
请勿将发热、气鼓、变形或漏液电池放入设备中充放电。
- 15.4 Don't let the battery over-charge or over-discharge.
在充放电时，不能超出本规格书规定的电压、电流范围。

16. Reminding提醒

- 16.1 Don't use the damaged batteries (the sealing edge was damaged, the pack was damaged, the electrolyte leakage, etc.). If the battery heating when using, go far away from the battery, it may avoid unnecessary damage;
禁止使用已损坏的电池(电池封口封边损坏,外壳破损,闻到电解液,电解液泄漏等). 操作电池时,如果发现电池发热,要立即远离该电池以免造成不必要的伤害;
- 16.2 Theoretically, there is not flowing electrolyte in the battery, but if the leakage of electrolyte happen, or the electrolyte splash down to the skin, eyes or other parts of the body, wash with water and go to hospital immediately;
聚合物锂离子电池理论上不存在流动的电解液,但万一有电解液泄漏而接触到皮肤、眼睛或身体其它部位,应立即用清水冲洗并就医;
- 16.3 The batteries supplied by AEC (Apower Electronics Co.,Ltd.) had passed the QC before sales, if there is any abnormal problem such as unidentified heating,expansion and peculiar smell,please contact with us;
电池组出货前已由QC严格检查，如客户发现所购电池有发热、气鼓或异味现象，请与我司联系;
- 16.4 Shipment within 14 days of complete customer incoming inspection.
出货起14天内，客户需完成进料检验。
- 16.5 For more than its expiration date or cycles specifications after the voltage is lower than 2.5 V battery and can't be charged to 3.0V with current 0.2C within 30min, then should stop charging, and the battery shouldn't be used again.
对于超过保质期或者循环次数规格后电压低于2.5V的电池，建议先用0.2C充电30分钟单颗电池电压仍未到达3.0V，应停止充电，电池应禁止再次使用。
- 16.6 The land transportation battery stored beyond six months or air freight battery stored beyond six months, should be charged to 3.7~3.9V/cell with constant current at 0.5C .
陆运电池储存超过6个月或空运电池超过3个月，请客户对电池用0.5C电流充电至单个电池电压3.7~3.9V。

17.Package/包装

Package sketch map/ 包装示意图



5、R-T table

$R_{25}=10K\Omega \pm 1\%$

$B_{25/85}=3435K \pm 1\%$

T(℃)	R _{Min} (KΩ)	R _{Nor} (KΩ)	R _{Max} (KΩ)	T(℃)	R _{Min} (KΩ)	R _{Nor} (KΩ)	R _{Max} (KΩ)
-40	212.0153	220.8889	230.1108	-1	28.6432	29.2447	29.8558
-39	199.8448	208.0846	216.6426	0	27.4021	27.9650	28.5366
-38	188.4623	196.1166	204.0614	1	26.2226	26.7494	27.2840
-37	177.8114	184.9244	192.3028	2	25.1013	25.5943	26.0943
-36	167.8401	174.4525	181.3073	3	24.0350	24.4962	24.9639
-35	158.5003	164.6495	171.0202	4	23.0206	23.4522	23.8895
-34	149.7478	155.4682	161.3910	5	22.0554	22.4591	22.8680
-33	141.5416	146.8649	152.3732	6	21.1366	21.5143	21.8965
-32	133.8440	138.7994	143.9239	7	20.2617	20.6150	20.9723
-31	126.6200	131.2344	136.0033	8	19.4285	19.7588	20.0928
-30	119.8373	124.1355	128.5749	9	18.6346	18.9435	19.2555
-29	113.4661	117.4708	121.6048	10	17.8780	18.1667	18.4583
-28	107.4785	111.2110	115.0617	11	17.1567	17.4266	17.6989
-27	101.8490	105.3288	108.9166	12	16.4689	16.7210	16.9753
-26	96.5538	99.7989	103.1426	13	15.8129	16.0483	16.2857
-25	91.5709	94.5978	97.7150	14	15.1869	15.4067	15.6282
-24	86.8797	89.7039	92.6106	15	14.5894	14.7946	15.0012
-23	82.4614	85.0971	87.8082	16	14.0191	14.2105	14.4031
-22	78.2982	80.7585	83.2879	17	13.4744	13.6529	13.8325
-21	74.3738	76.6710	79.0312	18	12.9541	13.1205	13.2878
-20	70.6729	72.8183	75.0212	19	12.4570	12.6120	12.7677
-19	67.1815	69.1854	71.2420	20	11.9818	12.1262	12.2711
-18	63.8862	65.7584	67.6787	21	11.5276	11.6620	11.7967
-17	60.7748	62.5243	64.3177	22	11.0933	11.2182	11.3435
-16	57.8359	59.4711	61.1463	23	10.6779	10.7940	10.9102
-15	55.0589	56.5874	58.1525	24	10.2804	10.3882	10.4961
-14	52.4338	53.8628	55.3252	25	9.9000	10.0000	10.1000
-13	49.9513	51.2875	52.6542	26	9.5287	9.6286	9.7285
-12	47.6028	48.8524	50.1299	27	9.1734	9.2731	9.3729
-11	45.3803	46.5491	47.7432	28	8.8334	8.9327	9.0322
-10	43.2761	44.3694	45.4858	29	8.5079	8.6068	8.7059
-9	41.2833	42.3062	43.3500	30	8.1963	8.2946	8.3932
-8	39.3953	40.3523	41.3284	31	7.8979	7.9955	8.0936
-7	37.6060	38.5014	39.4142	32	7.6120	7.7089	7.8063
-6	35.9095	36.7474	37.6010	33	7.3380	7.4342	7.5308
-5	34.3005	35.0846	35.8830	34	7.0755	7.1708	7.2666
-4	32.7739	33.5077	34.2545	35	6.8238	6.9182	7.0131
-3	31.3251	32.0118	32.7103	36	6.5824	6.6759	6.7699
-2	29.9496	30.5923	31.2456	37	6.3510	6.4434	6.5365

T(°C)	R _{Min} (KΩ)	R _{Nor} (KΩ)	R _{Max} (KΩ)	T(°C)	R _{Min} (KΩ)	R _{Nor} (KΩ)	R _{Max} (KΩ)
38	6.1289	6.2203	6.3124	82	1.5320	1.5764	1.6218
39	5.9158	6.0061	6.0972	83	1.4898	1.5333	1.5780
40	5.7114	5.8005	5.8905	84	1.4489	1.4917	1.5355
41	5.5150	5.6031	5.6920	85	1.4094	1.4513	1.4944
42	5.3265	5.4135	5.5013	86	1.3711	1.4123	1.4546
43	5.1455	5.2313	5.3179	87	1.3340	1.3745	1.4161
44	4.9716	5.0562	5.1417	88	1.2981	1.3379	1.3787
45	4.8045	4.8879	4.9723	89	1.2633	1.3024	1.3425
46	4.6439	4.7261	4.8093	90	1.2297	1.2680	1.3074
47	4.4896	4.5706	4.6526	91	1.1970	1.2347	1.2734
48	4.3412	4.4210	4.5018	92	1.1654	1.2024	1.2404
49	4.1985	4.2771	4.3567	93	1.1348	1.1711	1.2085
50	4.0612	4.1386	4.2170	94	1.1051	1.1408	1.1775
51	3.9292	4.0054	4.0826	95	1.0764	1.1114	1.1474
52	3.8021	3.8771	3.9531	96	1.0485	1.0829	1.1183
53	3.6798	3.7536	3.8285	97	1.0214	1.0552	1.0900
54	3.5621	3.6347	3.7084	98	0.9952	1.0284	1.0626
55	3.4488	3.5202	3.5927	99	0.9698	1.0024	1.0359
56	3.3396	3.4099	3.4812	100	0.9451	0.9771	1.0101
57	3.2345	3.3036	3.3738	101	0.9212	0.9526	0.9850
58	3.1332	3.2011	3.2702	102	0.8979	0.9288	0.9607
59	3.0356	3.1024	3.1703	103	0.8754	0.9058	0.9370
60	2.9416	3.0072	3.0740	104	0.8536	0.8834	0.9141
61	2.8509	2.9155	2.9811	105	0.8323	0.8616	0.8918
62	2.7635	2.8269	2.8915	106	0.8117	0.8405	0.8702
63	2.6793	2.7416	2.8051	107	0.7917	0.8200	0.8492
64	2.5980	2.6592	2.7216	108	0.7723	0.8001	0.8287
65	2.5196	2.5797	2.6411	109	0.7535	0.7807	0.8089
66	2.4439	2.5030	2.5633	110	0.7351	0.7619	0.7896
67	2.3709	2.4290	2.4883	111	0.7173	0.7437	0.7709
68	2.3005	2.3575	2.4158	112	0.7001	0.7259	0.7527
69	2.2324	2.2885	2.3457	113	0.6833	0.7087	0.7350
70	2.1668	2.2218	2.2781	114	0.6669	0.6919	0.7178
71	2.1034	2.1575	2.2127	115	0.6511	0.6756	0.7010
72	2.0421	2.0952	2.1495	116	0.6357	0.6598	0.6847
73	1.9830	2.0351	2.0885	117	0.6207	0.6444	0.6689
74	1.9258	1.9770	2.0294	118	0.6061	0.6294	0.6535
75	1.8706	1.9209	1.9724	119	0.5919	0.6148	0.6386
76	1.8172	1.8666	1.9172	120	0.5782	0.6007	0.6240
77	1.7656	1.8141	1.8638	121	0.5648	0.5869	0.6098
78	1.7157	1.7634	1.8122	122	0.5518	0.5735	0.5960
79	1.6675	1.7143	1.7622	123	0.5391	0.5604	0.5826
80	1.6208	1.6668	1.7139	124	0.5267	0.5477	0.5695
81	1.5757	1.6208	1.6671	125	0.5147	0.5354	0.5568

Device Specification

ELECTRICAL CHARACTERISTICS



Part Number	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	$P_{d typ}$ (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec.)	R_{min} (Ω)	R_{1max} (Ω)
SMD1206P200SLR	2.00	4.00	6	50	0.80	8.00	0.50	0.005	0.025

Note: I_{hold} = Hold current: maximum current device will pass without tripping in 23 °C still air.

I_{trip} = Trip current: minimum current at which the device will trip in 23 °C still air.

V_{max} = Maximum voltage device can withstand without damage at rated current (I_{max})

I_{max} = Maximum fault current device can withstand without damage at rated voltage (V_{max})

P_d = Power dissipated from device when in the tripped state at 23 °C still air.

R_{min} = Minimum resistance of device in initial (un-soldered) state.

R_{1max} = Maximum resistance of device at 23 °C measured one hour after tripping or reflow soldering of 260 °C for 20 sec.

*Value specified were determined using the PWB with 0.030" * 1.5oz copper traces.

*Customer should verify the device performance in their specified conditions.

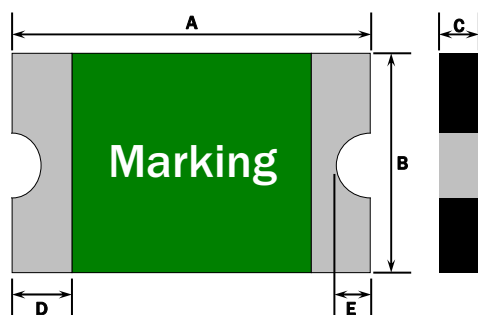
Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

Recognitions:  

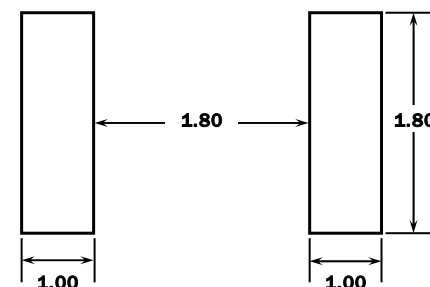
Marking

Polytronics / Polystar Logo
 P_{L2}
Part Identification

Figure



Recommended Pad Layout (mm)



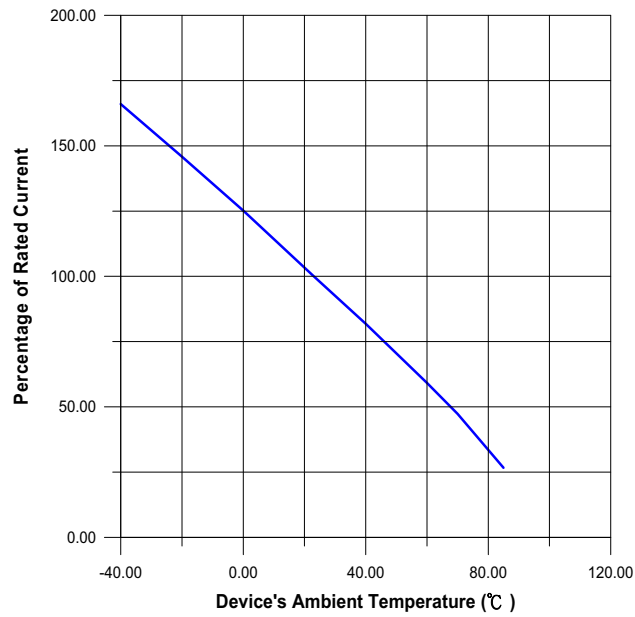
Note: Polystar is Polytronics's manufacturing site in China. The Polystar ID marking shall appear on smallest package.

PHYSICAL DIMENSIONS (mm)

Part Number	A		B		C		D		E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
SMD1206P200SLR	3.00	3.40	1.50	1.80	0.40	0.60	0.25	0.75	0.05	0.45

©Specifications are subject to change without notice.

Thermal Derating Curve

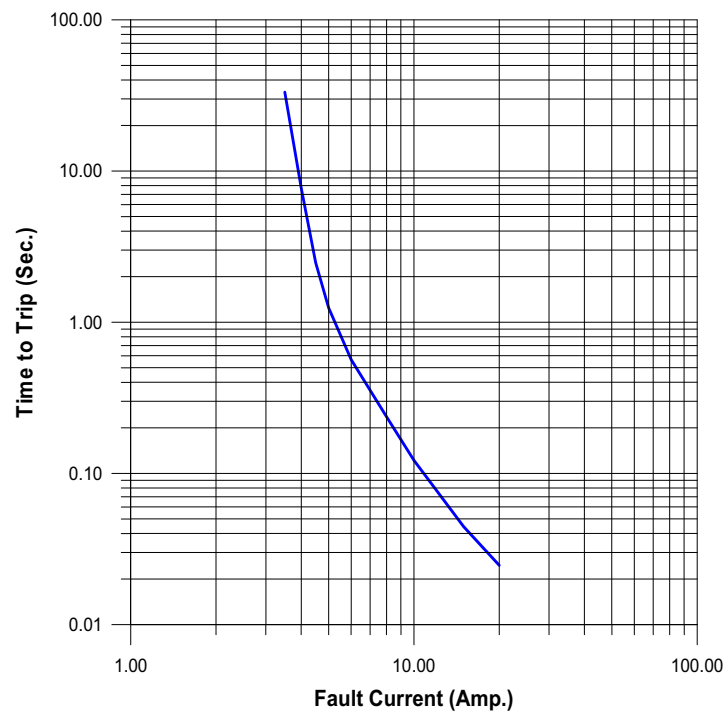


Thermal Derating Chart – I_{hold}/I_{trip} (Amps)

Recommended Data

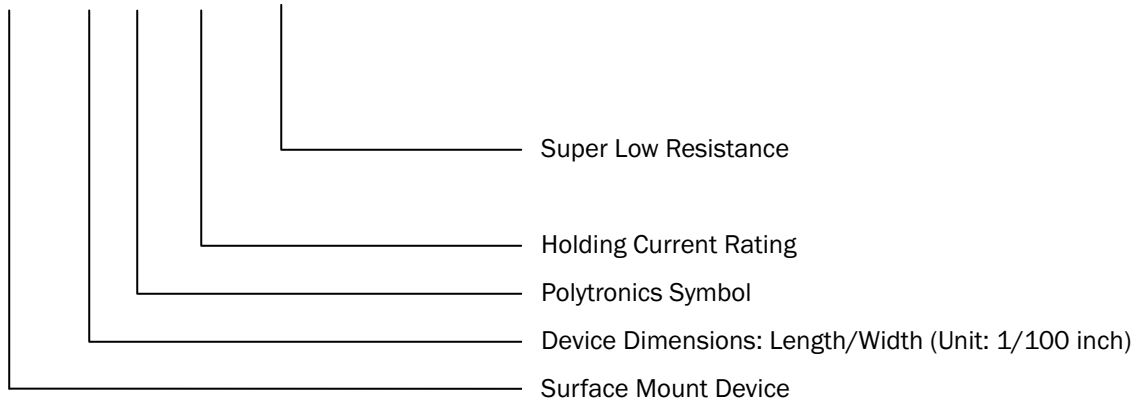
Part Number		Ambient Operation Temperature								
		-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
SMD1206P200SLR	I_{hold}	2.95	2.80	2.30	2.00	1.55	1.38	1.20	1.00	0.70
	I_{trip}	5.95	5.70	4.60	4.00	3.15	2.80	2.45	2.05	1.40

Average Time-Current Curve



Part Number System

SMD 1206 P □□□ SLR

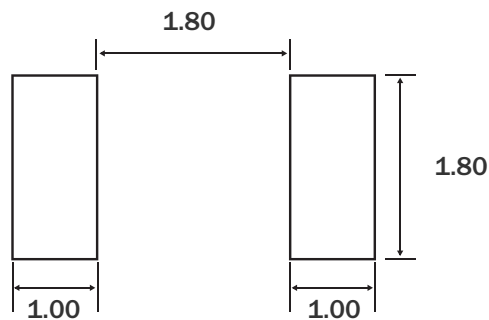


Environmental Specifications

Operating/Storage Temperature	-40°C to +85 °C
Maximum Device Surface Temperature in Tripped State	125°C
Moisture Level Sensitivity	Level 1, J-STD-020C

Packaging Quantity and Marking

Recommended Pad Layout (mm.)



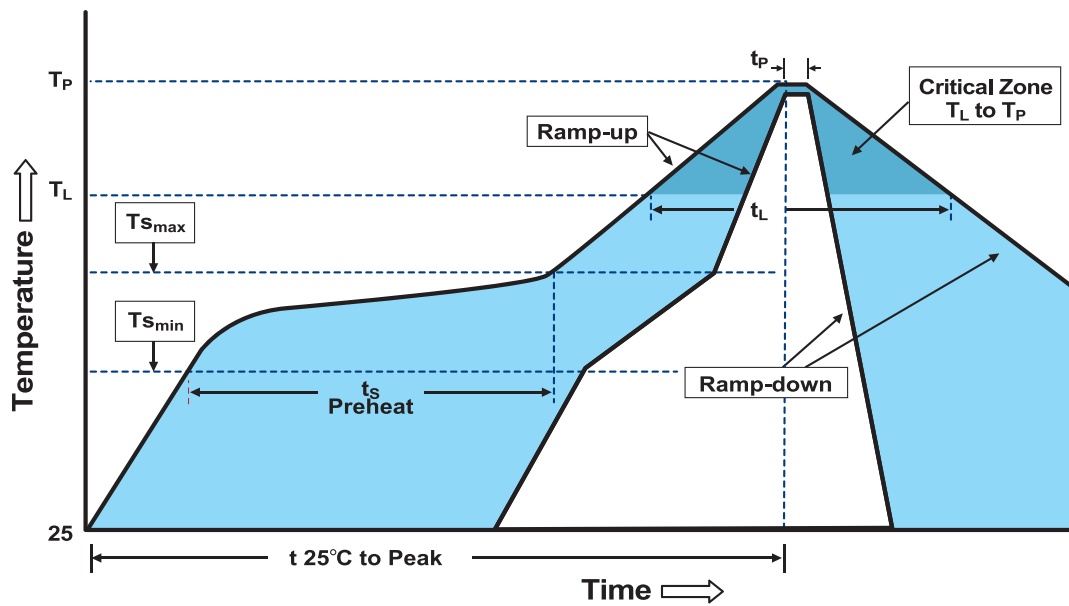
Part Number	Marking	Quantity
SMD1206P200SLR	L2	4000

◎ 8 mm tape on 7 inch reel per EIA-481-1 (equivalent to IEC286, part 3)

Physical Specifications

Terminal Material	100% matte tin with nickel underplate.
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3.

Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T_{smax} to T_P)	3°C/second max.
Preheat	
-Temperature Min (T_{smin})	150°C
-Temperature Max (T_{smax})	200°C
-Time (T_{smin} to T_{smax})	60-180 seconds
Time maintained above:	
-Temperature (T_L)	217°C
-Time (t_L)	60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-Down Rate	6 °C /second max.
Time 25°C to Peak Temperature	8 minutes max.
Storage Condition	0°C ~35°C, ≤70%RH

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N₂ environment for lead-free
- Recommended maximum paste thickness is 0.25mm (0.010 inch)
- Devices can be cleaned using standard industry methods and solvents.
- Devices can be reworked using the standard industry practices.

Note 1: All temperature refer to topside of the package, measured on the package body surface.

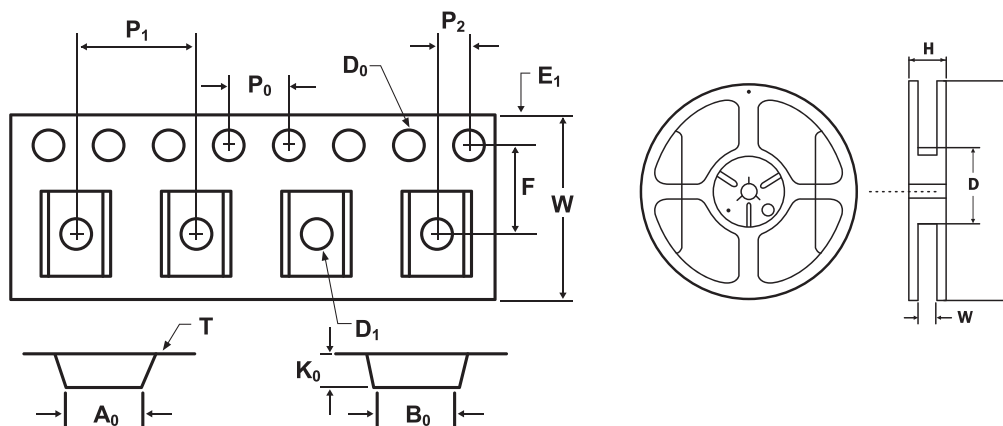
Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Tape Specifications: EIA-481-1 (mm.)

W	8.20 +0.10/-0.30
F	3.50 ± 0.05
E ₁	1.75 ± 0.10
D ₀	1.55 ± 0.05
D ₁	1.00 ± 0.10
P ₀	4.00 ± 0.10
P ₁	4.00 ± 0.10
P ₂	2.00 ± 0.05
A ₀	1.95 ± 0.10
B ₀	3.65 ± 0.10
T	0.20 ± 0.10
K ₀	0.87 ± 0.10
Leader min.	390
Trailer min.	160

Reel Dimensions: EIA-481-1 (mm.)

C	Ø178 ± 1.0
D	Ø60.2 ± 0.5
H	11.0 ± 0.5
W	9.0 ± 1.5



Arctis 7P

Title	Arctis 7P																							
Description	The SteelSeries Arctis 7P Wireless headset is designed specifically for PlayStation 5 with backwards compatibility on PlayStation 4 and other platforms. It has 24-hour battery life for nonstop gaming, easy on-headset controls, a durable and adjustable build, and lossless ultra-low latency wireless connectivity.																							
Features	N/A																							
Available	ASIA: -	EMEA: -	AMERICAS: -																					
Versions	<table><tr><th>Name</th><th>SKU</th><th>EAN</th><th>UPC</th><th>EAN inner master</th></tr><tr><td>N/A</td><td>61466</td><td>5707119046611</td><td>850014119850</td><td>5707119046629</td></tr><tr><td>N/A</td><td>61467</td><td>5707119043854</td><td>850014119850</td><td>5707119043861</td></tr></table>				Name	SKU	EAN	UPC	EAN inner master	N/A	61466	5707119046611	850014119850	5707119046629	N/A	61467	5707119043854	850014119850	5707119043861					
Name	SKU	EAN	UPC	EAN inner master																				
N/A	61466	5707119046611	850014119850	5707119046629																				
N/A	61467	5707119043854	850014119850	5707119043861																				
Package contents	N/A																							
Specifications	<table><tr><td colspan="2">Headphones:</td><td colspan="2">Microphone:</td></tr><tr><td>Freq. response</td><td>20 - 20000</td><td>Freq. response</td><td>100 - 6500</td></tr><tr><td>Impedence</td><td>32Ohm</td><td>Pick up pattern</td><td>Bidirectional</td></tr><tr><td>Cable</td><td>1.2m / 4ft</td><td>Sensitivity</td><td>-38</td></tr><tr><td>Connection</td><td>Multiple</td><td>Impedence</td><td>2200Ohm</td></tr></table>				Headphones:		Microphone:		Freq. response	20 - 20000	Freq. response	100 - 6500	Impedence	32Ohm	Pick up pattern	Bidirectional	Cable	1.2m / 4ft	Sensitivity	-38	Connection	Multiple	Impedence	2200Ohm
Headphones:		Microphone:																						
Freq. response	20 - 20000	Freq. response	100 - 6500																					
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Connection	Multiple	Impedence	2200Ohm																					
Requirements	N/A																							
Packing	<table><tr><td colspan="2">Single:</td></tr><tr><td>Pcs</td><td>1</td></tr><tr><td>Weight</td><td>711g / 1.57lbs</td></tr><tr><td>Height</td><td>237mm / 9.33in</td></tr><tr><td>Width</td><td>237mm / 9.33in</td></tr><tr><td>Depth</td><td>71mm / 2.79in</td></tr></table>				Single:		Pcs	1	Weight	711g / 1.57lbs	Height	237mm / 9.33in	Width	237mm / 9.33in	Depth	71mm / 2.79in								
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Warranty	<table><tr><td>EU:</td><td>N/A</td></tr><tr><td>US:</td><td>N/A</td></tr><tr><td>Taiwan:</td><td>N/A</td></tr></table> <p>(All products are covered by local warranty regulations. Please check with your local distributor or retailer, if your country is not listed)</p>				EU:	N/A	US:	N/A	Taiwan:	N/A														
EU:	N/A																							
US:	N/A																							
Taiwan:	N/A																							
Certifications	N/A																							
Country of origin	Designed in Denmark by SteelSeries, produced in China.																							