深圳市弘达安电子科技有限公司

产品规格书

Product Specifications

型号: 402030P-180mAh

受领公司签收（请将该页回执，对有异议项目以书面形式提出，或直接与业务员联系）

提交日期：

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1、Scope of Application：

This specification applies to the lithium polymer batteries manufactured by Shenzhen Hongdaan Electronic Technology Co., Ltd. The products described in this specification comply with the requirements of the national standard GB/T18287-2000.

2、Product Type：

2.1 **Type:** Lithium Polymer Rechargeable Battery

2.2 Spec： PL402030

3、Basic Parameters：

序号	项　　目	单位	参数要求	备注说明
1	Typical Capacity	mAh	190	The capacity obtained after the battery is charged according to the standard procedure and then discharged according to the standard procedure.
2	Minimum Capacity	mAh	180	The capacity obtained after the battery is charged according to the standard procedure and then discharged according to the standard procedure.
3	Nominal Voltage	V	3.7	The average voltage during the discharge process after the battery is charged according to the standard procedure and then discharged according to the standard procedure.
4	Charging Method		Constant Current	
5	Maximum Charging Voltage	V	4.2	
6	Discharge Cut-off Voltage	V	3.0	
7	Maximum Continuous Charging Current	mA	1.0 CA	
8	Maximum Continuous Discharge	mA	1.0 CA	

	Current				
9	Cell Weight		g		
10	Internal Resistance (including PCB)		mΩ	≤180	
11	Dimensions (T × W × H)		mm		Reference Drawing
12	Transportation Voltage Requirement		V	3.85~4.06	(approximately 70% capacity)
13	Shipping Voltage Requirement		V	3.85~4.06	
14	Operating Temperature	Charging	℃	0~45	
		Discharging	℃	-20~60	
15	Storage Temperature		℃	-5~45	
16	Storage Humidity		RH	≤85%	

4、Appearance：

The battery surface should not have any severe cosmetic defects that would affect its normal operation.。

5、Technical Requirements：

5.1 Test Conditions (Unless otherwise specified, all tests should be conducted under standard atmospheric pressure.)

Temperature: (25 ± 5)°C

Relative Humidity: (65 ± 20)%

Atmospheric Pressure: (96 ± 10) kPa

5.2 **Standard Charging:**

Under ambient temperature conditions of (25 ± 5)°C, charge the battery with a constant current of 0.5CA until the maximum voltage is reached, then continue charging with constant voltage until the current drops below 0.02CA.

5.3 **Standard Discharging:**

Under ambient temperature conditions of (25 ± 5)°C, discharge the battery with a current of 0.2CA until the voltage reaches 3.0V and measure the capacity.

6、 Electrochemical Performance**：**

序号	项目	测试方法	技术要求
1	Rated Capacity	After completing the charging as per section 5.2, rest the battery for 10 minutes. Then, in an ambient temperature of (25 ± 5)°C, discharge the battery with a constant current of 1CA until the cut-off voltage is reached.	The discharge time shall be ≥ 57 minutes.
2	High Current Discharge Performance	After completing the charging as per section 5.2, rest the battery for 10 minutes. Then, in an ambient temperature of (25 ± 5)°C, discharge the battery with a constant current of 1.5CA until the cut-off voltage is reached.	No obvious deformation or, cracking in appearance.
3	Cycle Performance	After completing the charging as per section 5.2, rest the battery for 10 minutes, then discharge with a constant current of 1CA until the cut-off voltage is reached, which constitutes one cycle. The test stops after 300 cycles.	The final discharge time shall be ≥ 45 minutes.
4	Charge Retention	After completing the charging as per section 5.2, store the battery for 28 days in an ambient temperature of (25 ± 5)℃. Then, discharge the battery with a constant current of 0.2CA until the cut-off voltage is reached. Measure the discharge capacity.	The final discharge time shall be ≥ 270 minutes.
5	High-Temperature Discharge	After completing the charging as per section 5.2, store the battery in a temperature-controlled chamber at 60℃ ± 2℃ for 2 hours. Then, discharge the battery with a constant current of 1CA until the cut-off voltage is reached and measure the discharge time. Afterward, store the battery in an ambient temperature of (25 ± 5)℃ for 2 hours and visually inspect its appearance.	No obvious deformation or cracking in appearance; Discharge time shall be ≥ 54 minutes.

6	Low-Temperature Discharge	After completing the charging as per section 5.2, store the battery in a temperature-controlled chamber at -20℃ ± 2℃ for 16 to 24 hours. Then, discharge the battery with a constant current of 0.2CA until the cut-off voltage is reached and measure the discharge time. Afterward, store the battery in an ambient temperature of (25 ± 5)℃ for 2 hours and visually inspect its appearance.	No obvious deformation or cracking in appearance; Discharge time shall be ≥ 180 minutes.

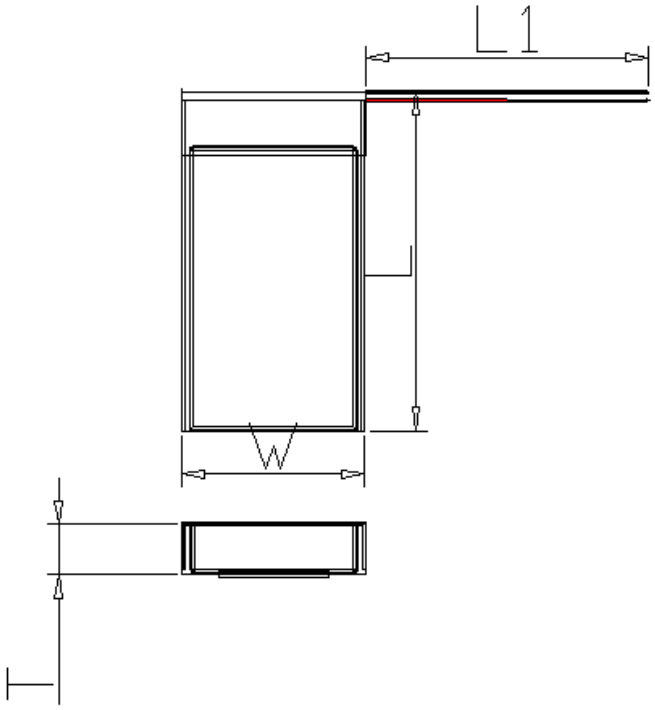
7、 Safety and Environmental Adaptability Performance Test：

序号	项目	测试方法	技术要求
1	Vibration	After completing the charging as per section 5.2, install the battery on a vibration table or fix it with a fixture. Adjust the vibration frequency and corresponding amplitude, and vibrate along the X, Y, and Z three mutually perpendicular directions with a frequency range of 10Hz to 55Hz. Vibration current (I): 60%; Vibration time (T): 30 minutes.	No fire or leakage. No obvious damage or explosion.
2	Drop Test	In the battery's standard charged state, drop the battery from a height of 1.0m onto a 20mm thick hardwood board. The battery should be dropped freely once in each of the six directions (positive and negative directions of X, Y, and Z axes).	No fire or leakage. No rupture or explosion.
3	Short Circuit	After standard charging, let the battery rest for 24 hours. Then short-circuit the positive and negative terminals (with a	No fire or explosion. External temperature

		total circuit resistance ≤ 50 mΩ). Monitor the temperature changes, and end the test when the temperature drops by 10℃ from the peak value. Inspect the battery's appearance and temperature afterward.	shall be ≤ 150°C.
4	Thermal Shock	After standard charging, let the battery rest for 24 hours. Then place it in a thermal chamber and raise the temperature at a rate of 5℃ ± 2℃ per minute until it reaches 130℃ ± 2℃. Maintain this temperature for 30 minutes, then inspect the battery's appearance.	No fire or explosion.
5	Overcharge	After standard charging, charge the battery with a constant current of 3CA. When the voltage reaches 4.8V, switch to constant voltage charging and continue until the charging current drops to 10mA. Then inspect the battery’s appearance.	No fire or explosion.
6	Constant Temperature and Humidity	After standard charging, store the battery in a temperature and humidity chamber at 40℃ ± 2℃ with a relative humidity of 90% to 95% for 48 hours. Afterward, remove the battery and place it in an ambient temperature of 25℃ ± 5℃ for 2 hours. Visually inspect the battery’s appearance. Then, discharge the battery with a constant current of 1CA until the cut-off voltage is reached.	No obvious deformation, smoking, or explosion in appearance; Discharge time shall be ≥ 36 minutes.

7	Puncture Test	After the battery is fully charged according to the standard, quickly puncture the battery's longitudinal axis with a steel needle with a diameter of 2.5mm to 5mm. The needle should remain inside the battery for 6 hours.	No fire or explosion.

8、PL402030 Battery Dimension Diagram (Unit: mm)



项目	技术要求
Thickness (T)	**≤4.0mm**
Width (W)	**≤20.0mm**
Height (L)	**31mm±1mm**
Lead Length (L1)	**25mm±5mm**
Wire Number	**26#**
Wiring Method	Left Wiring
PCB (Protection Circuit Board)	**DW01+8205**
Terminal Dimensions	