File MH60484
Project 4786591652

November 21, 2014

REPORT

On

Batteries, Household and Commercial
(BBFS)

Complementary Product Category

Information Technology Equipment
Including Electrical Business Equipment
(NWGQ, NWGQ7)

DESCRIPTION

PRODUCT COVERED:

USL, CNL – Portable Power Bank, Model(s): PB01, PB02, SP826.

Basic Model(s)	Derivative Model(s)	Model Differences
*PB01	1557, CPP-3792, IT122	All Derivative Models are identical to Basic Model except for Model designation
*PB02	7120-15, CPP-3795	All Derivative Models are identical to Basic Model except for Model designation
*SP826	CPP-3860	All Derivative Models are identical to Basic Model except for Model designation
Remark: Model PB01 is identical to Model PB02 except for model designation, and that Model PB01 is designed with switch Button and Indicator, which are specified in Construction Details Descriptive pages. Model SP826 is identical to Model PB02 except for model and enclosure designation.		

ELECTRICAL RATING

Model	Voltage (Nominal)	Capacity (Nominal)	Manufacturer's Recommended Use Ambient
PB01, PB02, SP826	5.0Vdc	2200mAh	0~45°C for Charging, -20~55°C for Discharging

Note: The packs have been tested based upon their electrical ratings but no capacity performance testing has been conducted. In addition, no testing with a host product including a charger has been conducted.

CELL CHEMISTRY AND CONFIGURATION:

Pack Model	Cell Model	Cell Chemistry and Type#	Number of Cells	Configuration*: X-S/Y-P
PB01, PB02, SP826	FST18650NB-2200mAh	lithium ion cylindrical	1	1-S/1-P
* - X = No. of cells in series; Y = Number of parallel strings # - e.g. lithium ion cylindrical, lithium ion prismatic, lithium ion polymer (soft pouch), Ni-Cad prismatic, etc.				

MANUFACTURER'S RECOMMENDED CHARGING PARAMETERS:

Model	Standard Charging Current	Standard Charging Voltage	Maximum Charging Current	Maximum Charging Voltage
PB01, PB02, SP826	550mA	5.0Vdc	600mA	5.3Vdc

GENERAL CONSTRUCTION:

See Section General for general details regarding construction.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVES'S USE):

The output of these battery packs has been determined to be limited power in accordance with second edition of UL 2054 issue dated October 29, 2004 with revisions through and including September 14, 2011.

Products designated USL have been investigated using requirements contained in the First Edition of UL 2054, Standard for Household and Commercial Batteries issue dated October 29, 2004 and contains revisions through and including September 14, 2011.

Products designated USL have been investigated using requirements contained in the U.S. Standard for Safety of Information Technology Equipment-Safety-Part1: General Requirements, UL 60950-1, Second Edition, issue dated March 27, 2007, with revisions through and including October 14, 2014.

Products designated CNL have been investigated using requirements contained in the Canadian Standard for the Safety of Information Technology Equipment-Safety-Part1: General Requirements, Canadian Standards Association, CAN/CSA-C22.2 No. 60950-1-07, second Edition, issue dated March 27, 2007, with revisions through and including October 14, 2014.

MARKINGS/INSTRUCTIONS:

All markings shall be legible and permanent such as ink stamped, etched, adhesive labels, etc. All adhesive labels shall be R/C (PGDQ2) component marking and labeling systems or printed on R/C(PGJI2) Component Printing Materials.

Nameplate Marking – The Listee Name, file number(MH60484), trade name, trademark or other descriptive marking; catalog or model number; electrical rating; date of manufacturer; and UL Listing Mark, UL Listing Mark for Canada.

Date of Manufacturer Marking can be identified as following:

S/N: YYMMXXXXXX **or YY-MM-XXXXXX**

Where, YY for Year, MM for Month. For example, 1412000000 indicates the Power Bank was manufactured in December, 2014

Factory Location Marking - See Section General for manufacturing location marking.

Cautionary Markings/Instructions - Each 1) battery pack; or 2) he smallest unit package, must be marked with; or 3) instructions provided with each battery, must include the following statements or equivalent:

a. An attention word such as "CAUTION", “WARNING”, or “DANGER”, and a brief description of possible hazards associated with mishandling of the battery pack such as burn hazard, fire hazard, explosion hazard, and
b. A list of actions to take to avoid possible hazards, such as do not crush, disassemble, dispose of in fire, or similar actions.
c. An attention word such as “Accessible surfaces held or touched for short periods only”.

A lithium ion battery pack shall be marked with the following or equivalent: “CAUTION: Risk of Fire and Burns. Do Not Open, Crush, Heat Above (manufacturer’s specified maximum temperature) or Incinerate. Follow Manufacturer’s Instructions.” This wording or equivalent shall also be included in the instructions packaged with the battery pack.

Charging Marking/Instructions - Recommended charging information is also provided on the product, its smallest packaging unit, or the instructions provided with each battery pack.

The charging limits as outlined in the Manufacturer’s Recommended Charging Parameters Table above are provided as part of these instructions.

*Portable Power Bank, Fig. 1 thru Fig. **10**
See Ill. 1 for additional views of overall battery constructions.

1. Cell – See table below:

Battery Pack Model	Cell Manufacturer	Cell Model No.	Recognized Cells, Y or N*	Recognized Cells	
				File No.	Report Date
PB01, PB02, **SP826**	JIANGXI FIRST NEW ENERGY CO LTD	FST18650NB-2200mAh	Y	MH48852	2012-06-07
Note: See Cell Chemistry and Configuration Table at beginning of report for information on type of cells, number of cells and their configuration in the battery pack circuit.					

Cells are located within the pack in a manner that would not result in blocking of vents in the event of cell venting. Cells are secured in their enclosure and prevented from movement that would cause damage to connections and short circuit of parts by:

Pack Model No.	Description	Cell Layout Ills. No.
PB01, PB02	Cell was fitted and secured by Aluminum Housing and Plastic Frame/Plate.	Fig. 6
SP826	**Cell was fitted and secured in Plastic Enclosure.**	**Fig. 8**

Connections to cell terminals are constructed as noted below:

Pack Model No.	Description	Ills. No. or description
PB01, PB02	Cell was connected to PWB by wires and metal tabs	Fig. 4
SP826	**Cell was connected to PWB by wires and metal tabs**	**Fig. 10**

*

2. Battery Pack Enclosure/Case – See Table Below:

Battery Pack Model	Overall Dimensions, L x W x H, mm	Minimum thick-ness, mm	Enclosure Material Manufacturer/ Grade	Enclosure Material Type	Enclosure material flame rating at Minimum Thickness*
PB01, PB02	Approximately 94.2*22*21	0.6 (Aluminum Housing)	--	--	--
		0.75 (Plastic Frame)	SABIC (E45329, E121562 or E207780)	CX7240(GG)	V-0, 90°C
		0.75 (Plastic Plate)	BAYER MATERIALSCIENCE AG (E41613)	6485+(Z)(f2)	V-1,115°C
SP826	Approximately 94.6*24.3*24.3	0.75 (Plastic Frame)	SABIC (E45329, E121562 or E207780)	CX7240(GG)	V-0, 90°C
* - V-0, V-1, or compliant with UL746C 20mm Flame Test					

For Model PB01, PB02, Plastic Frame/Plate parts are secured by Special Screw, see Fig. 7.

For Model SP826, Plastic Enclosure is secured by Ultrasonic.

3. Protective Circuitry – Consists of the following:

Battery Pack Model No.	Type of Protective Component	Location of Component Within Pack	Component Manufacturer	Component Part No.	Component Ratings
PB01, PB02, **SP826**	IC (U1)	PWB	VIIHOT	VT5017	--
	IC (U2)	PWB	VIIHOT	VT5353	--
	IC (U3)	PWB	Fitipower integrated technology lnc	FP6715	--
	Inductor (L1)	PWB	Various	Various	3.3uH 1.5A

See the following illustrations for details of protective circuitry:

Battery Pack Model Number	Illustration Number
PB01	Ill. 2
PB02, **SP826**	Ill. 3

4. External Connector – Constructed as noted below:

Battery Pack Model Number	R/C Connector Manufacturer	R/C Connector Part Number	Illustration No.
PB01, PB02, **SP826**	--	--	Fig. 5

5. Insulation – R/C (OANZ2), located between cell and other parts, minimum 105 degree C or designated “Flame Retardant”. Except for less than or equal to 2 cm3.

6. Printed Wiring Board – R/C (ZPMV2), Min. V-1, Min. 105°C.

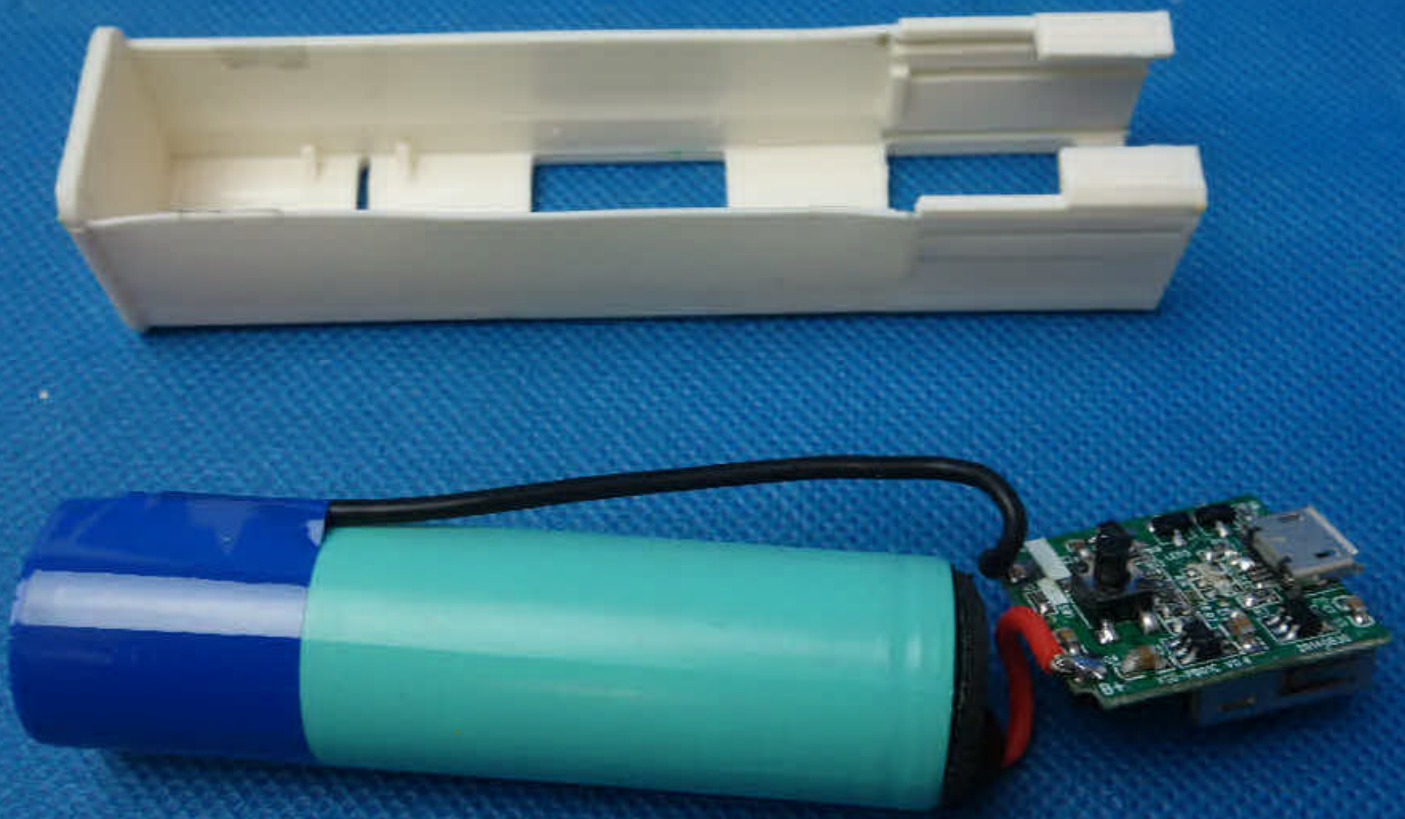
7. Lead Wires - – R/C (AVLV2), Routed away from sharp edges, moving parts. Rated minimum 80 degree C, 30 V, minimum 24 AWG, FEP, PTFE, PVC, TFE, neoprene, or surface marked VW-1 or FT-1.

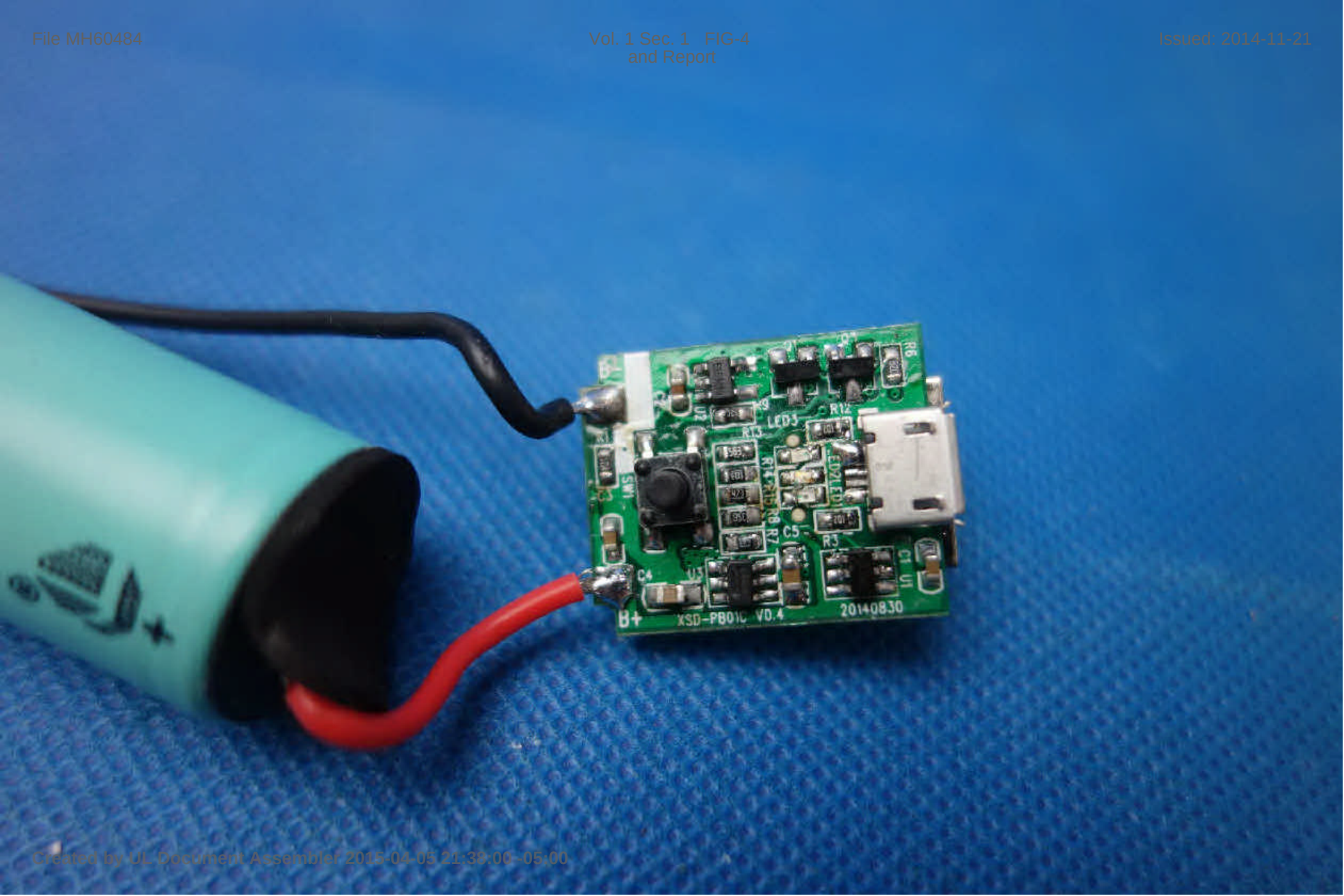
FIGURES:

Fig. No.	Model
1	Overall View – Model PB01
2	Overall View – Model PB02
3	Internal View 1 – Model PB01
4	Internal View 2 – Model PB01
5	Internal View 3 – Model PB01
6	Aluminum Housing and Plastic Frame/Plate - Model PB01, PB02
7	Special Screw for securing - Model PB01, PB02
8	**Overall View 1 – Model SP826**
9	**Overall View 2 – Model SP826**
10	**Internal View – Model SP826**

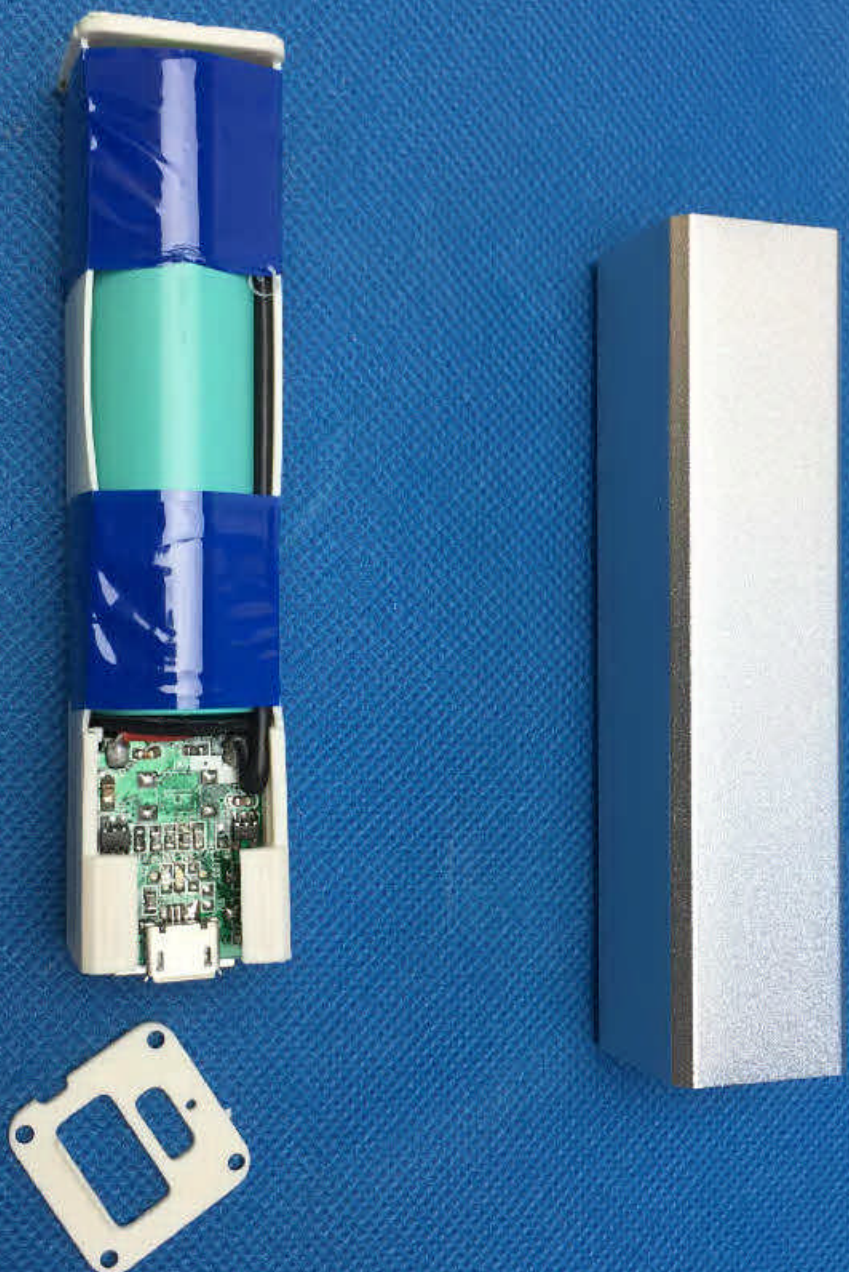
ILLUSTRATIONS:

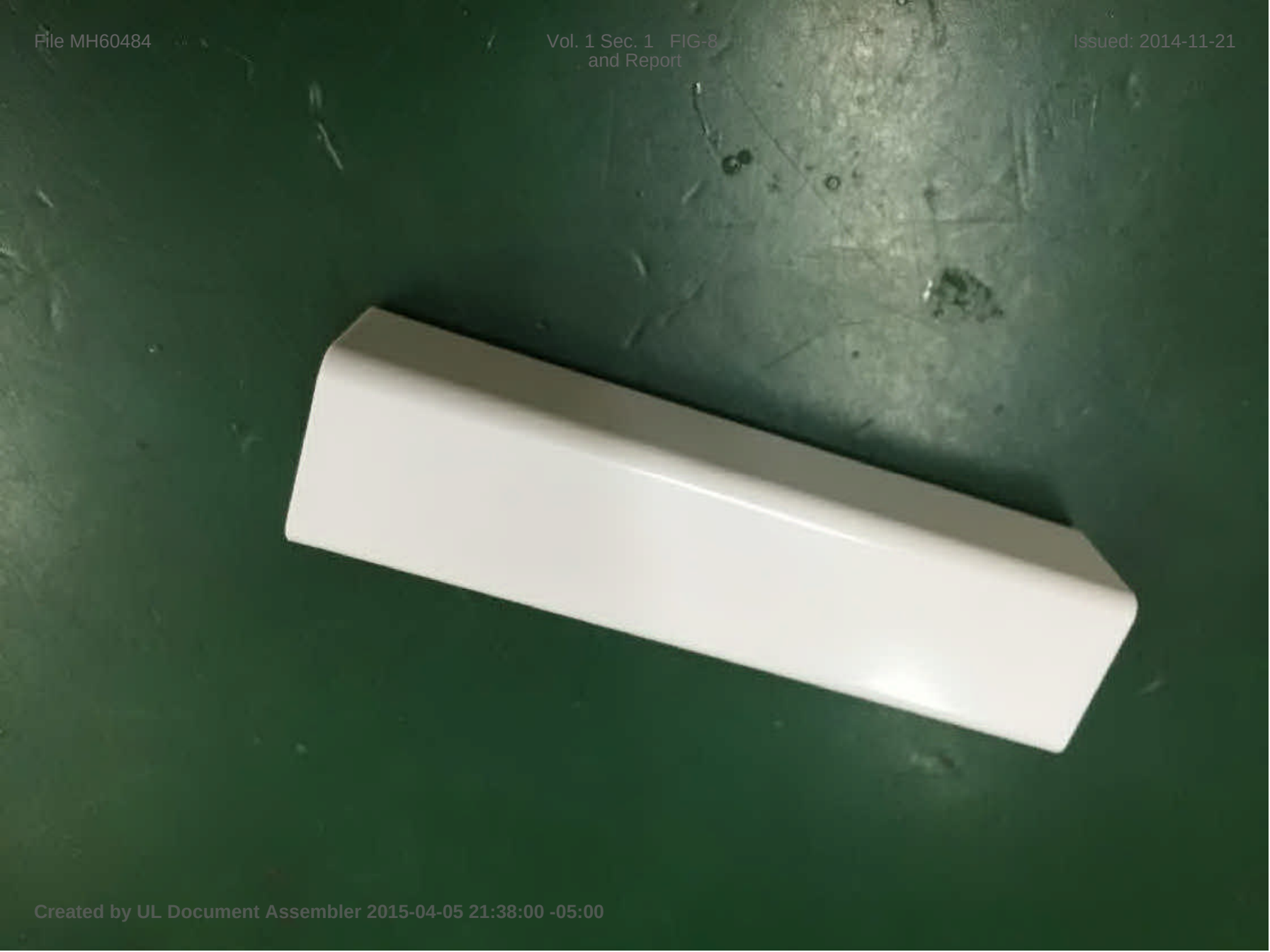
ILL. No.	Description
1	Enclosure Drawing for Model PB01, PB02
2	PWB Layout – Model PB01
3	PWB Layout – Model PB02, **SP826**
4	**Enclosure Drawing for Model SP826**

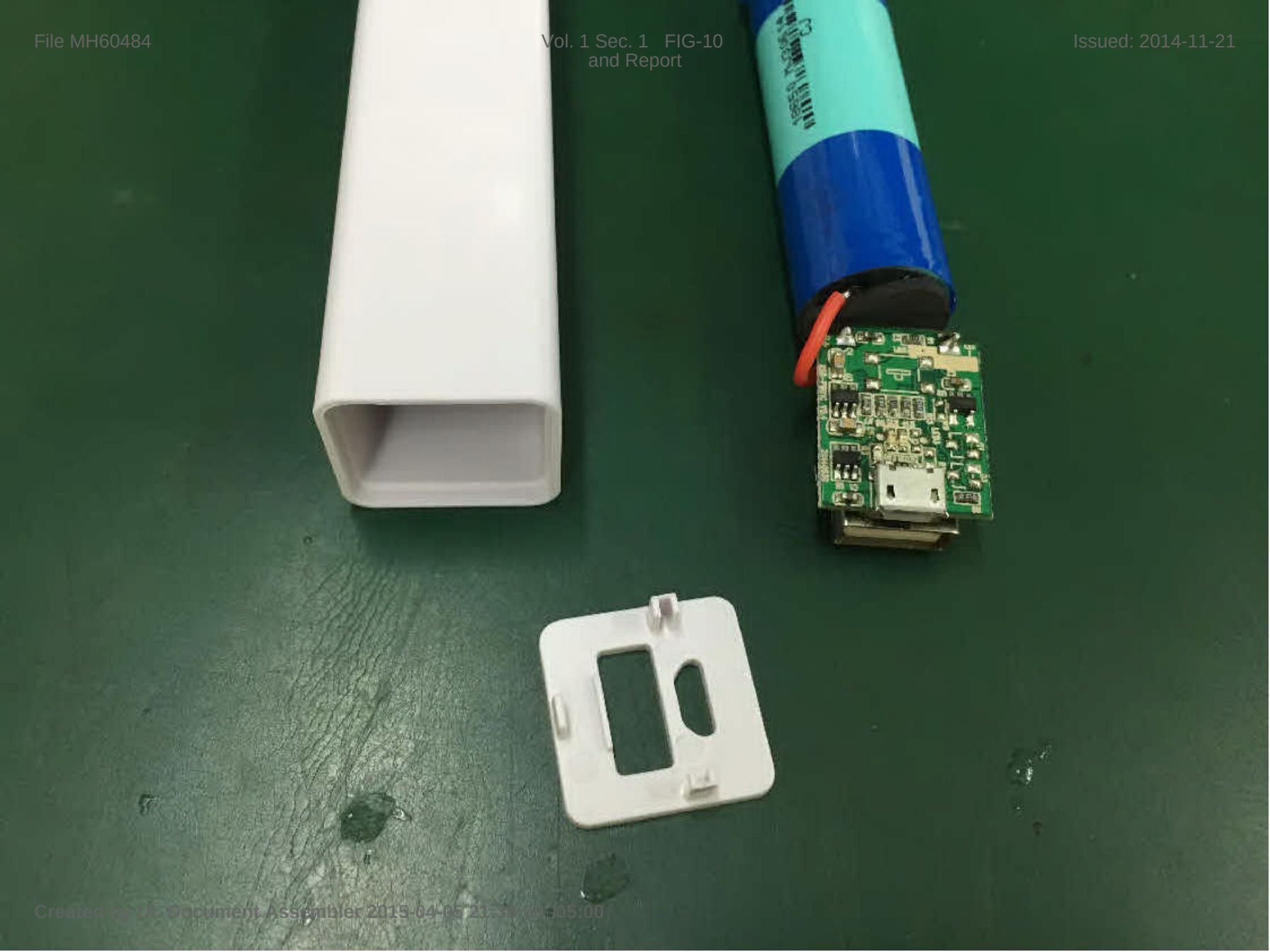



R6
R12
LED3
R13
SW1
C5
R3
C4
U3
U1
B+
XSD-PB01C V0.4
20140830

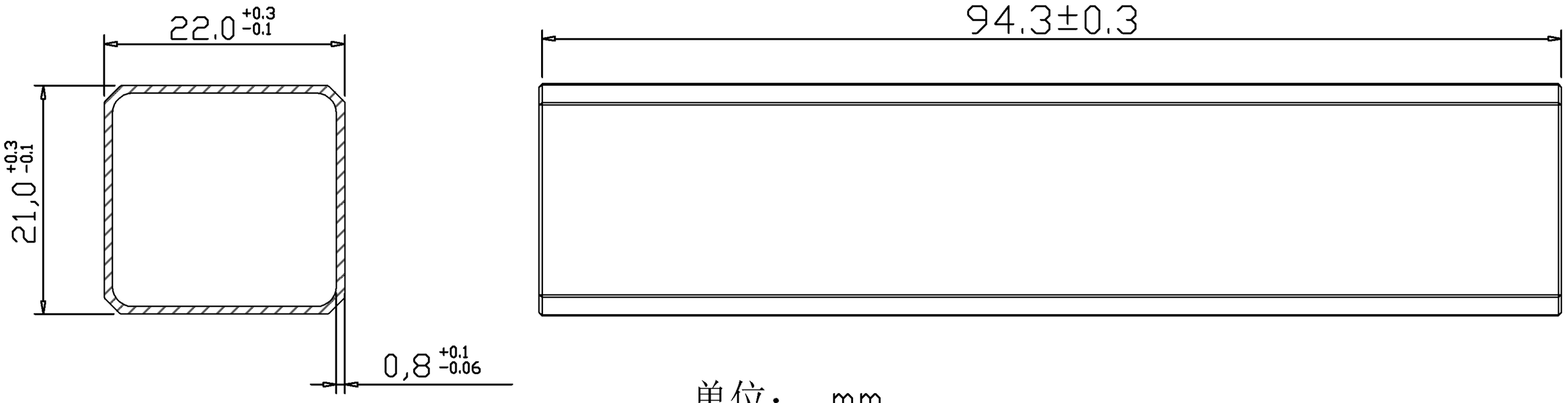

B+
B-



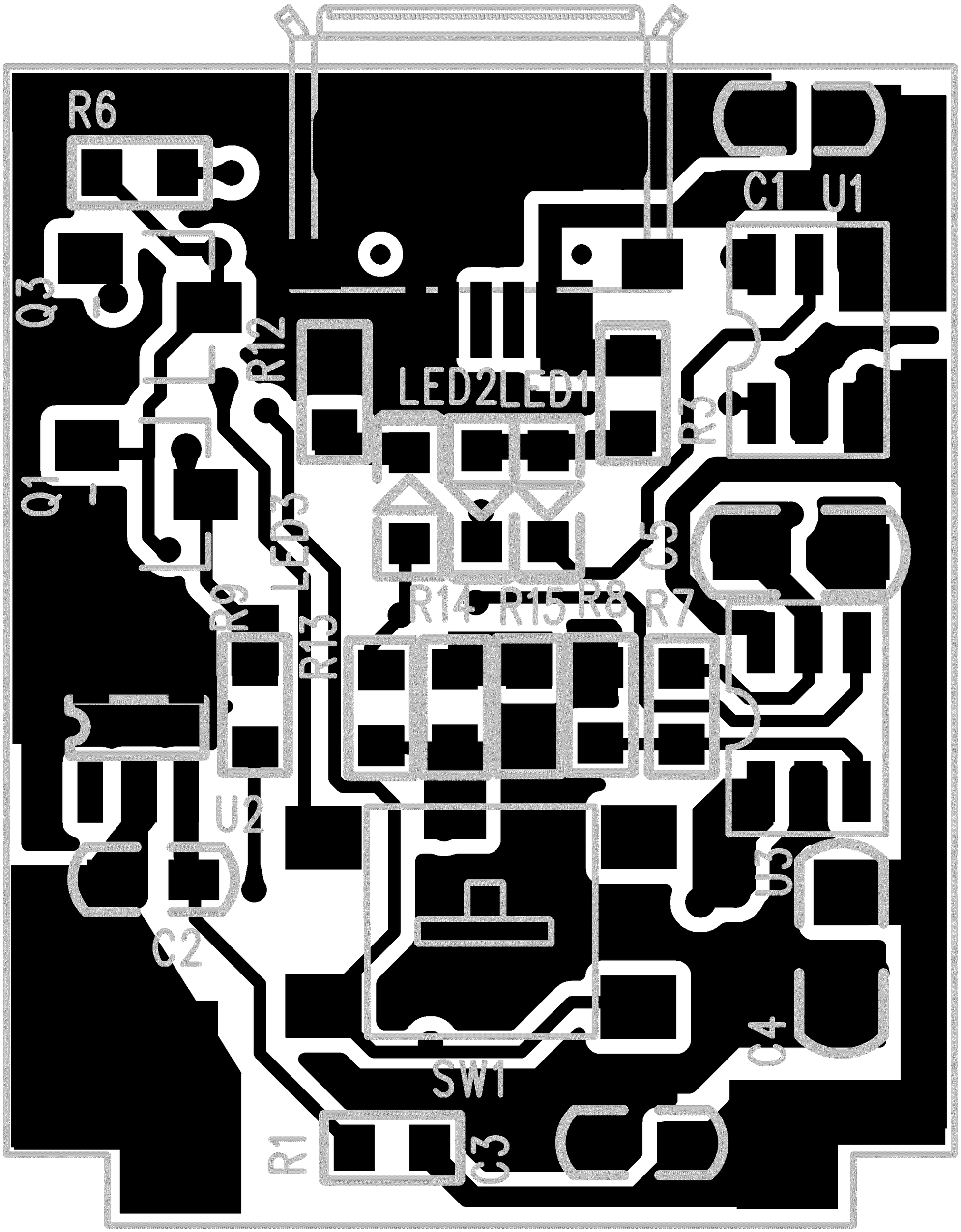


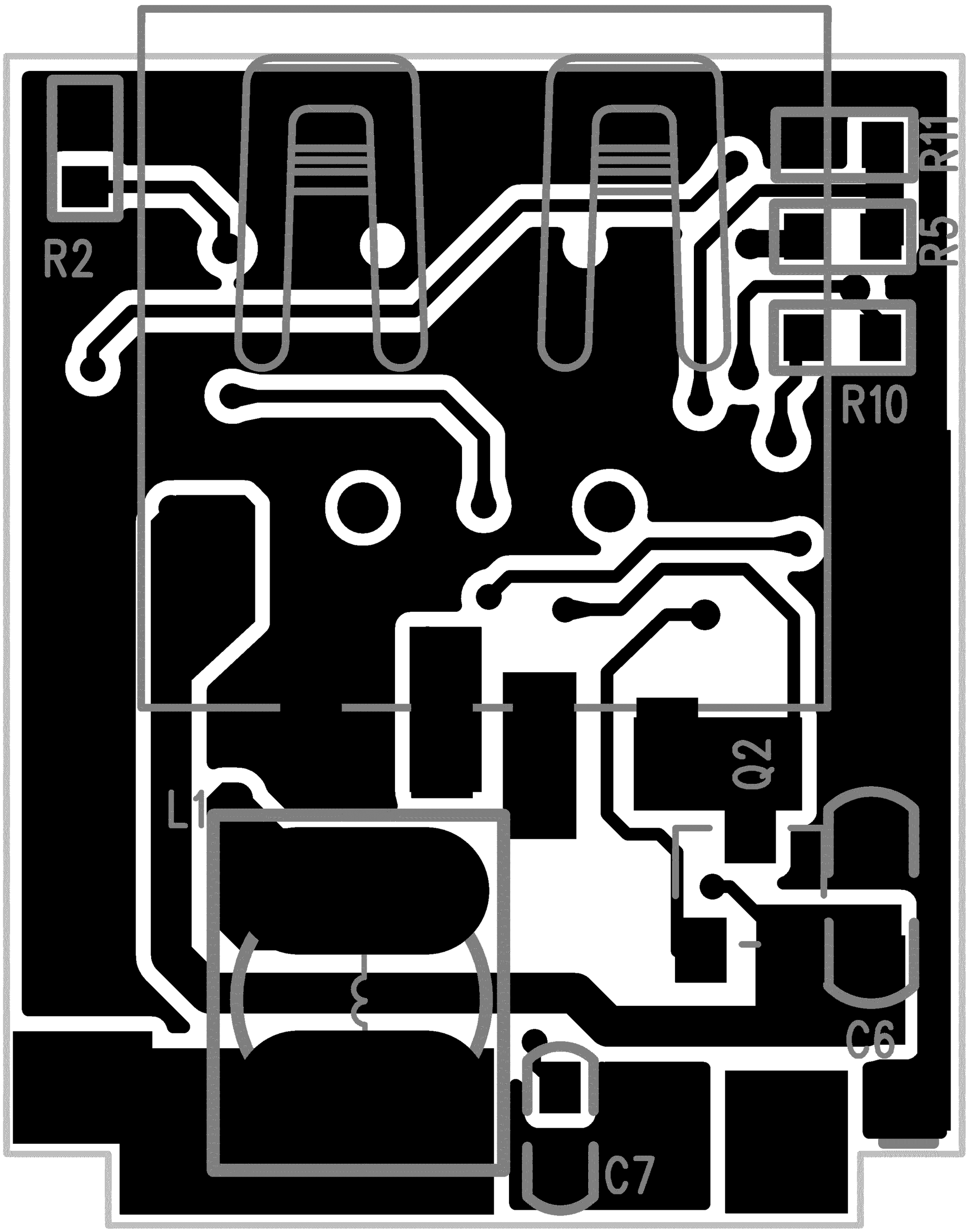


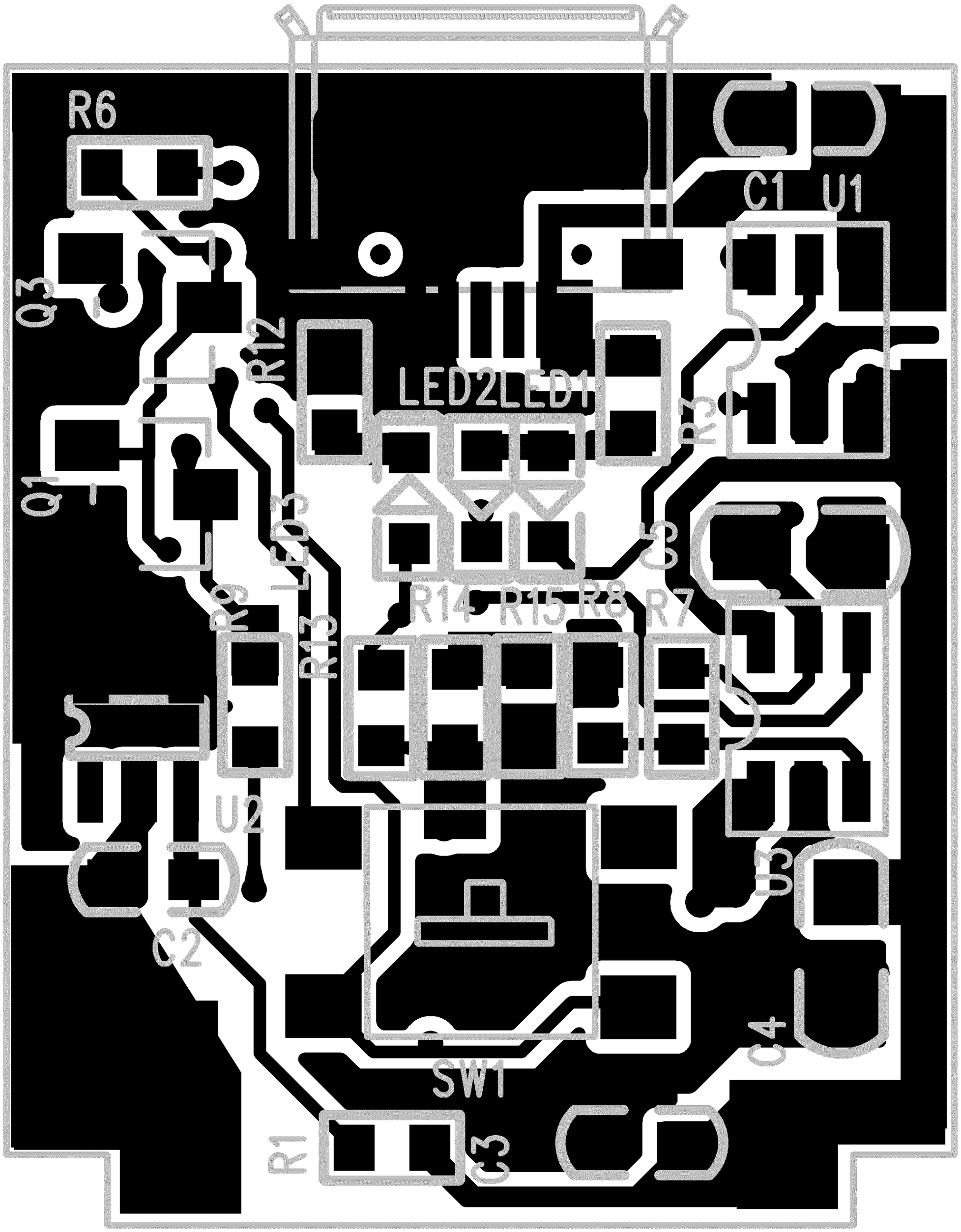
PB01&PB02方管尺寸。

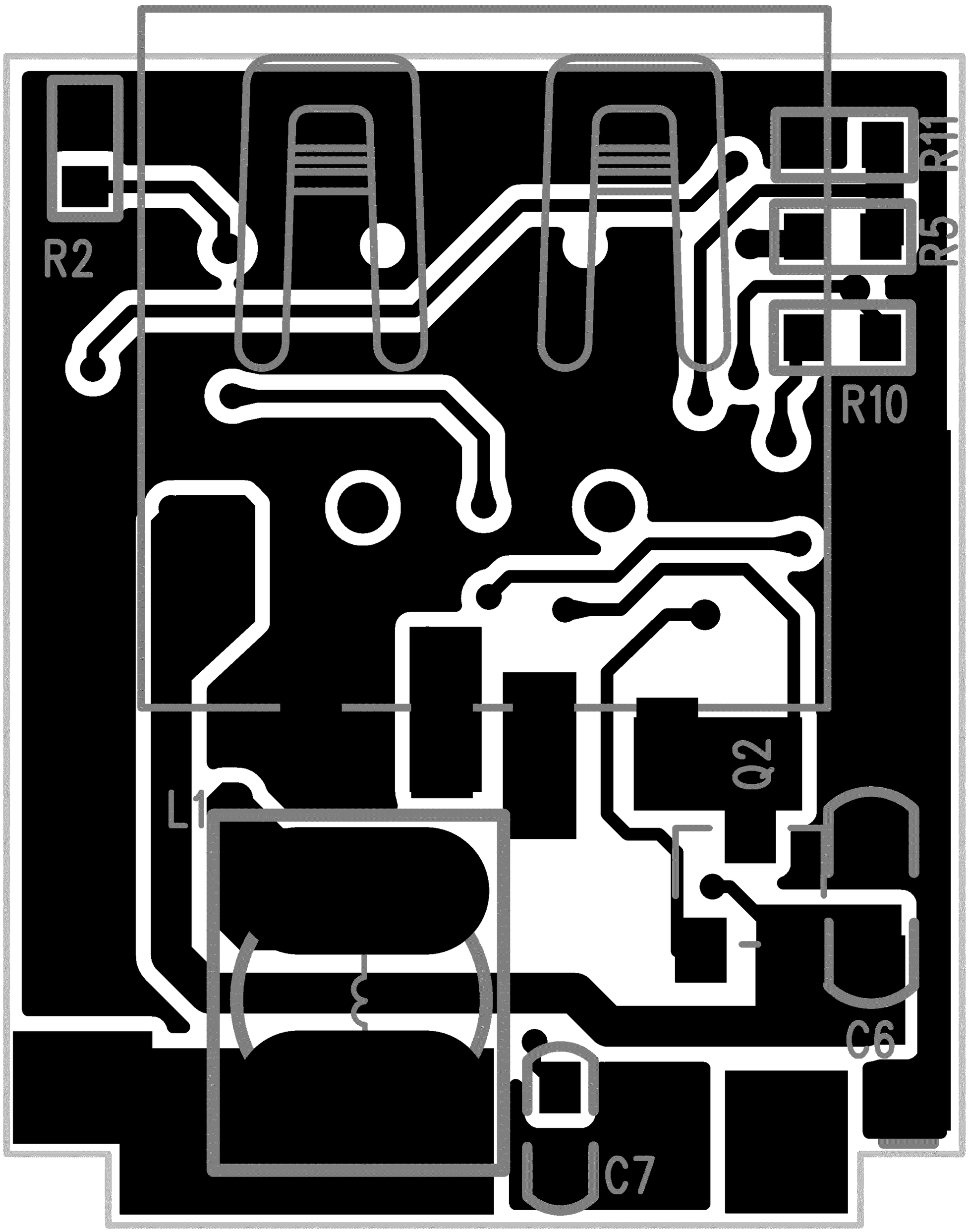


单位： mm

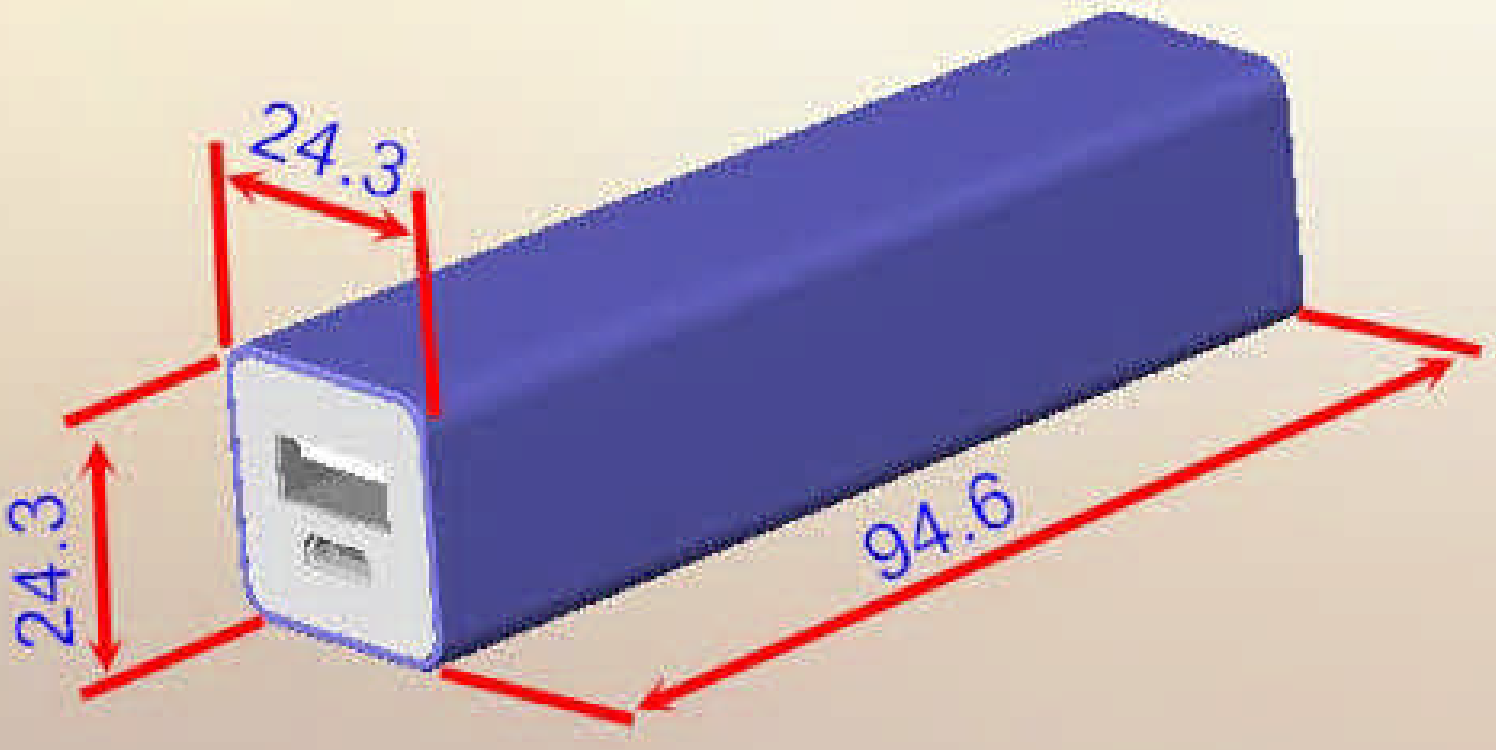

R6
C1
U1
Q3
R12
LED2
LED1
R2
Q1
LED3
R14
R15
R8
R7
R13
U2
C2
C3
SW1
C4
R1


R2
R11
R5
R10
Q2
L1
C6
C7


R6
C1
U1
Q3
R12
LED2
LED1
R2
Q1
LED3
R14
R15
R8
R7
R13
U2
C2
C3
SW1
C4
R1


R2
R11
R5
R10
Q2
L1
C6
C7

SP826外形尺寸图



单位： mm

TEST RECORD NO. 1

SAMPLES:

A sample Portable Power Bank, Models as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

Model No.	Nominal Voltage, V dc	Cap-acity, Ah	Maximum Charging Voltage, V dc	Maximum Charging Current, mA	Maximum discharge condition, mA	Dis-charge Cutoff Voltage, Vdc	Cell Config xS/yP	Cell Mfg.	Cell Model Number
PB01, PB02	5.0	2.2	5.3	600	1200	2.75 (Cell)	1S/1P	JIANGXI FIRST NEW ENERGY CO LTD (MH48852)	FST18650NB-2200mAh

GENERAL:

Test results relate only to the items tested.

All tests are conducted at UL-CCIC Guangzhou.

Model PB01 is identical to Model PB02 except for model designation, and that Model PB01 is designed with switch Button and Indicator, so only all tests need conduct on single model, the following tests were conducted on Model PB02.

Test Conducted	UL 2054 Section Reference / [x] (UL/CSA 60950-1 Section Reference)	Compliant Results? [Y] [N]	Comments
Short Circuit Test - At Room Temperature (Excessive Discharging Rate for any Battery)	9.7 - 9.12 (4.3.8)	Y	--
Short Circuit Test - At 55 C	9.7 – 9.12	Y	--
Abnormal Charging Test: (Secondary) (Overcharging of a Rechargeable Battery)	10.10 – 10.13 (4.3.8)	Y	--
Abusive Overcharge Test	11	Y	--
Limited Power Source Test	13 (2.5)	Y	--

Table Cont'd

Test Conducted	UL 2054 Section Reference / [x] (UL/CSA 60950-1 Section Reference)	Compliant Results? [Y] [N]	Comments
Battery Pack Component Temperature Test Lithium Ion System (Heating Test) (Energy Hazard Measurements)	13A 4.5 (4.5) (2.1.1.5)	Y	--
Battery Pack Surface Temperature Test (Heating Test)	13B (4.5)	Y	--
250 N Steady Force Test (Steady Force Tests - 250 N)	19 (4.2.4)	Y	--
Mold Stress Relief Test (Stress Relief)	20 (4.2.7)	Y	--
Drop Impact Test (Drop)	21 (4.2.6)	Y	--

The test methods and results of the above tests have been reviewed and found in accordance with the requirements (unless noted otherwise in the table above) in the Standard for Household and Commercial Batteries, UL 2054, Second Edition, including revisions through revision date September 14, 2011.

The test methods and results of the above tests also have been reviewed and found in accordance with the requirements (unless noted otherwise in the table above) in the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment-Safety-Part1: General Requirements, CAN/CSA-C22.2 No. 60950-1-07, Second Edition, issue dated October 14, 2014, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the U.S. Standard for Safety of Household and Commercial Batteries, UL 2054 Second Edition, including revisions through revision date September 14, 2011, and the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment-Safety – Part 1: General Requirements, CAN/CSA-C22.2 No. 60950-1-07, Second Edition, issue dated October 14, 2014, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

TEST RECORD NO. 2

SAMPLES:

A sample Portable Power Bank, Models as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

Model No.	Nominal Voltage, V dc	Cap-acity, Ah	Maximum Charging Voltage, V dc	Maximum Charging Current, mA	Maximum discharge condition, mA	Dis-charge Cutoff Voltage, Vdc	Cell Config xS/yP	Cell Mfg.	Cell Model Number
SP826	5.0	2.2	5.3	600	1200	2.75 (Cell)	1S/1P	JIANGXI FIRST NEW ENERGY CO LTD (MH48852)	FST18650NB-2200mAh

GENERAL:

Test results relate only to the items tested.

All tests are conducted at UL-CCIC Guangzhou.

Due to Model SP826 is identical to Model PB02 except for model and enclosure designation, only limited tests are necessary, the following tests were conducted on Model SP826.

Test Conducted	UL 2054 Section Reference / [x] (UL/CSA 60950-1 Section Reference)	Compliant Results? [Y] [N]	Comments
Battery Pack Component Temperature Test	13A	Y	--
Lithium Ion System (Heating Test) (Energy Hazard Measurements)	4.5 (4.5) (2.1.1.5)		
Battery Pack Surface Temperature Test (Heating Test)	13B (4.5)	Y	--
250 N Steady Force Test (Steady Force Tests - 250 N)	19 (4.2.4)	Y	--
Mold Stress Relief Test (Stress Relief)	20 (4.2.7)	Y	--
Drop Impact Test (Drop)	21 (4.2.6)	Y	--

The test methods and results of the above tests have been reviewed and found in accordance with the requirements (unless noted otherwise in the table above) in the Standard for Household and Commercial Batteries, UL 2054, Second Edition, including revisions through revision date September 14, 2011.

The test methods and results of the above tests also have been reviewed and found in accordance with the requirements (unless noted otherwise in the table above) in the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment-Safety-Part1: General Requirements, CAN/CSA-C22.2 No. 60950-1-07, Second Edition, issue dated October 14, 2014, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the U.S. Standard for Safety of Household and Commercial Batteries, UL 2054 Second Edition, including revisions through revision date September 14, 2011, and the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment-Safety – Part 1: General Requirements, CAN/CSA-C22.2 No. 60950-1-07, Second Edition, issue dated October 14, 2014, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report. Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Record by:

NICKY X. WU
Engineer Project Associate

CONCLUSION

Samples of the product covered by this Report have been found to comply with the requirements covering the category and the product is found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify UL certification or that the product(s) described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the UL Listing on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Listing Mark of UL LLC on the product, or the UL symbol on the product and the Listing Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Listing and Follow-Up Service.

Report by:

NICKY X. WU
Engineer Project Associate