Dongguan Xuanjing Electronics Co.,LTD

SPECIFICATION FOR APPROVAL

Name of client:_____
Customer type:_____
Main material configuration: CM1033-DS+DP3080*2
XJ Material Code: XJ-D164-3S5217
Date: 2023-05-09

XJ internal confirmation			
Engineering Confirmation	Quality confirmation	Market Confirmation	Approvals
Client Confirmation			
Engineering Confirmation	Quality confirmation	Purchase confirmation	Approvals
Confirmation result: Pass ( ) Fail ( ) Other ( )			

Company Name: Dongguan Xuanjing Electronics Co.,LTD

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1. Overview

This acknowledgement describes the scope of application, process standards, electrical performance parameters, main materials, dimensional specifications, testing standards and other items related to lithium battery protective circuitry produced by Dongguan Xuanjing Electronics Co. All the standards described in this acknowledgement can be used as quality inspection standards and basis.

2. Product application range

2.1 Liquid lithium-ion rechargeable batteries;

2.2 Polymer lithium-ion rechargeable battery.

3. Product appearance and process indicators

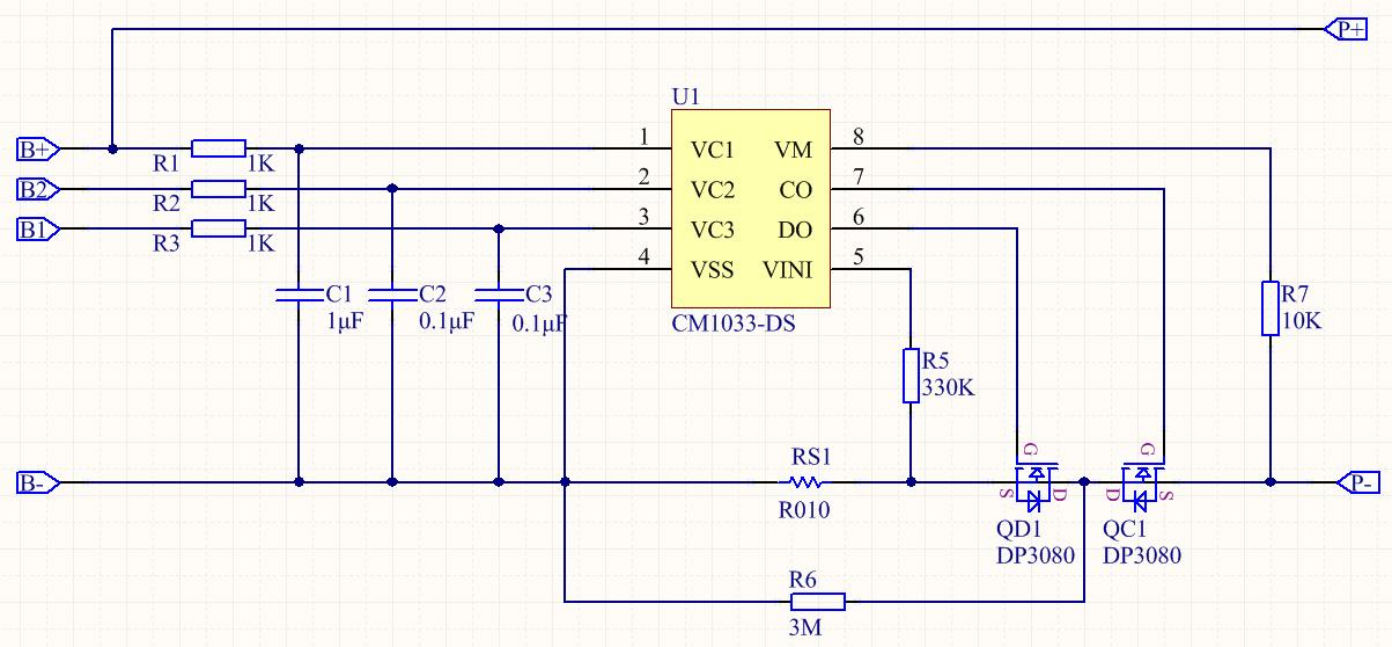
Serial number	Projects		Test methods and means	Inspection standards
3.1	Product appearance		Visual inspection	The appearance of the protection board should meet the following requirements: reasonable wiring, neatly arranged components, no oxidation or abnormal colour at each pad and soldering point, clean components and PCB board surface, no stains, and no impact on its commercial value.
3.2	Products Craftsmanship	Welding processes	Visual inspection, with the aid of a magnifying glass	Rounded joints, solid and reliable welding, no welding defects such as false welding, dummy welding and burrs.
		Panel material		☐ Glass fibre double sided ☑ Glass fibre single sided ☐ Plain single sided ☐ Other
		PCB plating process		☐ thick gold ☐ cobalt gold ☐ sprayed tin ☐ plain gold ■ sprayed lead-free tin ☐ other
		Finished plate welding process		☐ Plain tin ■ Environmentally friendly lead-free tin ☐ Environmentally friendly halogen-free tin ☐ Others

4. Product electrical performance indicators

Serial	Projects		Symbols	Inspection methods and equipment	Inspection standards			Unit
					Minimum	Typical	Maximum	
4.1	Overcharge protection	Overcharge detection voltage	V_{DET1}	Lithium protection board tester	4.20	4.25	4.30	V
		Overcharge detection delay time	tV_{DET1}	Lithium protection board tester	500	1000	1500	ms
		Overcharge release voltage	V_{REL1}	Lithium protection board tester	4.00	4.05	4.10	V
4.2	Over-discharge protection	Over-discharge detection voltage	V_{DET2}	Lithium protection board tester	2.6	2.7	2.8	V
		Over-discharge detection delay time	tV_{DET2}	Lithium protection board tester	500	1000	1500	ms
		Over-discharge discharge voltage	V_{REL2}	Lithium protection board tester	2.9	3.0	3.1	V
4.3	Overcurrent protection	Overcurrent detection voltage	V_{DET3}	Lithium protection board tester	0.085	0.100	0.115	V
		Overcurrent protection current	I_{DP}	Lithium protection board tester	6	10	14	A
		Detection delay time	tV_{DET3}	Lithium protection board tester	500	1000	1500	ms
4.4	Short circuit protection	Detection delay time	T_{SHORT}	Lithium protection board tester	100	300	600	μS
		Protection release conditions		Multimeter	Disconnect external short-circuit load or charge recovery			
4.5	Internal resistance	Main circuit through-state resistance	R_{DS}	Lithium protection board tester			50	mΩ
4.6	Current consumption	Normally operates with current consumption	I_{DD}	Lithium protection board tester			50	μA
4.7	Static current	Current consumption during dormancy	I_{PWN}	Lithium protection board tester			8	μA
4.8	Discharge	Hibernation function				Yes		

Note: The above values are measured at 25° C, and may vary at very high temperatures. The operating temperature range of the circuit is -40 to 85° C. Please refer to the specification of the protection IC for specific test conditions and test circuits.

5. Schematic diagram of a typical application

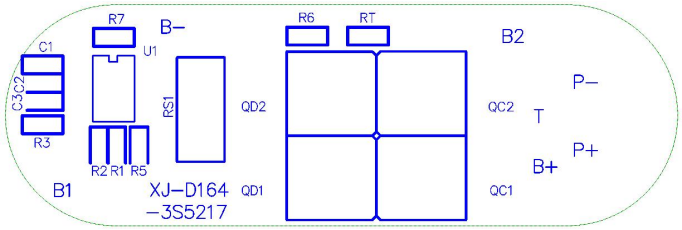


6. Main bill of materials

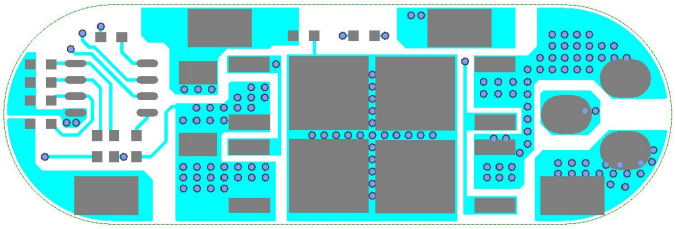
Serial number	Name of material	Material code	Material specifications	Dosage	Manufacturers
1	Protection ICs	U1	CM1033-DS/SOP-8	1	Transcend Micro
2	MOSFETs	QD1 QC1	DP3080/TO-252	2	DP Micro
3	Alloy resistors	RS1	R010/1%/2512/2W	1	Da Yi/Shin Chong
4	Chip Resistors	R1R2R3	1K±5%/0603	3	Guozhu/Hou Sheng
5	Chip Resistors	R5	330K±5%/0603	1	Guozhu/Hou Sheng
6	Chip Resistors	R7	10K±5%/0603	1	Guozhu/Hou Sheng
7	Chip Resistors	R6	3M±5%/0603	1	Guozhu/Hou Sheng
8	Chip capacitors	C1	1μF/±20%/0603	1	Guozhu/Hou Sheng
9	Chip capacitors	C2C3	0.1μF/±20%/0603	2	Guozhu/Hou Sheng
10	Nickel flakes	B+B2B1B-	5*3*0.3mm	4	China-Thailand
11	Circuit board	PCB	XJ-D164-3S5217/52*17*1.0mm copper thickness 1.0OZ/lead-free tin spraying green oil and white letters	1	Synthesis / Lutonda

7.PCB layout

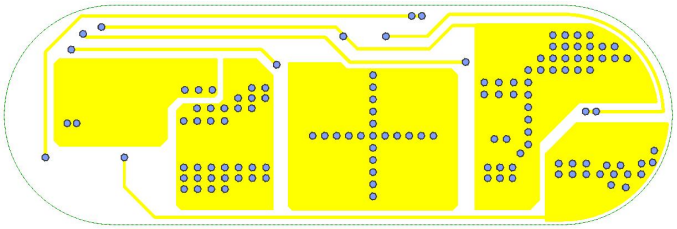
Top level circuit board component location diagram



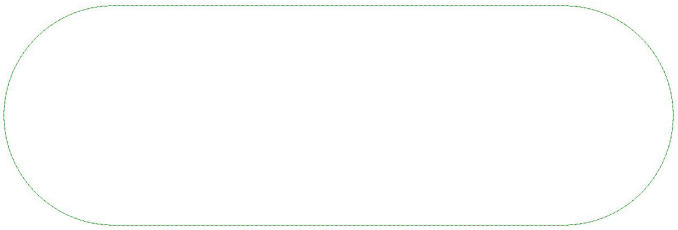
Top floor wiring diagram



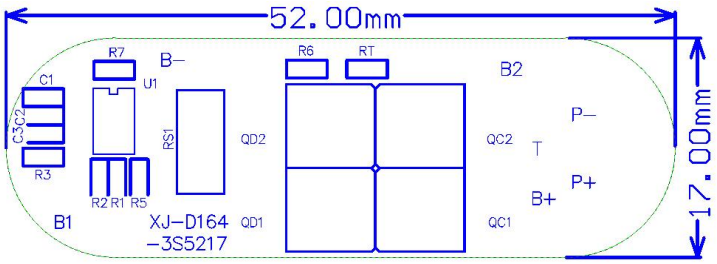
Ground floor wiring diagram



Bottom screen print



8. PCB dimensional drawing (length ±0.15mm, width ±0.15mm, thickness 1.0±0.10mm)



9 Environmental material requirements:

All materials in the contents of this specification are RoHS compliant and the content of restricted substances is in accordance with the following standards:

限用物质清单

List of Prohibited Substances

有害物质各称 Hazardous substances	限定值PPm （mg/Kg） Limit ppm(mg/kg)	保证符合选项 Guarantee of conformity	备注Remark
Cd	≤100ppm	OK	欧盟RoHS 2.0
Pb	≤1000ppm	OK	欧盟RoHS 2.0
Hg	≤1000ppm	OK	欧盟RoHS 2.0
Cr6+	≤1000ppm	OK	欧盟RoHS 2.0
PBB	≤1000ppm	OK	欧盟RoHS 2.0
PBDE	≤1000ppm	OK	欧盟RoHS 2.0
DIBP	≤1000ppm	OK	欧盟RoHS 2.0
DEHP	≤1000ppm	OK	欧盟RoHS 2.0
BBP	≤1000ppm	OK	欧盟RoHS 2.0
DBP	≤1000ppm	OK	欧盟RoHS 2.0

10 Flux and rosin are strictly forbidden in the PACK production process!

If used it will cause an intermittent short circuit between the protection board IC or MOS tube pins, resulting in the battery not being charged and discharged properly and excessive self-consumption.

11 Terminal explanations

Port Description:

1. B+: Connected to the battey's positive terminal
2. B-: Connected to the battey's negative terminal
3、P+：Connect battery output or charger positive
4. P-: Connect Battery Output or Charger Negative
5、T：Connection of identification resistor or temperature control line output

Note: When soldering the cores, please solder the B- end before the B+ end.

12 Guidelines for packaging, storage and transport

Packaging: Wrap the finished panels in anti-static film according to the actual quantity, affix a material label, indicating clearly the model, quantity and configuration.

Shipping: Express delivery or dispatch.

Storage: General storage temperature -15°C~45°C, relative humidity not more than 60%, no dust/no acid/no alkaline/no other corrosive gases. Storage time is one year.

After one year, it should be fully inspected before it can be used again in circulation.

Note: During transport and use, care should be taken to prevent moisture and humidity and to avoid extrusion and collision to avoid deformation of the protection board.