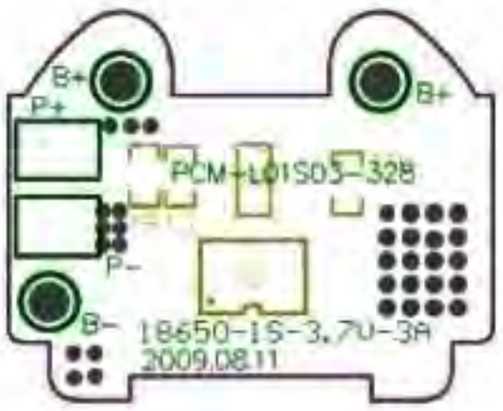
1S1P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC4.2V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤10μA
		Maximal continuous Charging current	3A
		Maximal continuous Discharging current	3A
3	Over charge protection	Over charge detection voltage	4.325±0.025V
		Over charge detection delay time	0.96S—1.4S
		Over charge release voltage	4.075±0.025V
4	Over discharge protection	Over discharge detection voltage	2.50±0.05V
		Over discharge detection delay time	115—173mS
		Over discharge release voltage	2.9±0.05V
5	Over current protection	Over current detection voltage	0.15±0.015V
		Over current detection current	5±0.5A
		Detection delay time	7ms—11ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤50mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



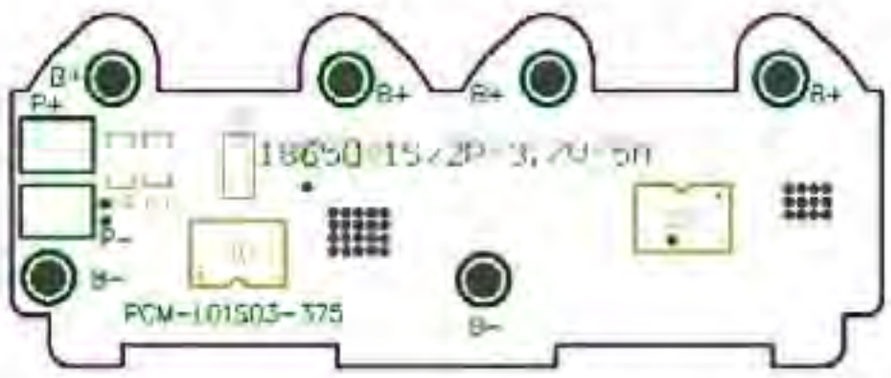
1S2P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC4.2V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤10μA
		Maximal continuous Charging current	5A
		Maximal continuous Discharging current	5A
3	Over charge protection	Over charge detection voltage	4.325±0.025V
		Over charge detection delay time	0.96S-1.4S
		Over charge release voltage	4.075±0.025V
4	Over discharge protection	Over discharge detection voltage	2.50±0.05V
		Over discharge detection delay time	115-173mS
		Over discharge release voltage	2.9±0.05V
5	Over current protection	Over current detection voltage	0.15±0.015V
		Over current detection current	9.5±1A
		Detection delay time	7ms-11ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤50mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



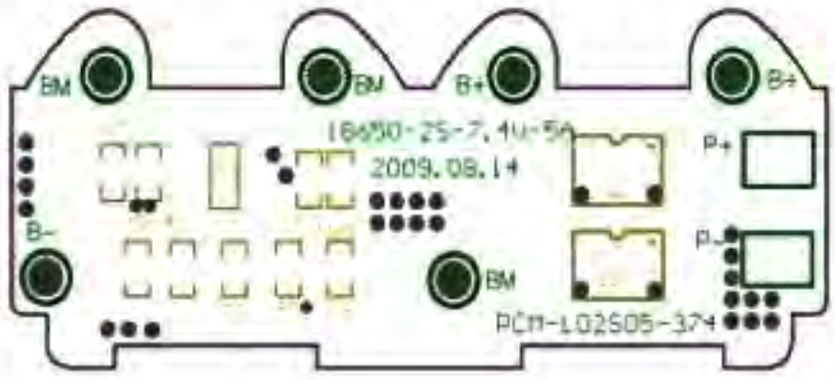
2S1P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC8.4V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤20μA
		Maximal continuous Charging current	5A
		Maximal continuous Discharging current	5A
3	Over charge protection	Over charge detection voltage	4.25±0.025V
		Over charge detection delay time	0.7S—1.3S
		Over charge release voltage	4.05±0.05V
4	Over discharge protection	Over discharge detection voltage	2.4±0.08V
		Over discharge detection delay time	89—167mS
		Over discharge release voltage	3.0±0.1V
5	Over current protection	Over current detection voltage	200±30mV
		Over current detection current	6.5±1A
		Detection delay time	8ms—16ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤50mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



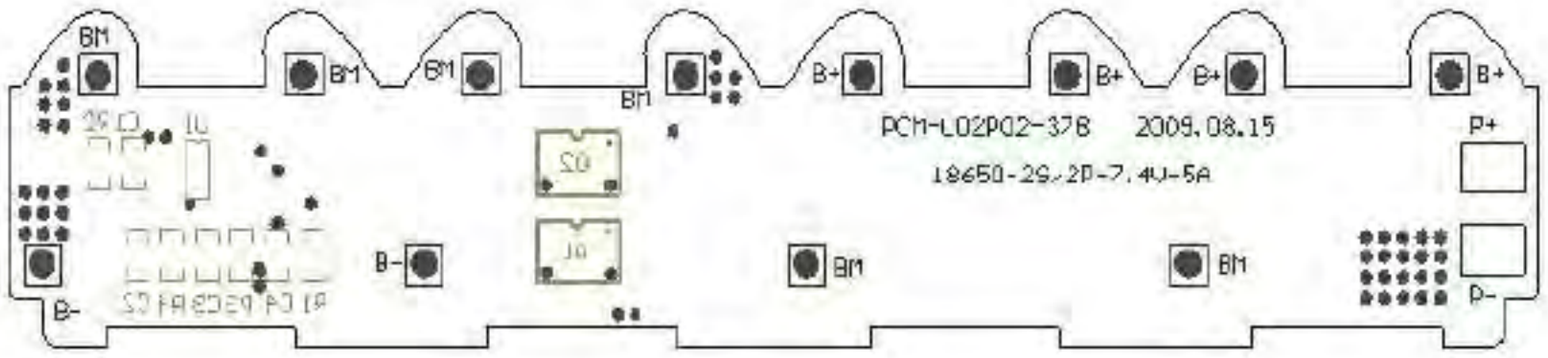
2S2P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC8.4V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤20μA
		Maximal continuous Charging current	5A
		Maximal continuous Discharging current	5A
3	Over charge protection	Over charge detection voltage	4.25±0.025V
		Over charge detection delay time	0.7S—1.3S
		Over charge release voltage	4.05±0.05V
4	Over discharge protection	Over discharge detection voltage	2.4±0.08V
		Over discharge detection delay time	89—167mS
		Over discharge release voltage	3.0±0.1V
5	Over current protection	Over current detection voltage	200±30mv
		Over current detection current	13±2A
		Detection delay time	8—16ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤30mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



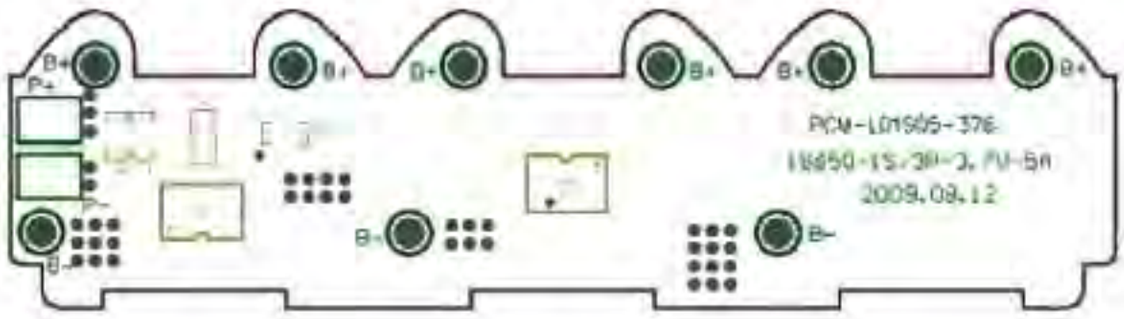
1S3P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC4.2V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤10μA
		Maximal continuous Charging current	5A
		Maximal continuous Discharging current	5A
3	Over charge protection	Over charge detection voltage	4.325±0.025V
		Over charge detection delay time	0.96S—1.4S
		Over charge release voltage	4.075±0.025V
4	Over discharge protection	Over discharge detection voltage	2.50±0.05V
		Over discharge detection delay time	115—173mS
		Over discharge release voltage	2.9±0.05V
5	Over current protection	Over current detection voltage	0.15±0.015V
		Over current detection current	9.5±1A
		Detection delay time	7ms—11ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤30mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



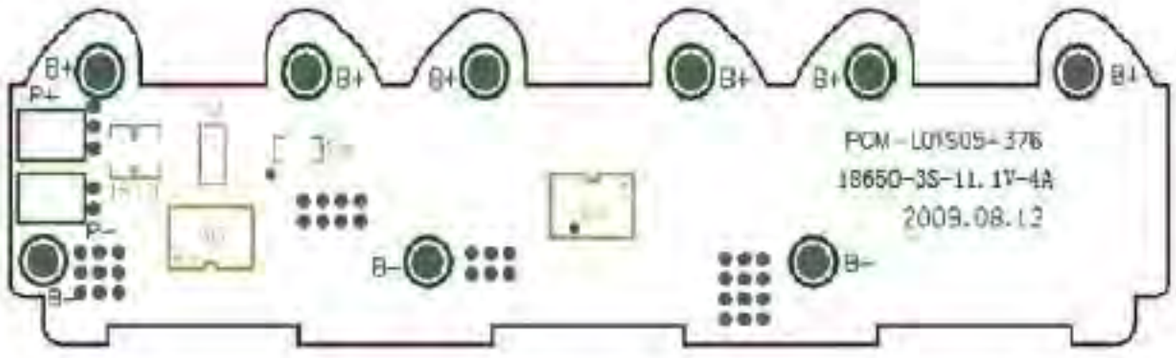
3S1P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC12.6V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤50μA
		Maximal continuous Discharging current	4A
3	Over charge protection	Over charge detection voltage	4.325±0.025V
		Over charge detection delay time	0.5S—1.5S
		Over charge release voltage	4.15±0.05V
4	Over discharge protection	Over discharge detection voltage	2.4±0.08V
		Over discharge detection delay time	50—150mS
		Over discharge release voltage	3.0±0.1V
5	Over current protection	Over current detection voltage	150±25mV
		Over current detection current	6±1A
		Detection delay time	5—15ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤60mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



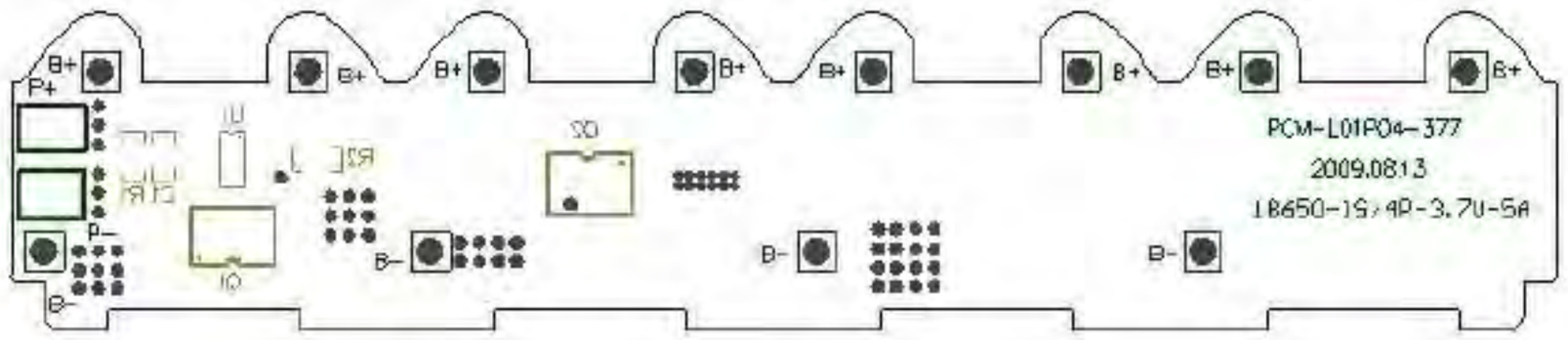
1S4P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC4.2V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤10μA
		Maximal continuous Charging current	5A
		Maximal continuous Discharging current	5A
3	Over charge protection	Over charge detection voltage	4.325±0.025V
		Over charge detection delay time	0.96S—1.4S
		Over charge release voltage	4.075±0.025V
4	Over discharge protection	Over discharge detection voltage	2.50±0.05V
		Over discharge detection delay time	115—173mS
		Over discharge release voltage	2.9±0.05V
5	Over current protection	Over current detection voltage	0.15±0.015V
		Over current detection current	9.5±1A
		Detection delay time	7ms—11ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤30mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-



4S1P Protection Circuit Module Specifications

No.	Test Item	Description	Criterion
1	Voltage	Charging voltage	DC16.8V
		Balance voltage for single cell	/
2	Current	Balance current for single cell	/
		Current consumption for single cell	≤50μA
		Maximal continuous Charging current	4A
3	Over charge protection	Over charge detection voltage	4.325±0.025V
		Over charge detection delay time	0.5S—1.5S
		Over charge release voltage	4.15±0.05V
4	Over discharge protection	Over discharge detection voltage	2.4±0.08V
		Over discharge detection delay time	50—150mS
		Over discharge release voltage	3.0±0.1V
5	Over current protection	Over current detection voltage	150±25mv
		Over current detection current	7.5±1A
		Detection delay time	5ms—15ms
		Release condition	charge up
6	Short protection	Detection condition	Exterior short circuit
		Detection delay time	200-500us
		Release condition	Exterior short circuit
7	Resistance	Protection circuitry	≤60mΩ
8	Temperature	Operating temperature range	-40～+85℃
		Storage temperature range	-40～+125℃

B+=Battery+, B-=Battery-

P+=Charge+/Discharge+

P-=Charge-/Discharge-