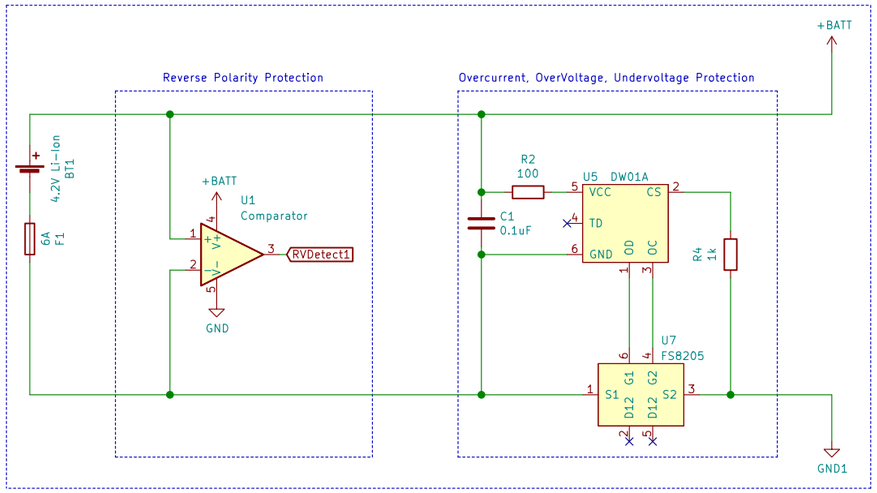
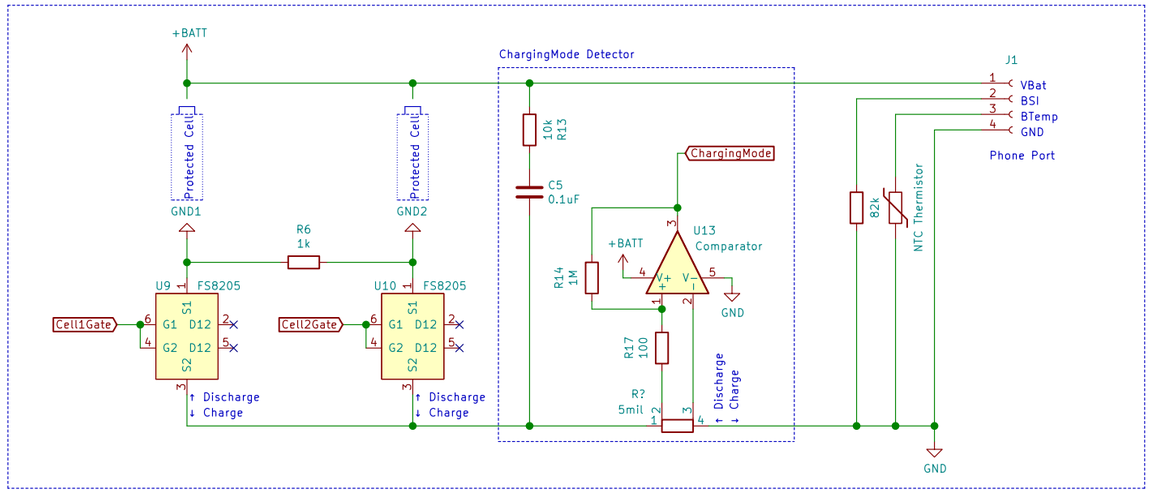
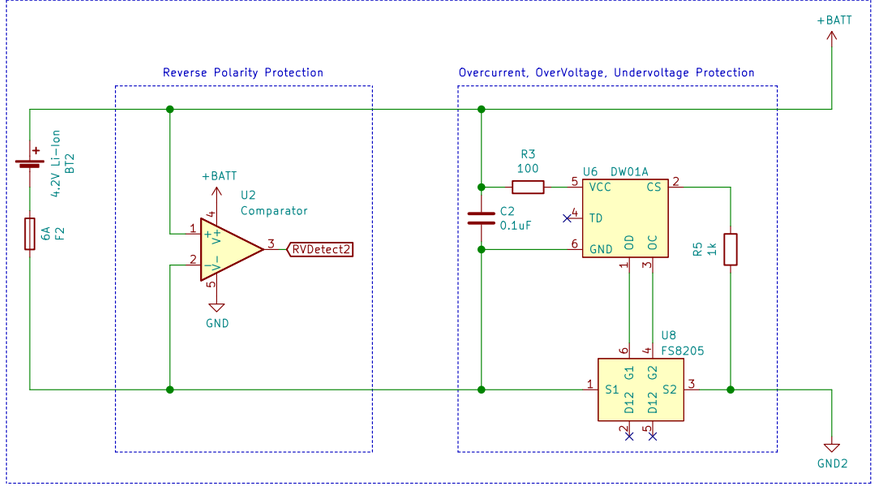
Protected Cell



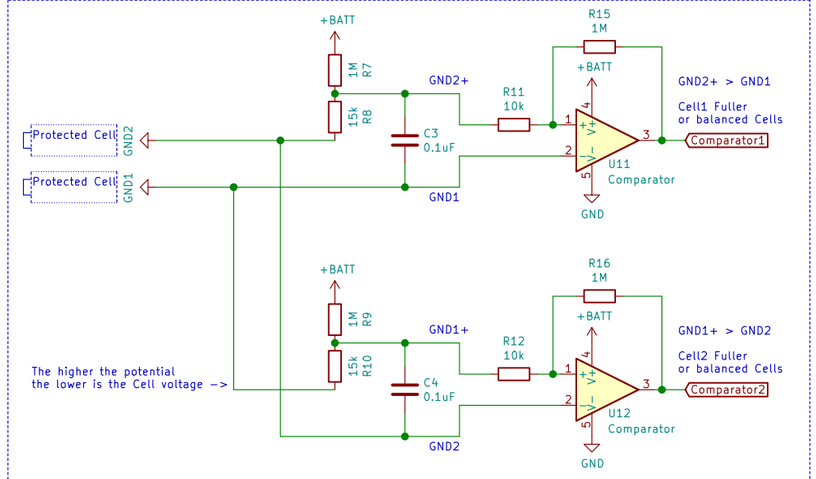
Phone wiring



Protected Cell



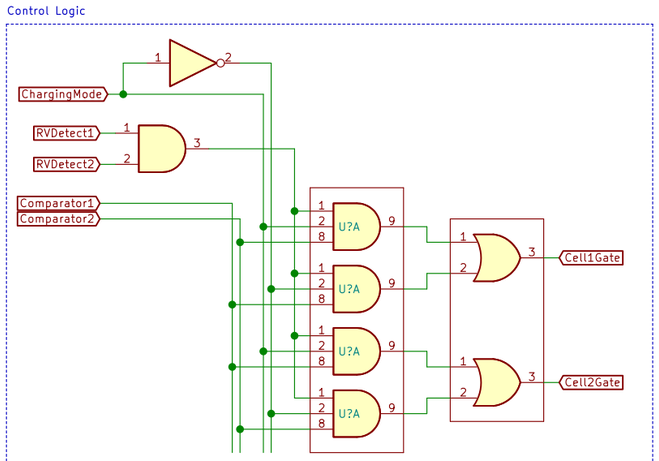
Cells Balancing Control



Control Logic Truth Table

RV Detect 2	RV Detect 1	Comparator 1	Comparator 2	ChargingMode	Cell1Gate	Cell2Gate	
0	0	0	0	0	0	0	RV Detector is High if the cell is inserted correctly
0	0	0	0	1	0	0	ChargingMode High if Cells are charging
0	0	0	1	0	0	0	Comparator 1 (U11) High if VCell1 >≈ VCell2
0	0	0	1	1	0	0	Comparator 2 (U12) High if VCell2 >≈ VCell1
0	0	1	0	0	0	0	
0	0	1	0	1	0	0	
0	0	1	1	0	0	0	
0	0	1	1	1	0	0	
0	1	0	0	0	0	0	
0	1	0	0	1	0	0	
0	1	0	1	0	0	0	
0	1	0	1	1	0	0	
0	1	1	0	0	0	0	
0	1	1	0	1	0	0	
0	1	1	1	0	0	0	
0	1	1	1	1	0	0	
1	0	0	0	0	0	0	Reverse Polarity, Shut down everything
1	0	0	0	1	0	0	
1	0	0	1	0	0	0	
1	0	0	1	1	0	0	
1	0	1	0	0	0	0	
1	0	1	0	1	0	0	
1	0	1	1	0	0	0	
1	0	1	1	1	0	0	
1	1	0	0	0	0	0	Correct Polarity, unfeasible Comparator combination. Shout down everything
1	1	0	0	1	0	0	Correct Polarity, unfeasible Comparator combination. Shout down everything
1	1	0	1	0	0	**1**	Correct Polarity, Cells are unbalanced, Cell 2 is Higher, Discharging -> Close Cell2Gate
1	1	0	1	1	**1**	0	Correct Polarity, Cells are unbalanced, Cell 2 is Higher, Charging -> Close Cell1Gate
1	1	1	0	0	**1**	0	Correct Polarity, Cells are unbalanced, Cell 1 is Higher, Discharging -> Close Cell1Gate
1	1	1	0	1	0	**1**	Correct Polarity, Cells are unbalanced, Cell 1 is Higher, Charging -> Close Cell2Gate
1	1	1	1	0	**1**	**1**	Correct Polarity, Cells are balanced, Close both gates
1	1	1	1	1	**1**	**1**	Correct Polarity, Cells are balanced, Close both gates

Control Logic



Cell1Gate = (ChargingMode && Comp2 && (RVD1 && RVD2)) || (! ChargingMode && Comp1 && (RVD1 && RVD2))

Cell2Gate = (ChargingMode && Comp1 && (RVD1 && RVD2)) || (! ChargingMode && Comp2 && (RVD1 && RVD2))

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