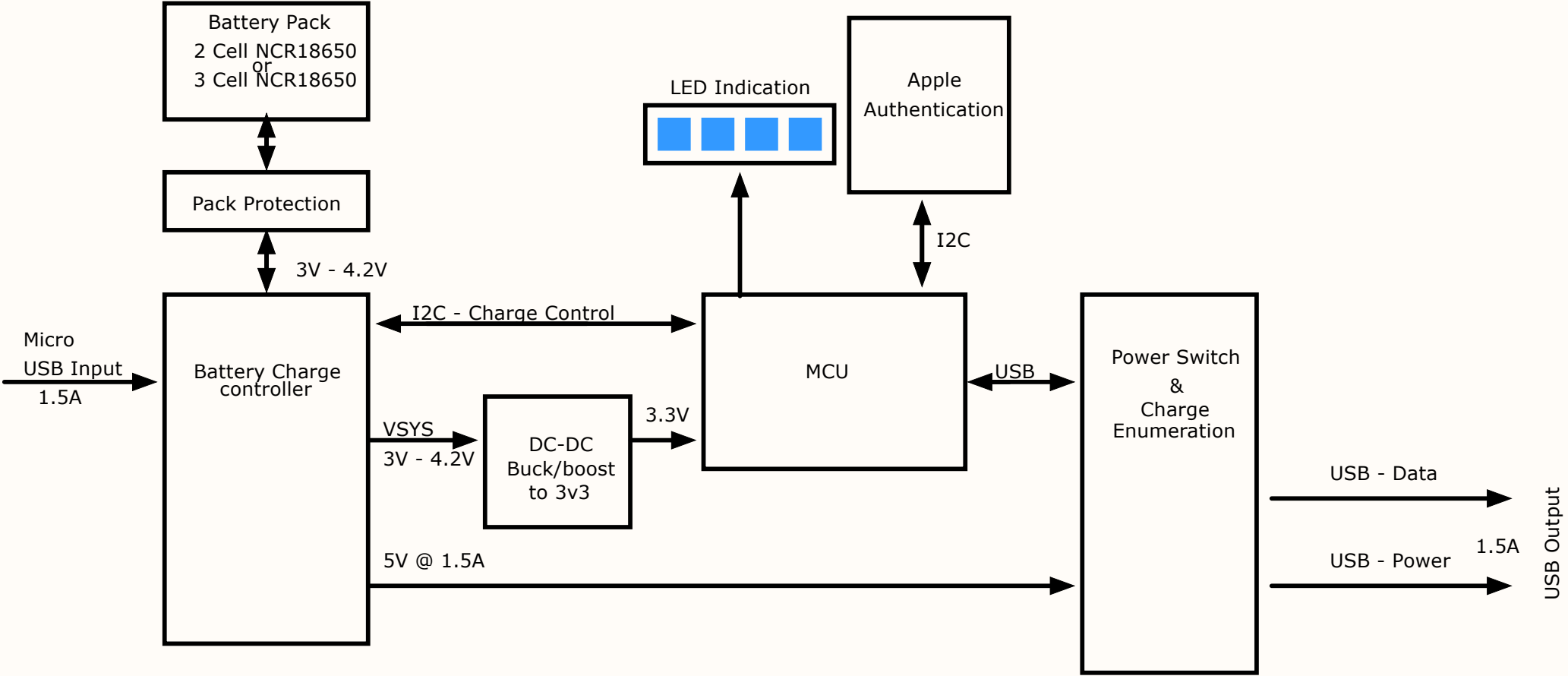


System Overview

Battery pack with enumeration capability



Project: Lucky Charge Battery Pack.PrjPcb	Version: V2.0
Overview.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 1 of 8

Interface Connections

USB Power Input

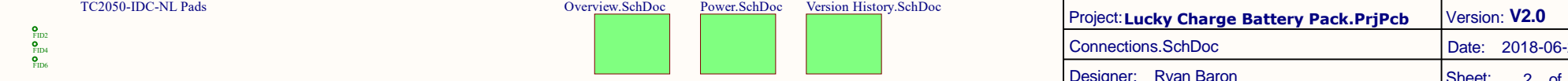
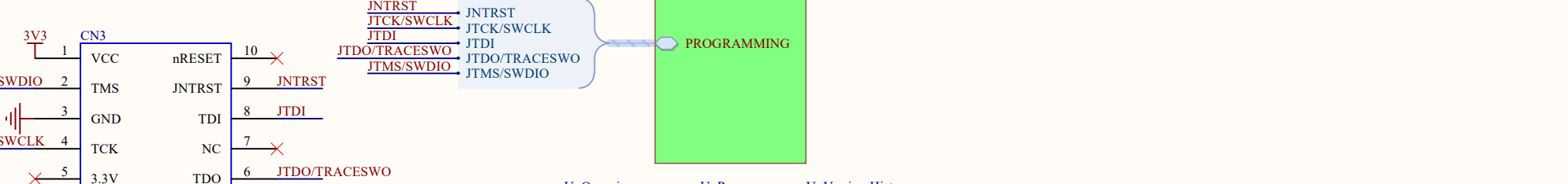
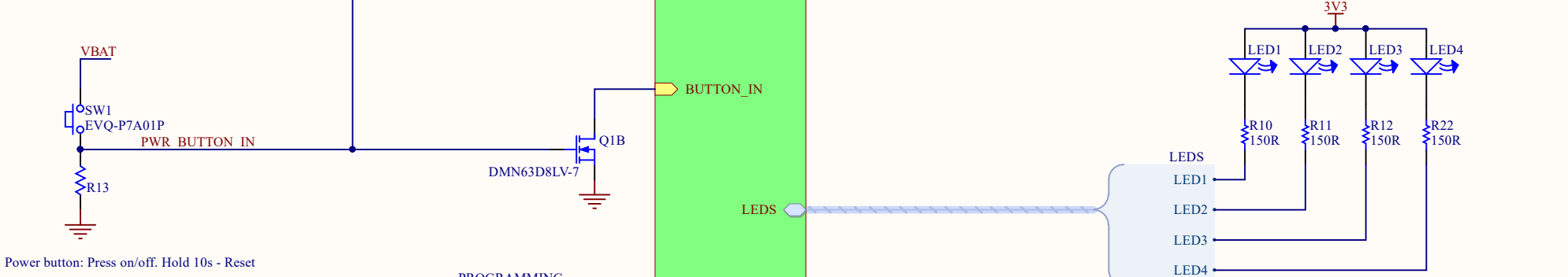
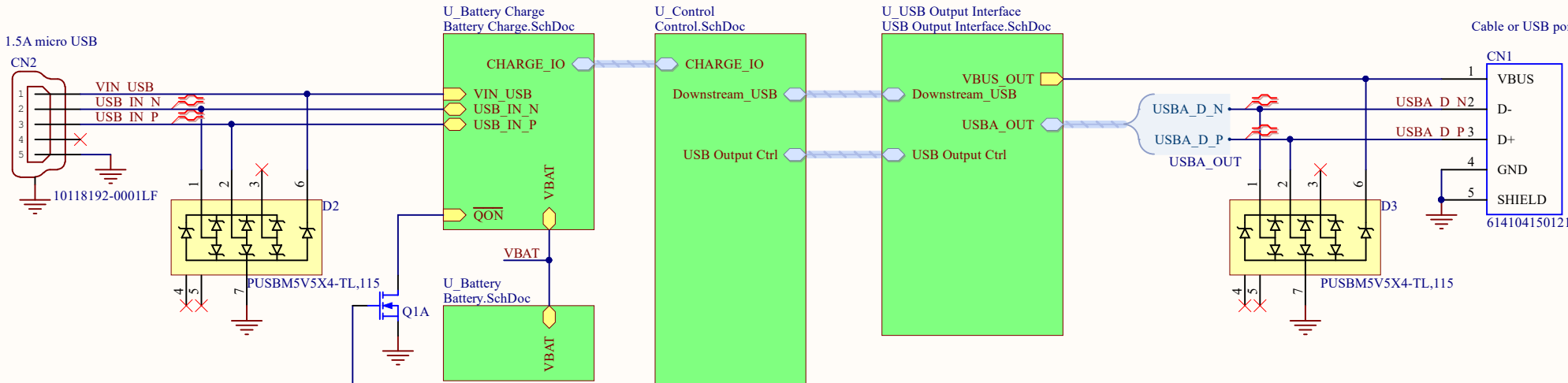
Power Button

PROGRAMMING

LEDS

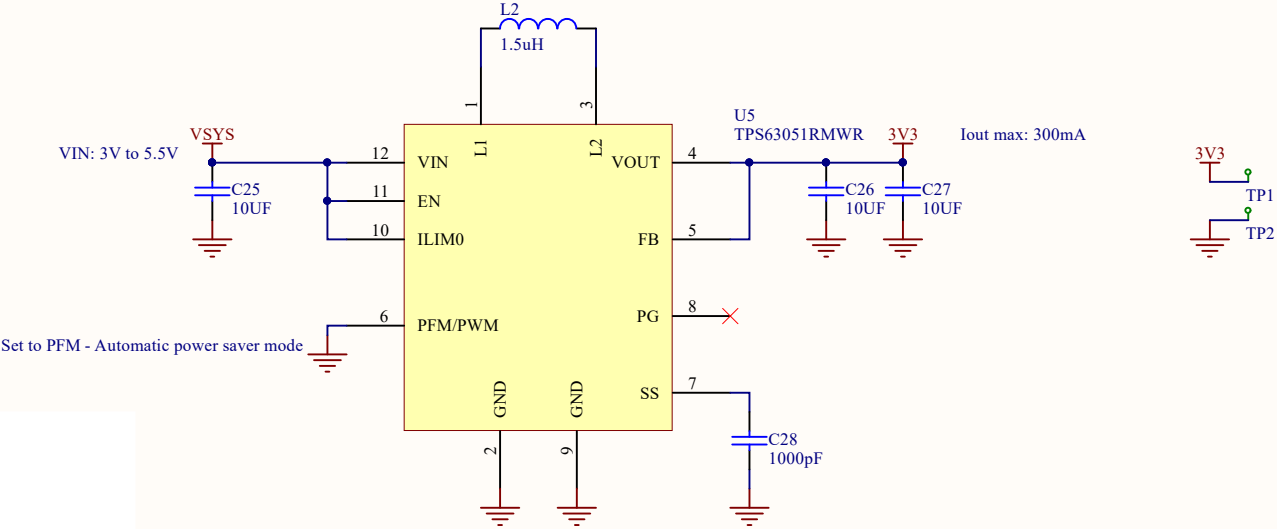
USB OUTPUT

User Indication



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Connections.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 2 of 8

Power Conditioning
3v3 Buck Boost Converter



Design:
Vin 3V - 5.5V
Vout: 3.3V Fixed

- Max output current: 500mA
- Max expected output current is under 300mA
- Always enabled
- Input current limit set to max of 1.4A (under VSys rating).
- Max expected input current is 350mA
- PFM mode (with automatic power save mode for low current) selected.
- Power good status not used.

Project: Lucky Charge Battery Pack.PrjPcb	Version: V2.0
Power.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 3 of 8

A
Text

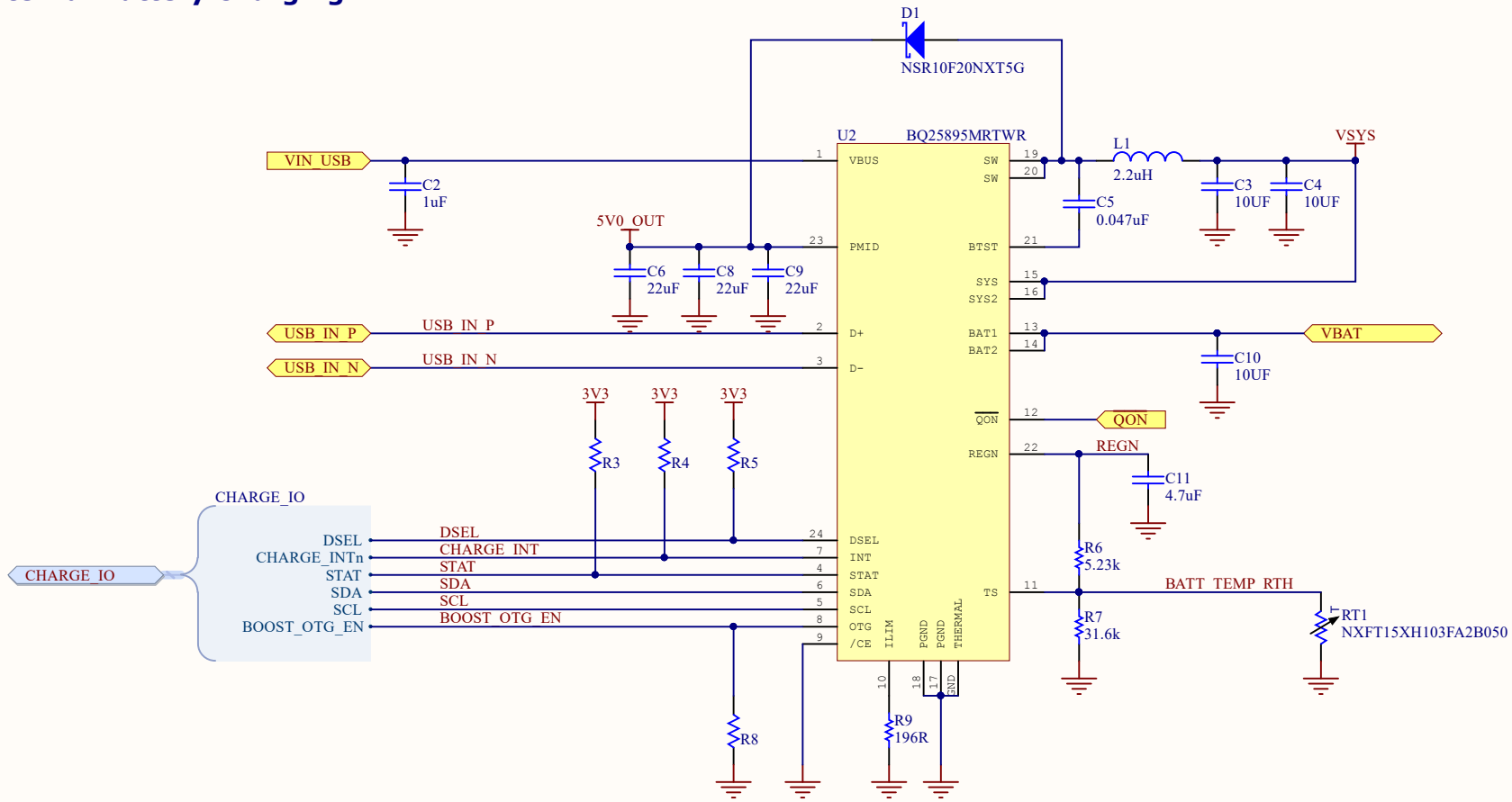
B

Text

Text
Text

D

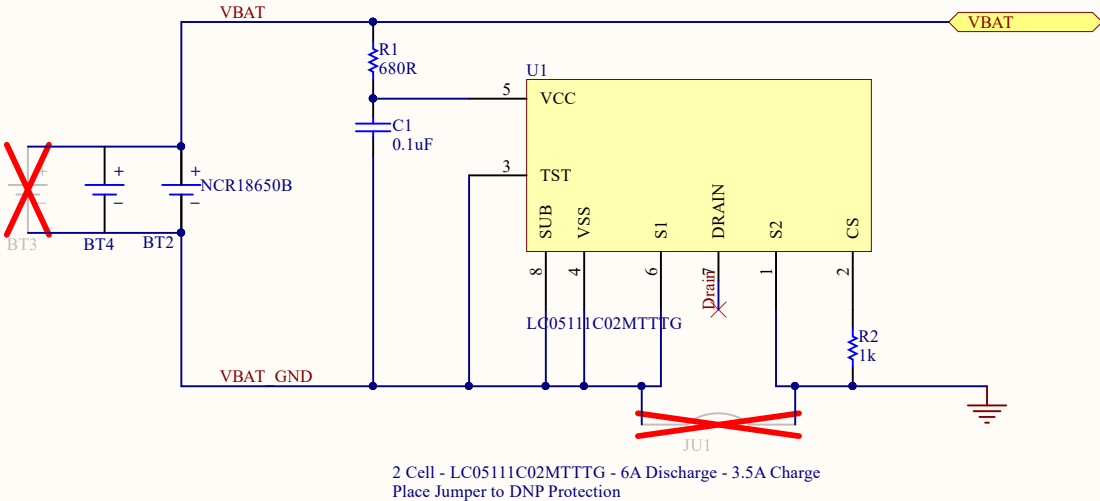
Internal Battery Charging



Charger Design
- Input current limit min of 1.6A, max of 1.98A
- Temp range 0 to 45C

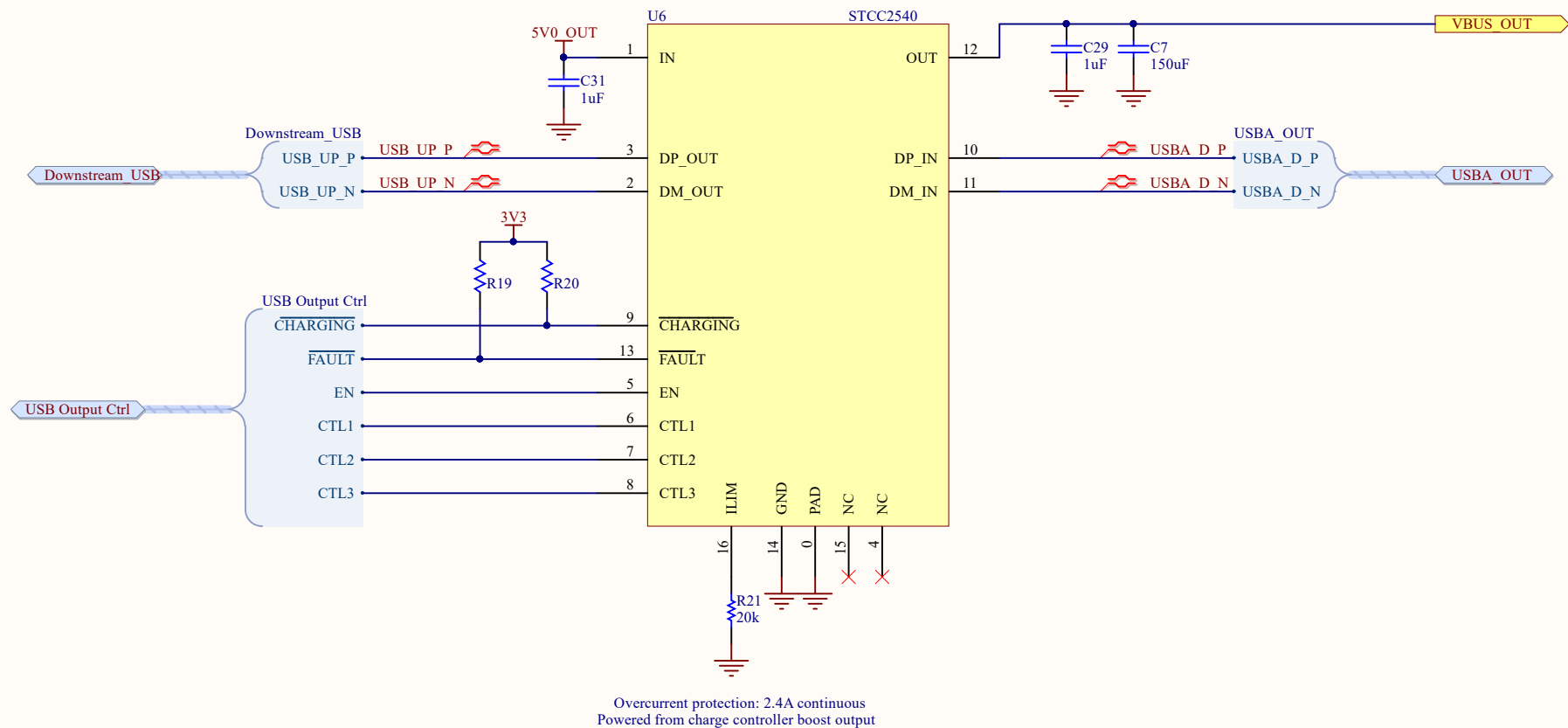
Project: Lucky Charge Battery Pack.PrjPcb	Version: V2.0
Battery Charge.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 5 of 8

Battery & Battery Protection



Project: Lucky Charge Battery Pack.PrjPcb	Version: V2.0
Battery.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 6 of 8

USB Output Charge Interface



Project: Lucky Charge Battery Pack.PrjPcb	Version: V2.0
USB Output Interface.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 7 of 8

Version History

V1.0 Initial Release - May 5, 2018

- 2 Cell battery pack
- Single Output with USB populated. USB may be removed and replaced with charge Cable.
- MCU boot from flash

V1.1 - May 12, 2018

Bom Updates:

- Changed all 0.1uF 0402 caps to C0402C104Z4VAC7867
- Changed all 1uF 0603 caps to C0603C105Z4VAC7867
- Changed all 10uF 0805 caps to EMK212BJ106MG-T
- Changed all 22uF 0805 caps to GRM219R61C226ME15L
- Changed all 10K 0402 resistors to RC1005F103CS
- Changed all 1000pF 0603 caps to C0603C102M5RACTU
- USB Connector changed to different type, PCB layout updated to match.

V2.0 - June 24, 2018

PCB Updates:

- Updated minimum solder mask sliver width to 3mil
- Changed outer layer copper thickness requirement to a minimum of 1oz.
- Changed inner layer copper thickness requirement to a minimum of 0.5oz.
- Added solder mask between pads for components: D2, U4, U2, U3, U6, D3, U5, Q1, D1, CN2
- Addjusted footprint pad size for components: D1, Q1

Project: Lucky Charge Battery Pack.PrjPcb	Version: V2.0
Version History.SchDoc	Date: 2018-06-24
Designer: Ryan Baron	Sheet: 8 of 8