

Revision History

Rev 1.0 12/16/2014

1. Initial Draft.
2. 2-layer, FR4, 62mil thickness, 1oz copper on TOP/BOT
3. Black PCB (Match EFM PCBs)
4. Design was copied from SSL_MOTHERBOARD. Differences from that design are:
 - a. Different GPIOs used for LED drive
 - b. LiPoly battery and charger added
 - c. No more leave NW button. nBOOTLOAD button added instead.
 - d. Module footprint changed to handle two different modules: 357-based and 358-based.

Rev 2.0 01/21/2015

1. Power domain hierarchy
 - a. header > USB > battery
 - b. use FETs to route power and have it auto-select
2. Power-down switch works for any power source
3. Improved reliability of battery charging
4. Smaller board
 - a. Put battery on back
 - b. Put all circuitry other than module and LEDs on back
5. Added female .1 pitch connectors on back so that board can be mounted on an array for large scale testing
6. Added connectors for ETI-like modules (total of three connector types now)
7. Design is now "interposer" friendly:
 - a. Future modules can use this board provided they mount to an interposer that routes appropriate signals.
 - b. An additional row of connectors is added along the bottom for mechanical stability.

Rev 2.1 01/21/2015

1. BOM updates
 - a. J6, J7, J8 are NI
 - b. Q5 changed to same NMOS as Q1-4
 - c. Change to taller bumpers
 - d. Made R19 NI so that LED doesn't flash when no battery is connected.

Rev 3.0 03/27/2015

1. Get rid of all daughtercard connectors except for interposer connector.
2. Move connectors left to accommodate longer board (ETI-based module)

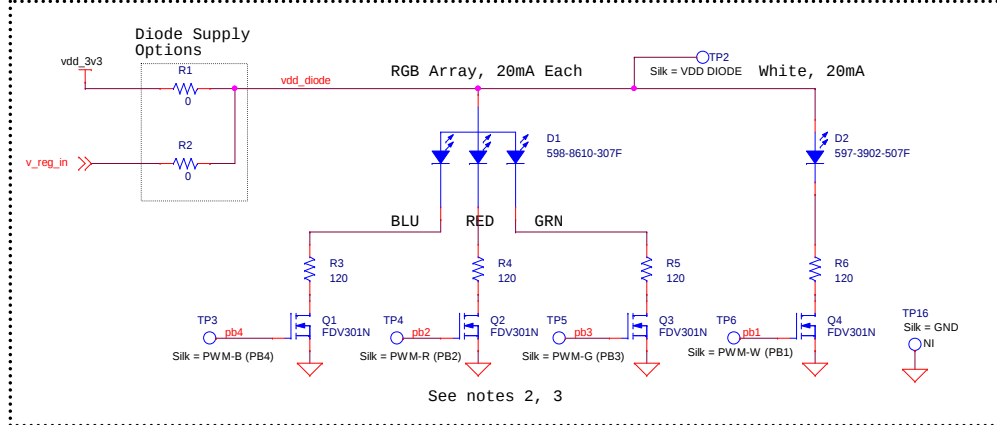
LB1

IST P/N LABEL

OPN-IST-A21 - P/N

		400 W Cesar Chavez Austin, TX 78701	
Size	Title		
B	Title and Revision History		
Part Number	Document Number	Rev	
	IST-A21	3.0	
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LED Supply Options, and LED drivers

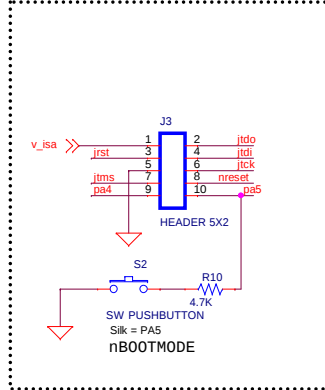


Component placement:

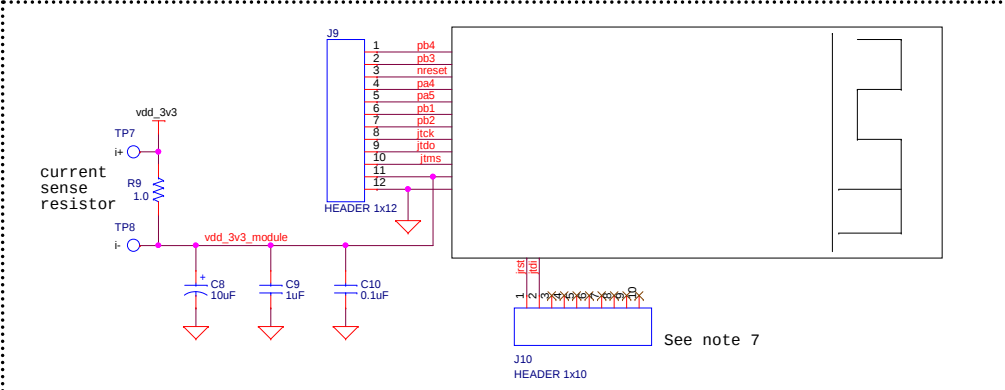
TOP side:
Module (J9 and J10)
LEDs
Power-down button

BOT side:
Everything else.

Programming Header



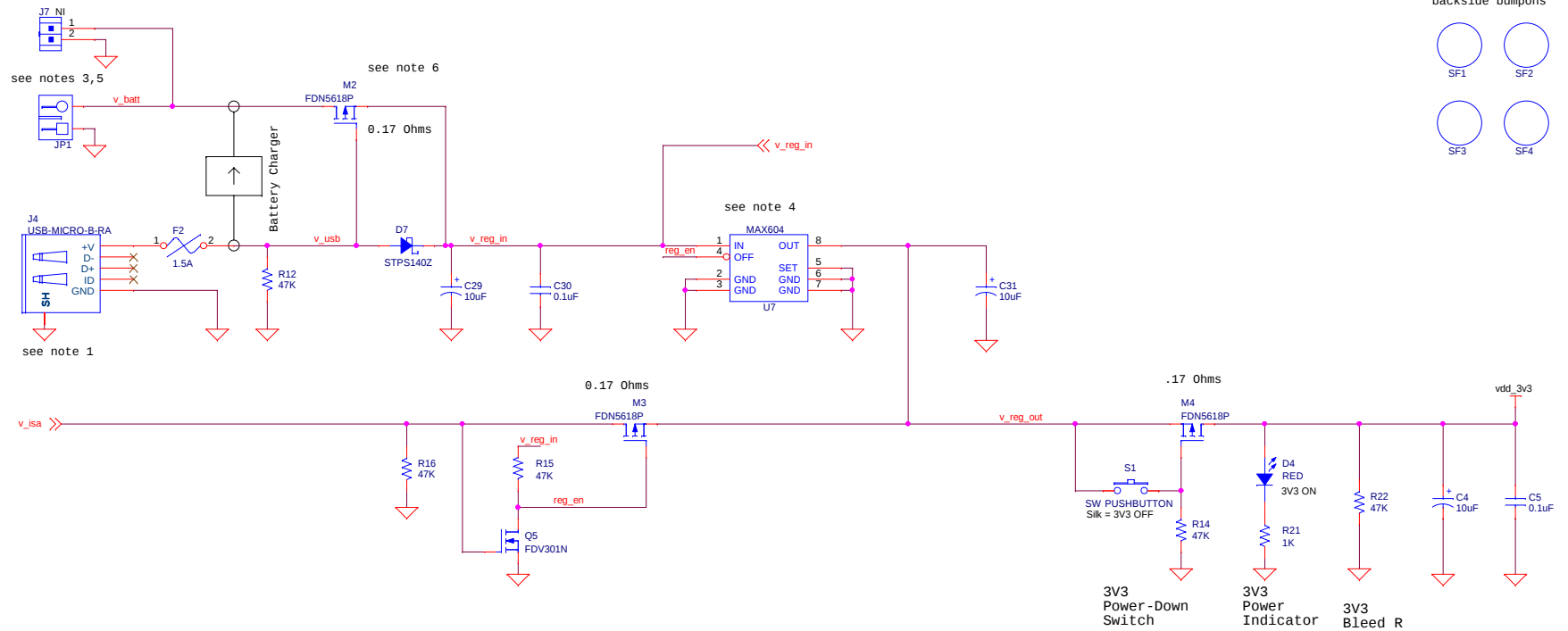
Module Connections



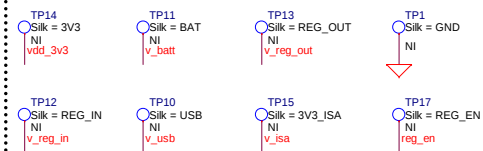
Notes:

1. R used to bleed the supply voltage so that we power down completely when doing ON/OFF cycling
2. R3, R4 and R5 can be tuned later for more accurate color generation
3. Use full-size test points
4. PD switch mimics the 10x(ON/OFF) leave-NW mechanism
5. Activate FIB monitor instead of main bootloader when coming out of reset.
7. Horizontal for added for mechanical stability. jrst and jtdi added for use by interposer if desired.

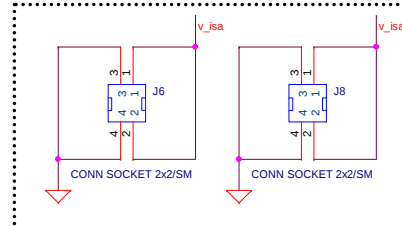
		400 W Cesar Chavez Austin, TX 78701	
Size	Title		
B	Module Conn, LED drivers, Buttons		
Part Number	Document Number	Rev	
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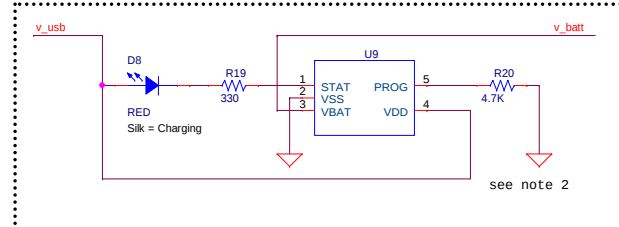
Supply test points



Bottom header for "light board" array.



Battery Charger



Notes:

1. Micro USB connector for power only
2. Charging current set to $1V/4.7 = 212 \text{ mA}$
3. JST connector: [http://www.digikey.com/product-detail/en/S2B-PH-K-S\(LF\)\(SN\)/455-1719-ND/926626](http://www.digikey.com/product-detail/en/S2B-PH-K-S(LF)(SN)/455-1719-ND/926626)
4. LiPoly Voltage = 3.7V. MAX604 dropout = 240mV at 200mA at 3.3V. --> Therefore we can regulate 3.7 down to 3.3 reliably
5. Battery: http://www.amazon.com/dp/B00HS5Y6G4/ref=cm_sw_su_dp
6. Cannot use simple diode-OR here because then vbatt would only provide 3.4V to the 3.3V regulator

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Size	Title	Battery Management, Bypassing	
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