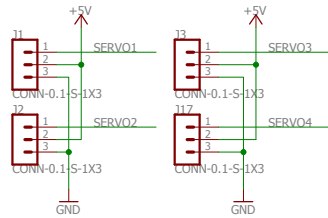




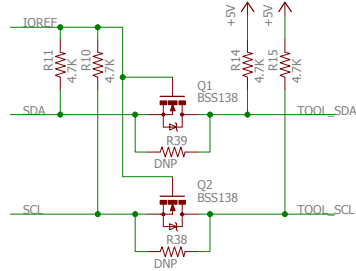
## SERVO OR NEOPIXELS



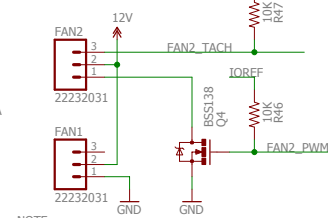
NOTE: DECOUPLE W/CAPACITORS AT NEOPIXEL END  
SEE ADAFRUIT UBERGUIDE FOR MORE INFO:  
<https://learn.adafruit.com/adafruit-neopixel-uberguide/overview>

WARNING: +5V SUPPLY \*MUST\* BE ABLE TO  
SUPPLY AT LEAST 60 mA PER NEOPIXEL!

## I2C 5V<->3.3V

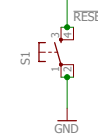


## +12V FANS

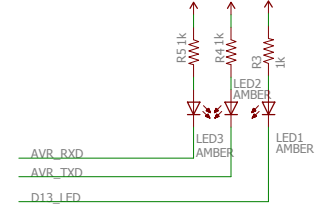


NOTE:  
FAN1 IS INTENDED FOR END EFFECTOR (CONSTANT ON)  
FAN2 IS INTENDED FOR PLA COOLING (SWITCHED)

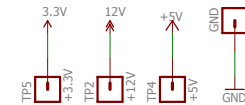
## RESET BUTTON



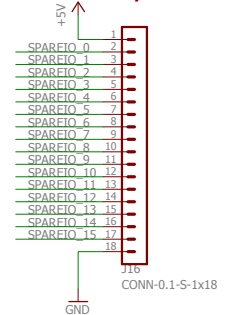
## STATUS LEDS



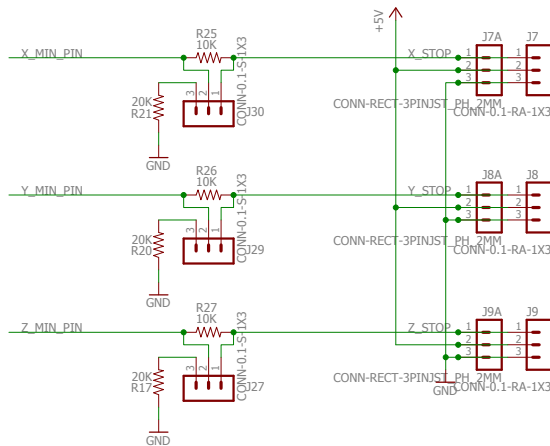
## TEST POINTS



## SPARE I/O



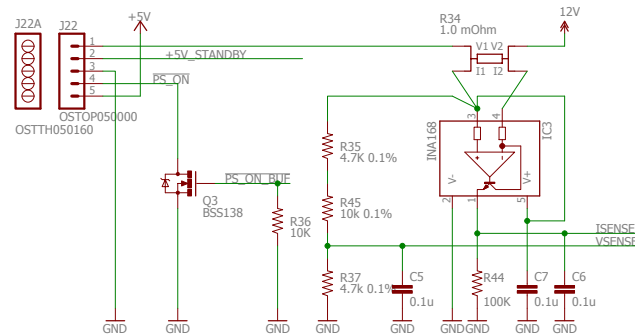
## ENDSTOP 5V->3.3V



## ENDSTOPS

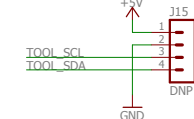
## POWER

\* NOTE:  
THIS IS A 2-PIECE TERMINAL STRIP.  
- THE OSTOP IS THE MALE PIN HEADER  
- THE OSTTH IS THE PLUG-ON SCREW TERMINAL

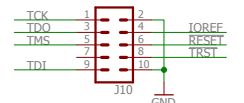


$$I_{sense} V_{out} = (I_s)(R_s)(200\mu A/V)(R_L) = 15A * 0.001 \text{ ohm} * 0.0002 A/V * R_L$$

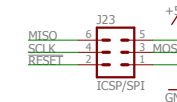
## I2C



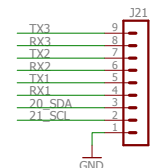
## AVR JTAG



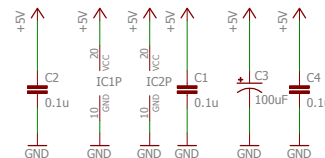
## SPI BUS



## SERIAL



## LOGIC IC PWR



**\*\*TODO:**

TODO: INSTALL FERRITE BEAD ON ISENSE?

- \* Replace BSS138's on I2C bus with PCA9512? (hot swap protection)
- \* Replace StepSticks with DRV8825's
- \* Add digital potentiometer adjustment circuit for DRV8825's

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**FirePick™**

EMC02 Motion Controller  
for FirePick Delta

Drawn by: NEIL JANSEN  
Checked by:

Revision B

EMC02  
6/3/2015 1:17 PM  
Sheet: 2/2

Revision --: First dev release  
Revision A: Arduino Due support added  
Revision B: Added R36,R45,C7. Unconnected Arduino VIN to +12V.  
Fixed PCB routing issue. Moved TOOL4\_DOUT\_BUF and TOOL4\_EN\_BUF from 18/19 to

