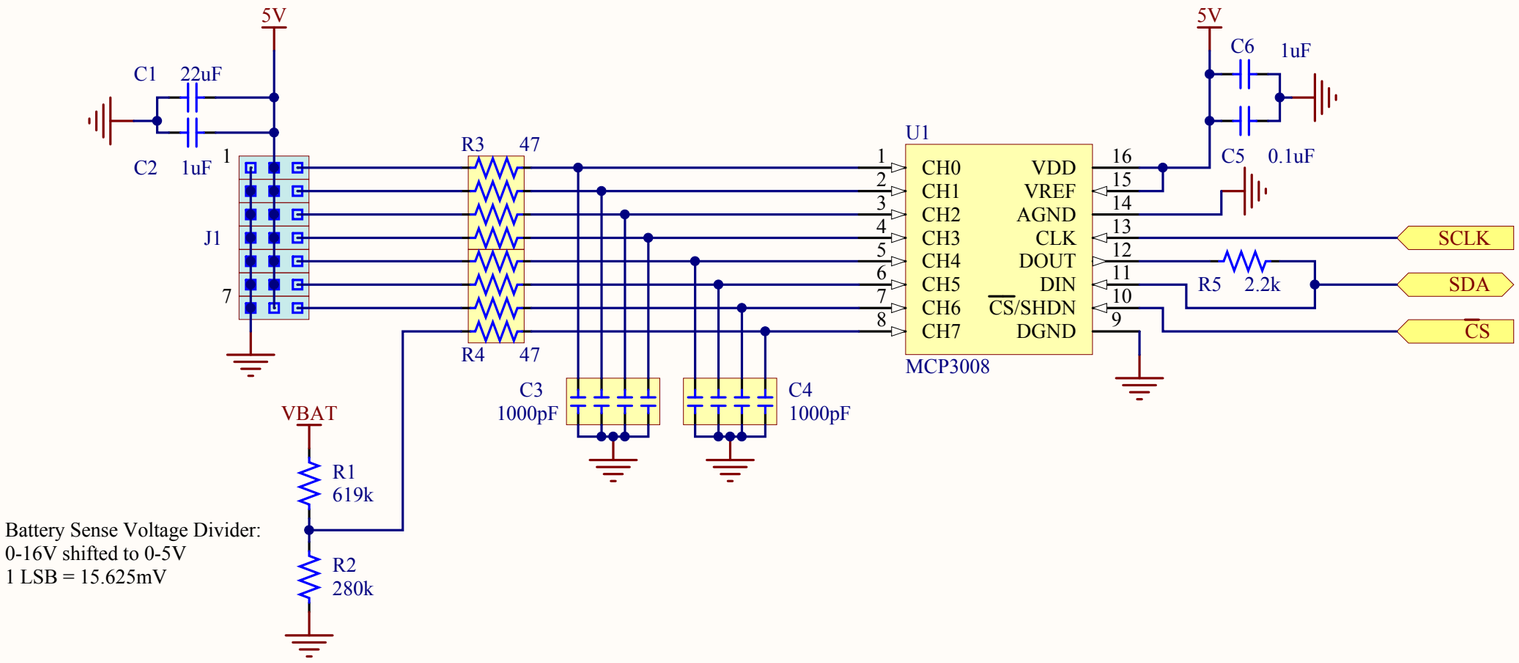
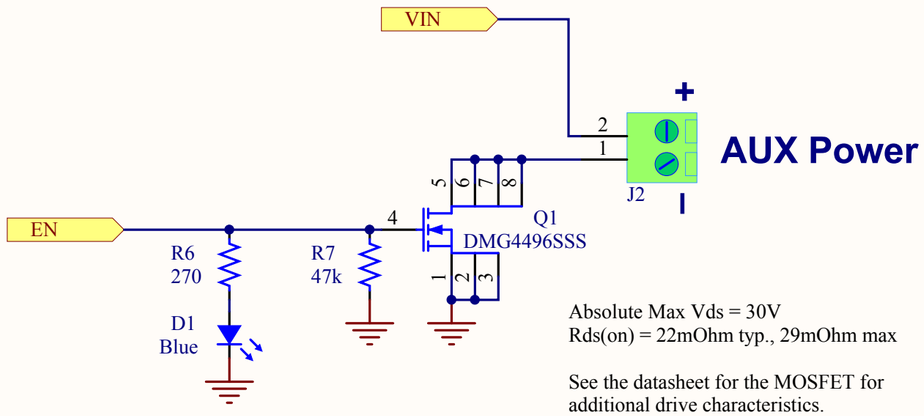


Sheet: ADC.SchDoc			Size: Letter
Description: Analog-to-digital converter			
Project: Eddie Control Board		Part #: 550-28990	Rev: A
PARALLAX INC™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com		Date: 10/10/2011	
		Sheet of	
		Drawn By: K. McCullough	



Absolute Max Vds = 30V
Rds(on) = 22mOhm typ., 29mOhm max

See the datasheet for the MOSFET for additional drive characteristics.

Sheet: Aux_SW.SchDoc		Size: Letter
Description: Auxilliary switched power port		
Project: Eddie Control Board	Part #: 550-28990	Rev: A
PARALLAX inc™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com	Date: 10/10/2011	
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	Drawn By: K. McCullough	

Circuit Details:
VIN_Battery voltage can be 5.5V to 16V.

Device will under-voltage or over-voltage shutdown if outside this range.

Circuit Details:
To disable motor drive output, pull EN low and disable the buffered inputs to INA, INB, and PWM.

Circuit Details:
PWM Frequency can be 0 up to 20kHz Max.
PWM Minimum 'OFF' time is 6us.

IMPORTANT:
All logic requires 5V levels. For design re-use, level shifters should be used outside this sheet block.

Note: The Current_Sense feature is currently not used.

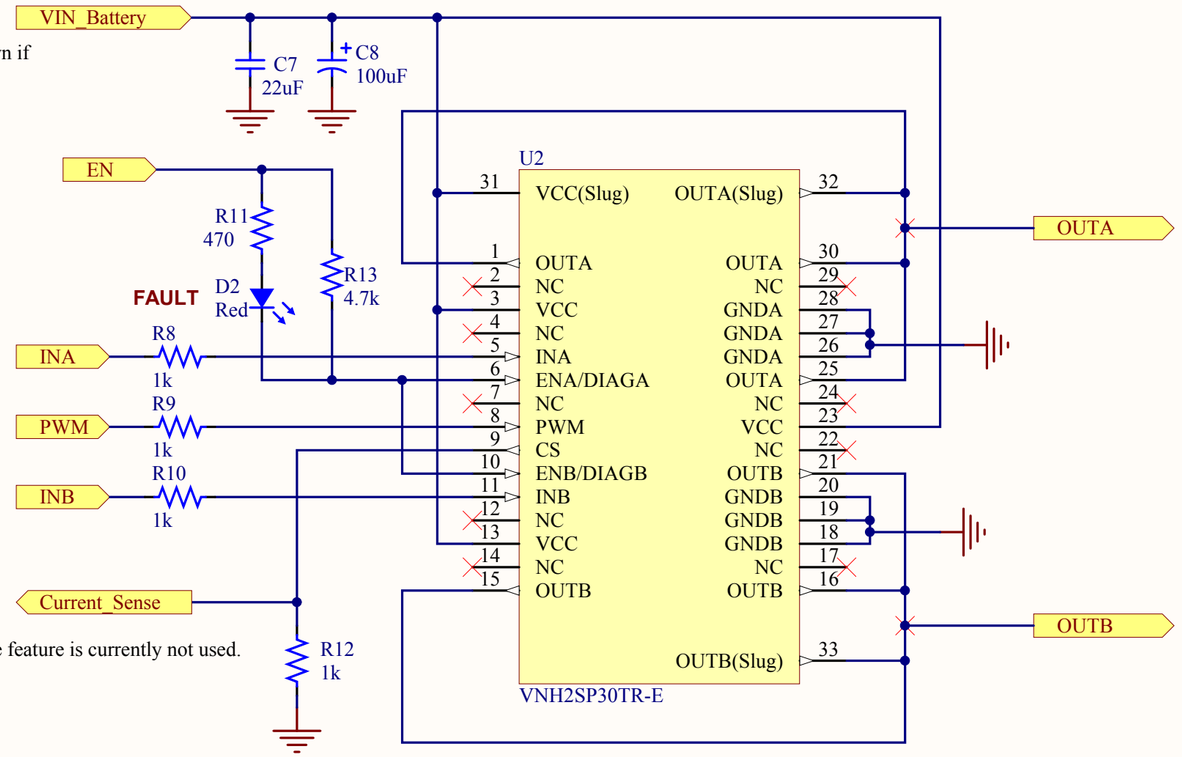


Table 12. Truth table in normal operating conditions

IN_A	IN_B	$DIAG_A/EN_A$	$DIAG_B/EN_B$	OUT_A	OUT_B	CS	Operating mode
1	1	1	1	H	H	High Imp.	Brake to V_{CC}
	0				L	$I_{SENSE} = I_{OUT}/K$	Clockwise (CW)
0	1			L	H		Counterclockwise (CCW)
	0				L	High Imp.	Brake to GND

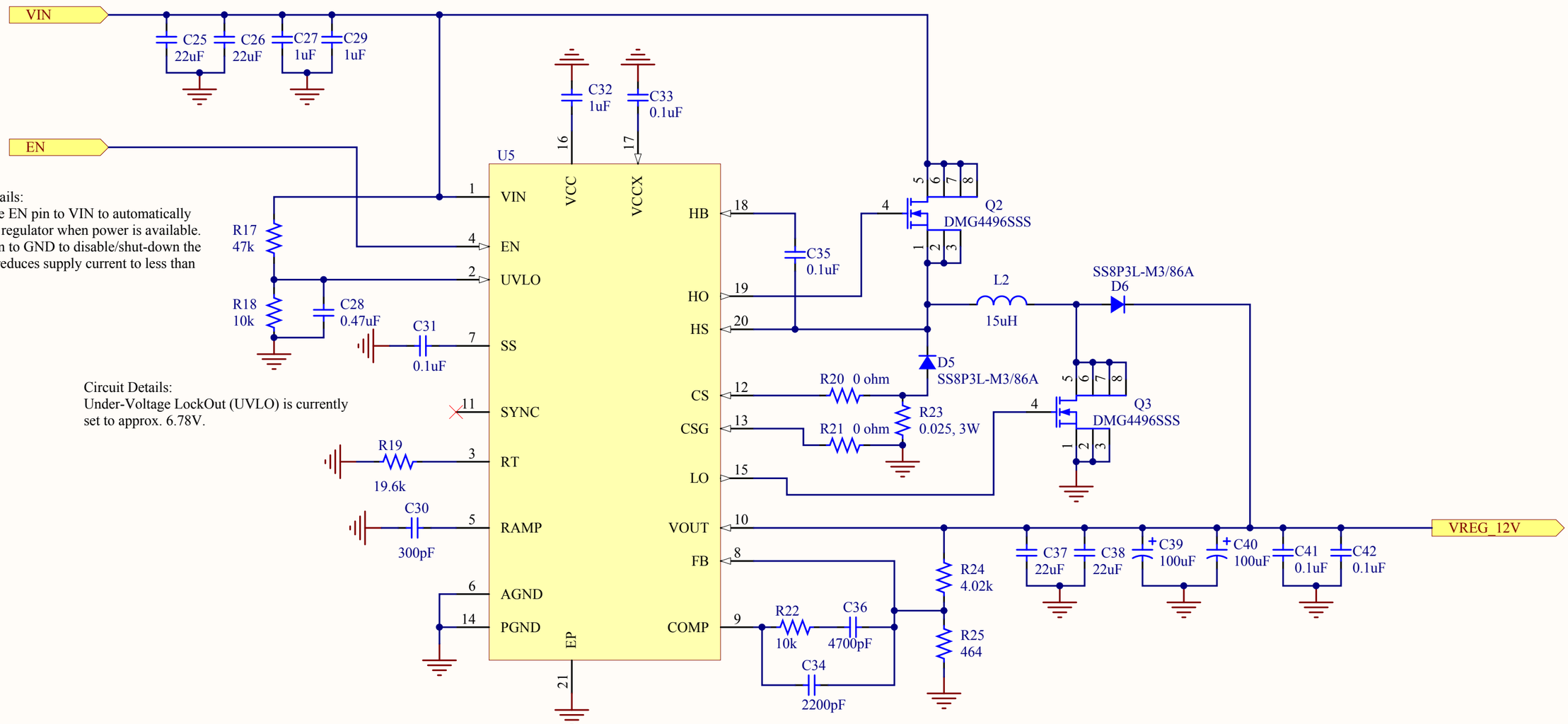
Sheet: H-Bridge Driver.SchDoc			Size: Letter
Description: Full H-bridge Motor Driver			
Project: Eddie Control Board		Part #: 550-28990	Rev: A
PARALLAX INC™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com		Date: 10/10/2011	
		Sheet of	
		Drawn By: K. McCullough	

12.0V, 2.2A Regulator

Circuit Details:
Vout = 12.0V
Vin (min) = 6.75V (set by under-voltage lockout)
Vin (max) = 16V (absolute max 25V - set by capacitors)
Iout (Max) = 2.2A
Iout (Min for CCM) = 400mA
Freq = 283kHz

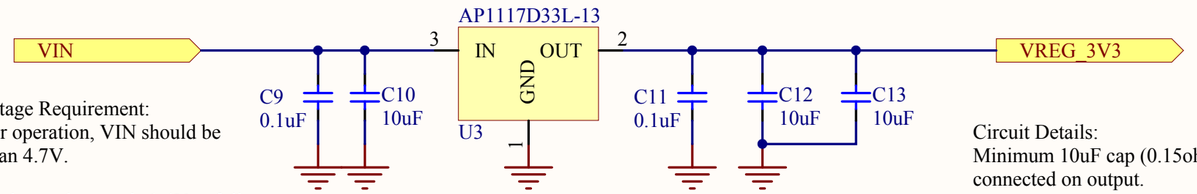
Circuit Details:
Connect the EN pin to VIN to automatically turn on the regulator when power is available. Pull this pin to GND to disable/shut-down the regulator (reduces supply current to less than 10uA).

Circuit Details:
Under-Voltage LockOut (UVLO) is currently set to approx. 6.78V.



Sheet: Power_12V.SchDoc			Size: Letter
Description: 12V buck-boost regulator			
Project: Eddie Control Board		Part #: 550-28990	Rev: A
PARALLAX INC™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com		Date: 10/10/2011	
		Sheet of	
		Drawn By: K. McCullough	

3.3V, 1A Regulator



Input Voltage Requirement:
For proper operation, VIN should be greater than 4.7V.

Guaranteed max dropout is 1.4V at full 1A load.

Circuit Details:
Minimum 10uF cap (0.15ohm <= ESR <= 20ohm) must be connected on output.

Component Details:
Component is rated for up to 1A output, and thermally protects at 150 degC. For TO252-3L package, Thermal Resistance (Junc-to-Amb) is 73 degC/W. Therefore derate below 1A for temperatures above about 25 degC when VIN is at 5.0V

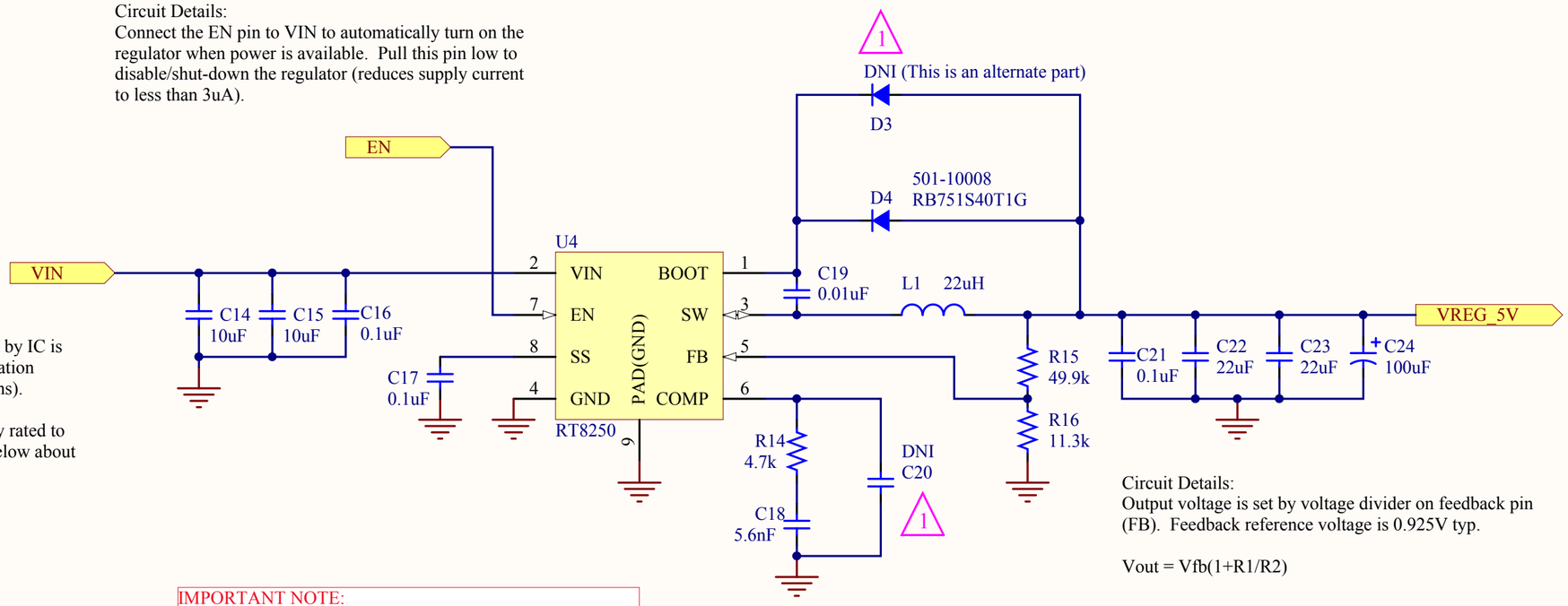
Sheet: Power_3V3.SchDoc		Size: Letter
Description: 3.3V linear regulator		
Project: Eddie Control Board	Part #: 550-28990	Rev: A
PARALLAX inc™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com	Date: 10/10/2011	
	Sheet of	
	Drawn By: K. McCullough	

5.0V, 3A Regulator

Circuit Details:
Connect the EN pin to VIN to automatically turn on the regulator when power is available. Pull this pin low to disable/shut-down the regulator (reduces supply current to less than 3uA).

Circuit Details:
VIN supply voltage required by IC is 4.5V to 23V for proper operation (required operating conditions).

However, capacitors are only rated to 25V so suggest VIN stays below about 16V.



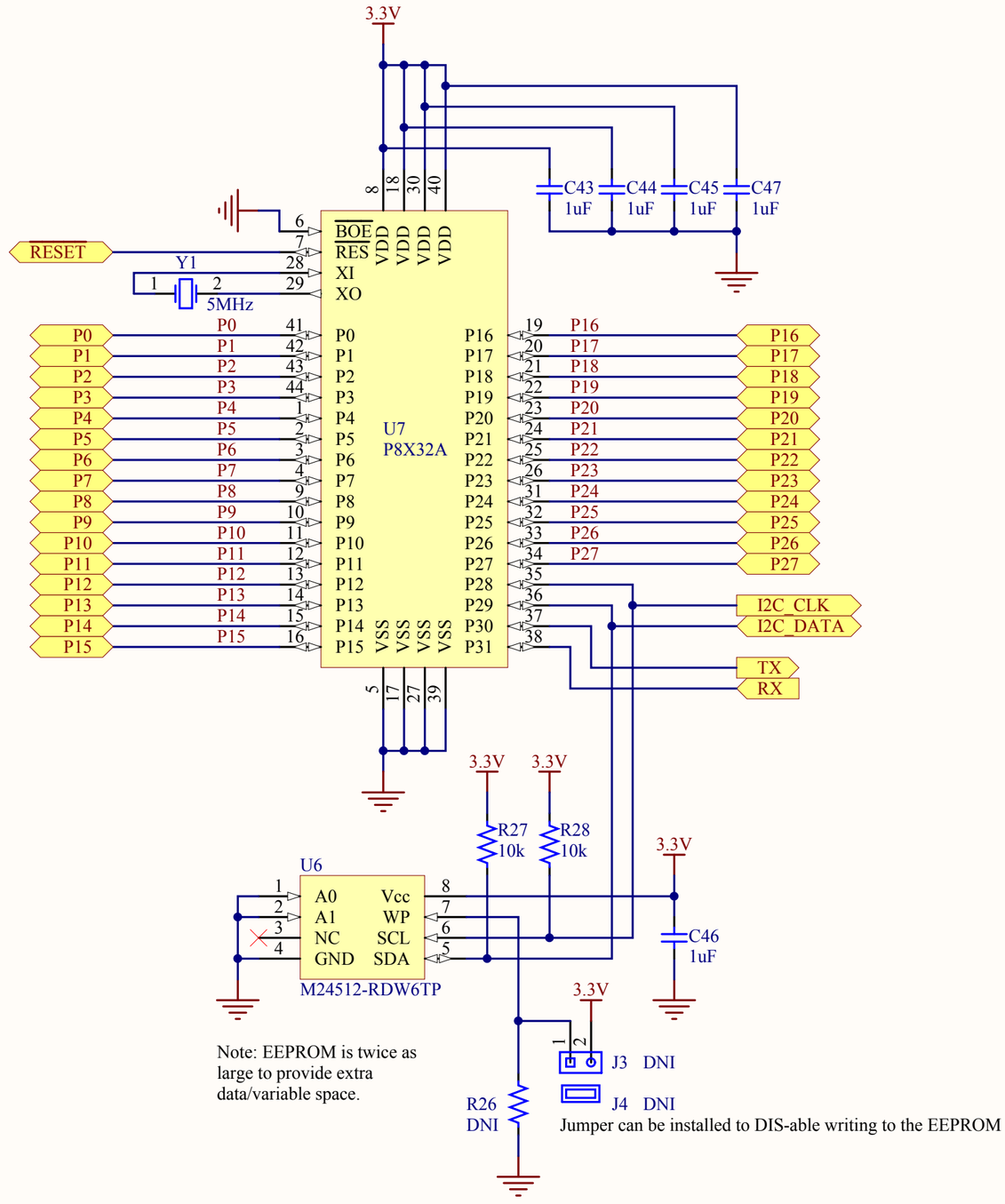
Circuit Details:
Output voltage is set by voltage divider on feedback pin (FB). Feedback reference voltage is 0.925V typ.

Vout = Vfb(1+R1/R2)

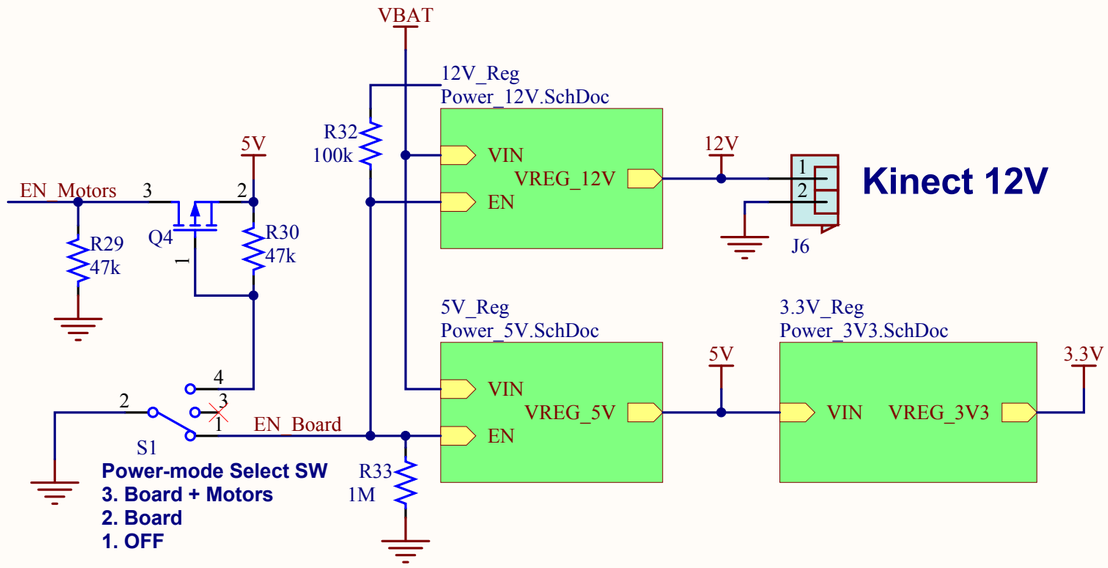
IMPORTANT NOTE:
Do not power-cycle this part too rapidly and repeatedly. Rapid power cycling causes excessive stress on the IC and may cause it to fail and damage the board and connected accessories. Therefore, after switching main board power off wait at least 5 seconds before switching power back on.

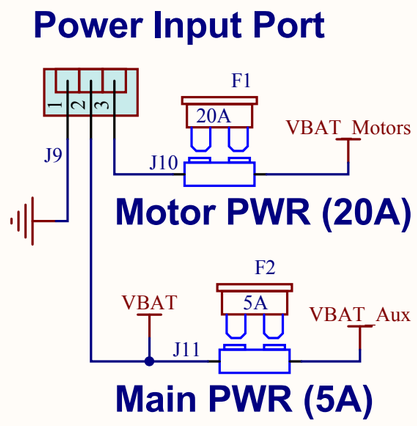
1 DO NOT INSTALL (SEE BOM FOR COMPONENT PLACEMENT)

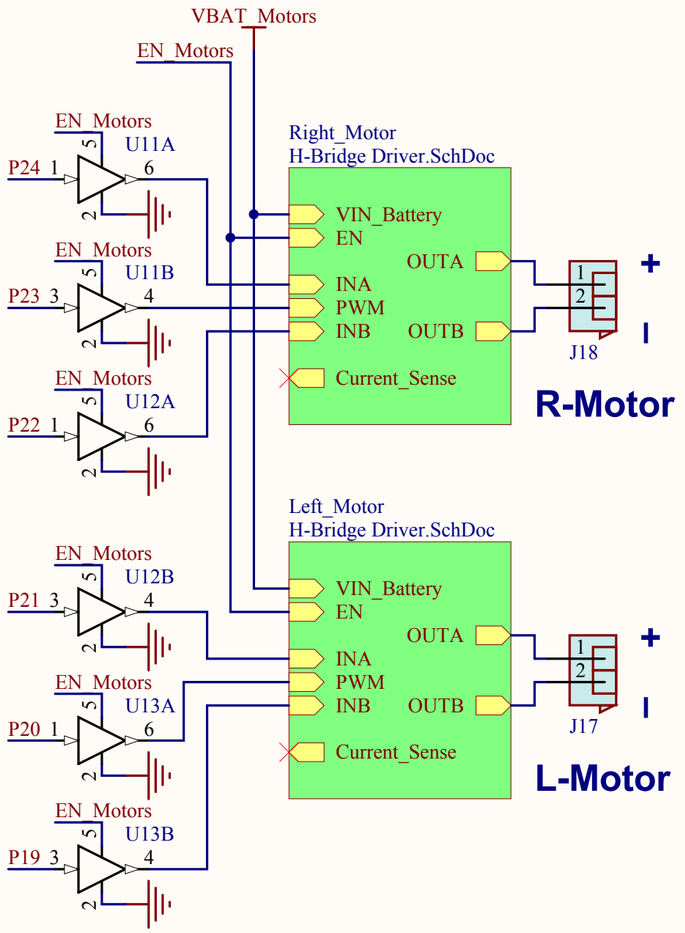
Sheet: Power_5V.SchDoc		Size: Letter
Description: 5V buck regulator		
Project: Eddie Control Board	Part #: 550-28990	Rev: A
PARALLAX inc™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com	Date: 10/10/2011	
	Sheet of	
	Drawn By: K. McCullough	

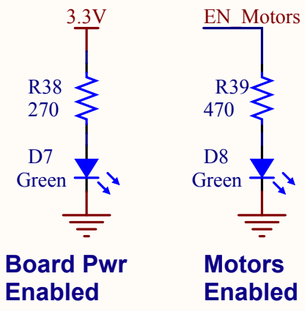


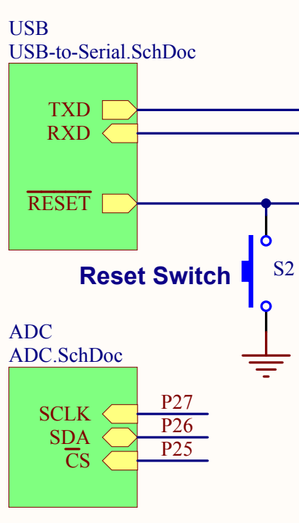
Sheet: Propeller.SchDoc	Size: Letter
Description: Propeller microcontroller and related circuitry	
Project: Eddie Control Board	Part #: 550-28990 Rev: A
PARALLAX INC™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com	Date: 10/10/2011
	Sheet of
	Drawn By: K. McCullough

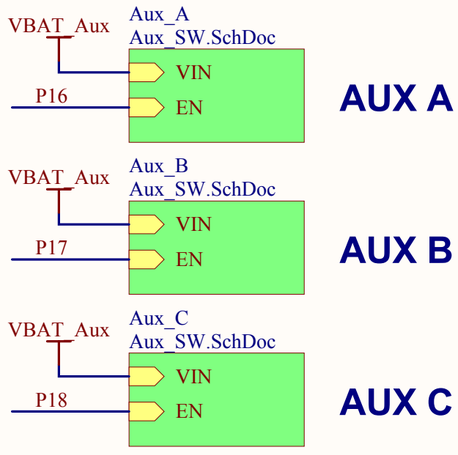


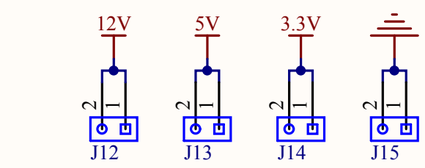


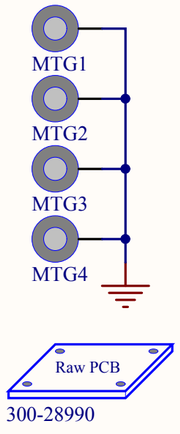


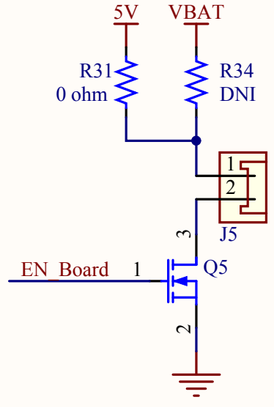


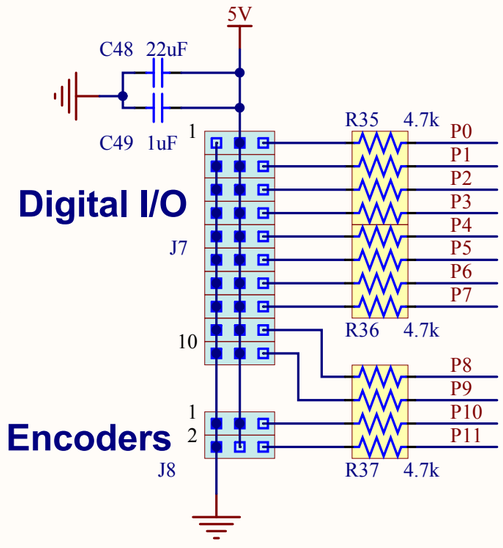


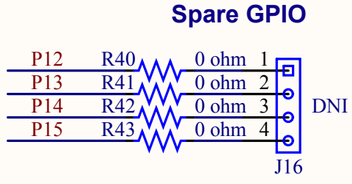




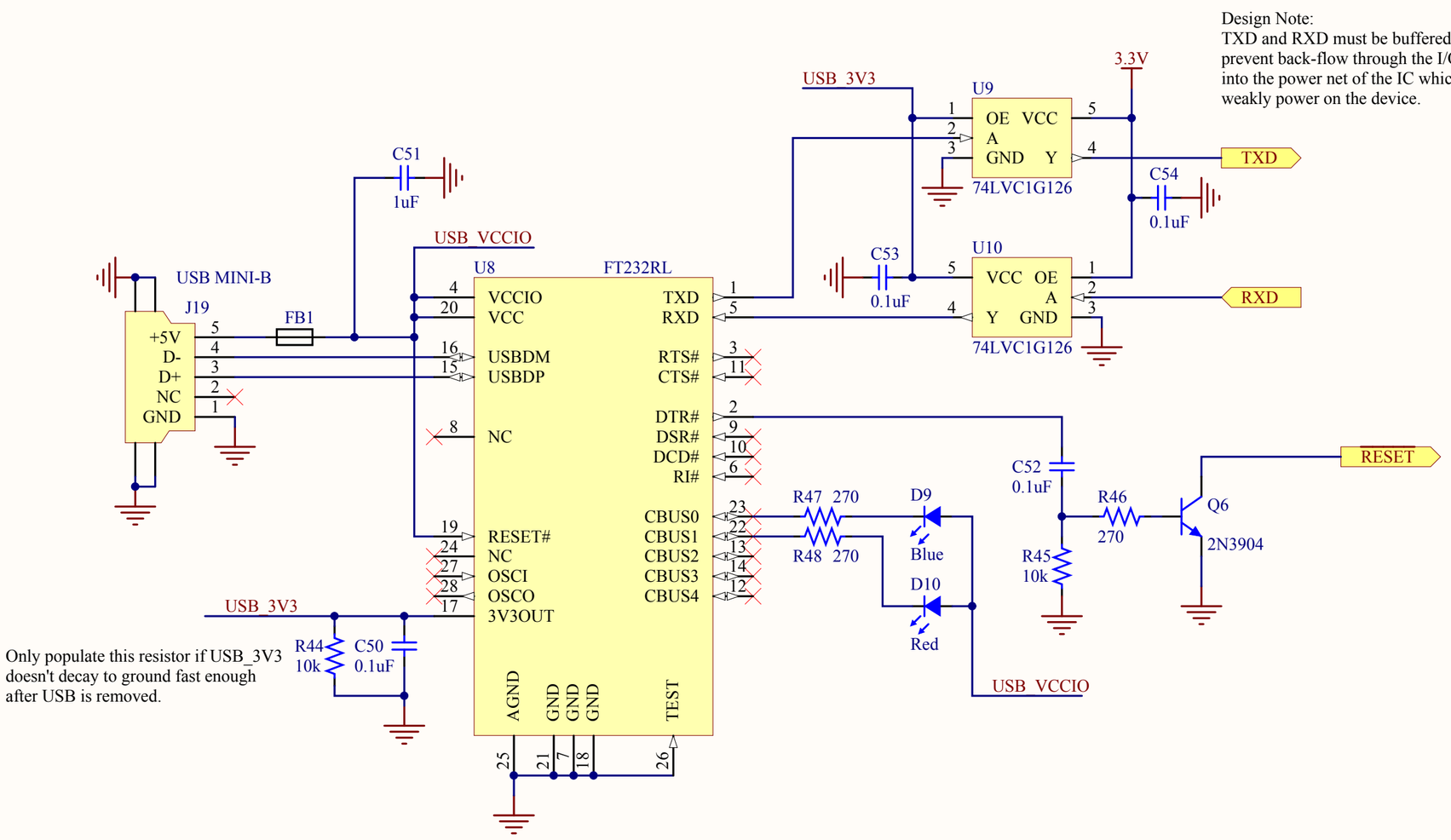








Sheet: System Integration.SchDoc		Size: Letter
Description: Top level system integration schematic		
Project: Eddie Control Board	Part #: 550-28990	Rev: A
PARALLAX INC™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com	Date: 10/10/2011	
	Sheet of	
	Drawn By: K. McCullough	



Sheet: USB-to-Serial.SchDoc			Size: Letter
Description: USB to Serial interface			
Project: Eddie Control Board		Part #: 550-28990	Rev: A
PARALLAX INC™ 599 Menlo Drive Rocklin, CA 95765 www.parallax.com		Date: 10/10/2011	
		Sheet of	
		Drawn By: K. McCullough	