

Notes:

Jumpers labeled JP5 and JP6 are crossover wires,nothing more. This was done to ease single sided PCB Prototype testing.

J2 is the TE Connectivity Automotive Grade water resistant connector. The 35 positions will allow for modifications to the board for additional inputs/outputs as this design only uses 27 positions. My samples to test have arrived, <http://www.te.com> Part #'s:

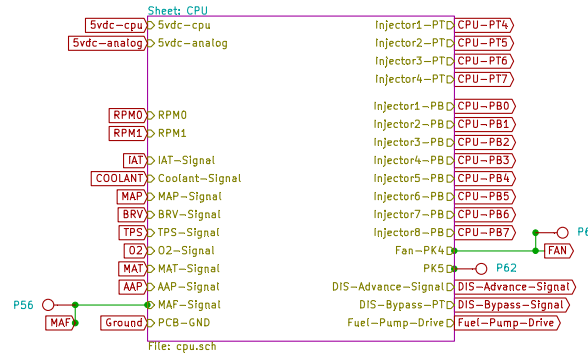
1-776163-2 Right Angle 35 Position Header (Natural Color)
OR
1-776231-2 Vertical 35 Position Header (Natural Color)
1-776231-2 Vertical 35 Position Header (Natural Color)
776164-2 35 Position AMP SEAL Plug Assembly (Natural Color)

Make sure that the PCB grounds do not touch the inside of the case and isolate the T0-220 voltage regulators from the end panels of the case with mica insulators and use plastic screws.

5vdc-cpu = VDD

5vdc-analog = VCC

INJ-GND and INJ-GND2 are isolated to only be used by the Injector FETs



For 6/8 cylinder using Port T with current code, run jumper wires from:

P20 pin 1 to P34 pin 1 = Bank 1
P20 pin 2 to P34 pin 3 = Bank 2
P20 pin 3 to P34 pin 5 = Bank 3
P20 pin 4 to P34 pin 7 = Bank 4

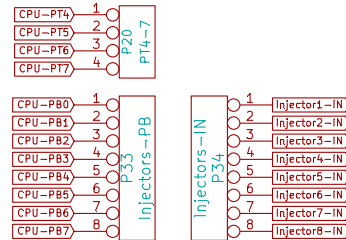
AND DO THE FOLLOWING

For 6/8 cylinder using Port T with current code jumper from: (can be tie-bar shorting jumper if you installed a 0.100" pin header for P34)

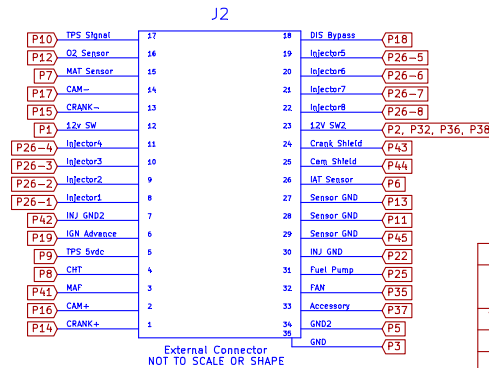
P34 pin 1 to P34 pin 2
P34 pin 3 to P34 pin 4
P34 pin 5 to P34 pin 6
P34 pin 7 to P34 pin 8

To use Port B with future XGATE code, run jumper wires from: P33 to P34 pin for pin and do not connect anything to P20. ie:

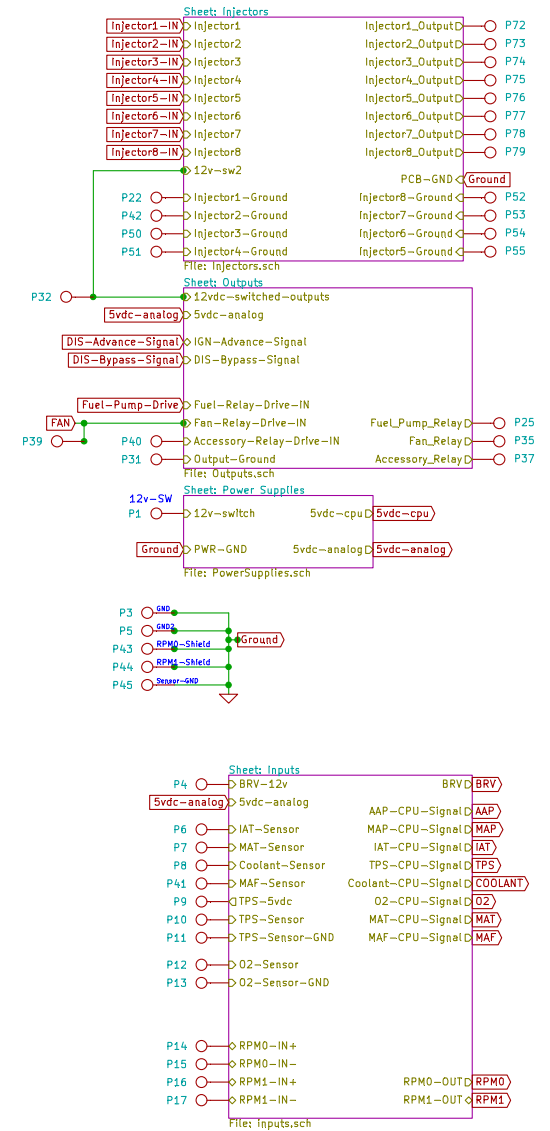
P33 pin 1 to P34 pin 1
P33 pin 2 to P34 pin 2
P33 pin 3 to P34 pin 3
P33 pin 4 to P34 pin 4
P33 pin 5 to P34 pin 5
P33 pin 6 to P34 pin 6
P33 pin 7 to P34 pin 7
P33 pin 8 to P34 pin 8



P20 and P34 allow for selection to use either Port T (4 cpu outputs MAXIMUM:current code) or Port B (8 cpu outputs:future XGATE code)



External Connector
NOT TO SCALE OR SHAPE



git hash: 60790c9fea

File: Jaguar.sch

Sheet: /

Title: Jaguar PCB for FreeEMS

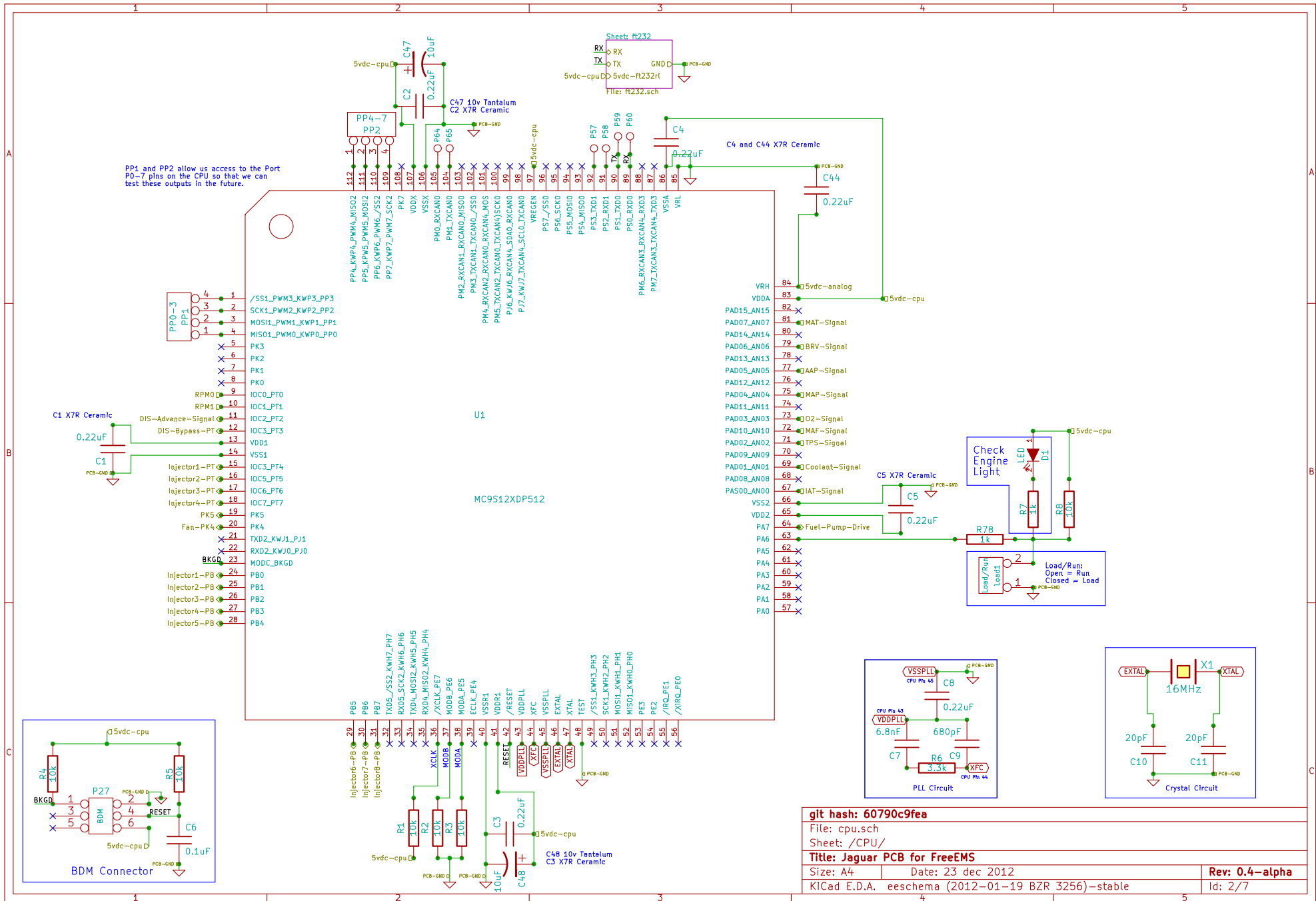
Size: A4

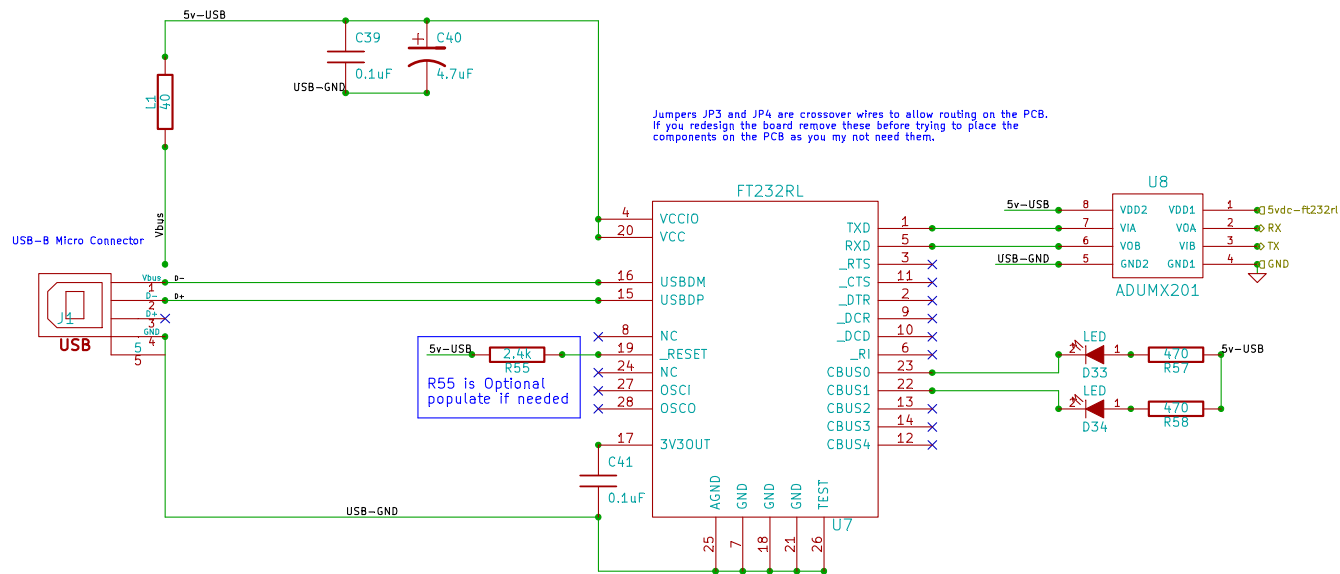
Date: 23 dec 2012

Rev: 0.4-alpha

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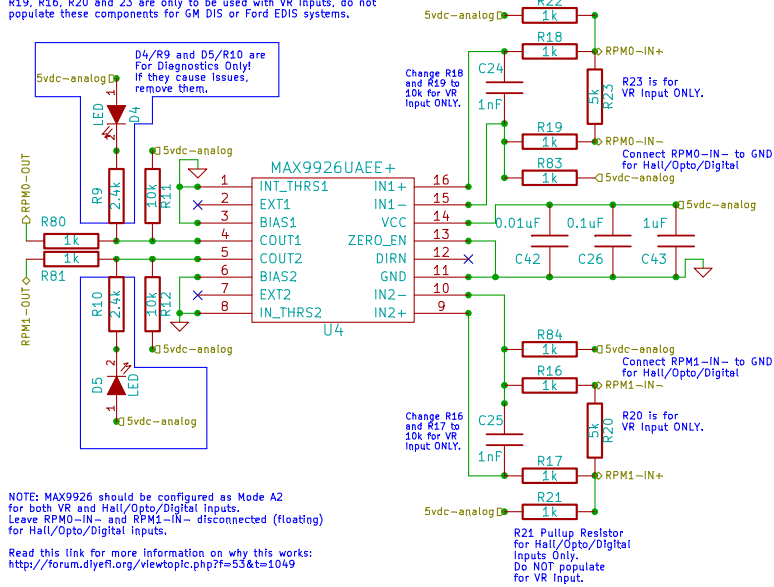
Id: 1/7



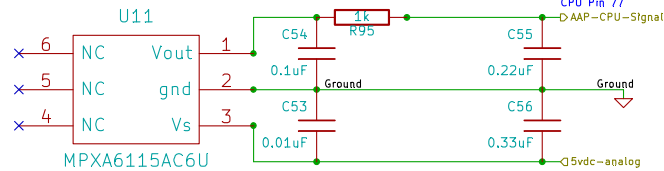


git hash: 60790c9fea		
File: ft232.sch		
Sheet: /CPU/ft232/		
Title: Jaguar PCB for FreeEMS		
Size: A4	Date: 23 dec 2012	Rev: 0.4-alpha
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For GM DIS and Ford EDIS leave RPM0-IN- and RPM1-IN- totally disconnected.
For Ford EDIS do not connect RPM1-IN+ to anything either.
R16, R17, C25, R10, R12 and D5 are not needed for the EDIS system.
R19, R16, R20 and 23 are only to be used with VR Inputs, do not populate these components for GM DIS or Ford EDIS systems.

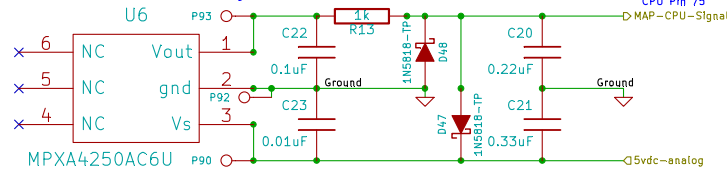


Crankshaft and Camshaft Inputs



Ambient Absolute Pressure

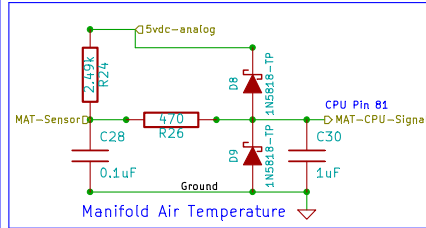
Use the MPXA6115AC6U for Non-Boosted Engines.
Use the MPXA4250AC6U for Boosted Engines.



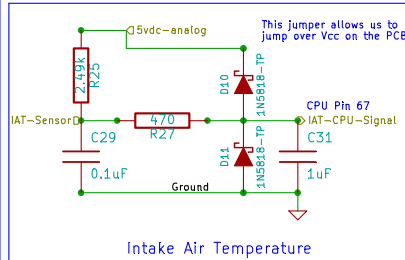
Manifold Absolute Pressure

D47 and D48 are only populated if you are using an external MAP sensor. Do not populate these locations if you are using the on-board sensor.
Do not populate C23 and C21 if you are using an external MAP sensor.
Change R13 value from 1k to 470 ohm if you are using an external MAP sensor.

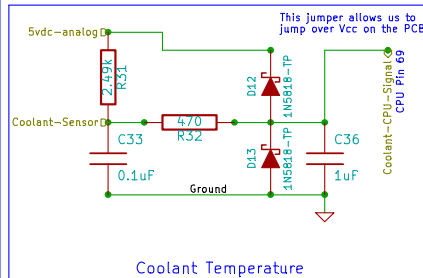
R24, R25 and R31 (2.49k) can be replaced if using sensors other than GM temperature sensors: For FORD Sensors: use 27.4k 0.1% Metal Film resistors; for MOPAR Sensors: use 9.1k 0.1% Metal Film resistors or use 2.43k 0.1% Metal Film resistors (best for most cases). Be sure to use FreeTherm to adjust the values in the FreeEMS code for the best accuracy regardless of which value resistors you use!



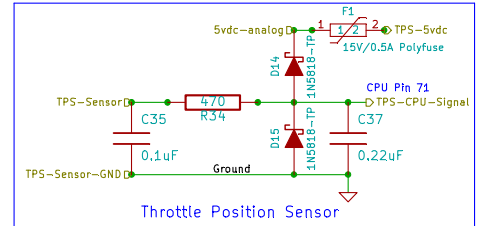
Manifold Air Temperature



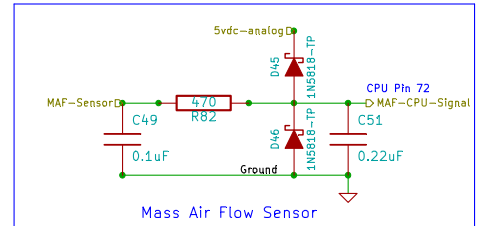
Intake Air Temperature



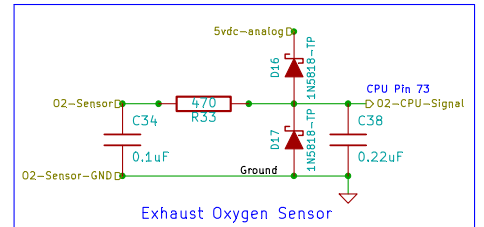
Coolant Temperature



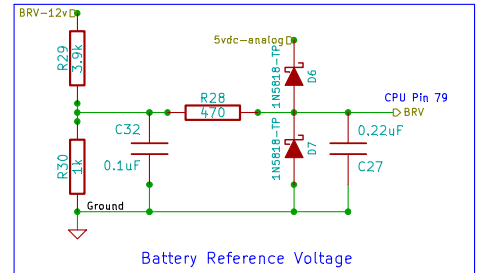
Throttle Position Sensor



Mass Air Flow Sensor



Exhaust Oxygen Sensor



Battery Reference Voltage

git hash: 60790c9fea

File: inputs.sch

Sheet: /Inputs/

Title: Jaguar PCB for FreeEMS

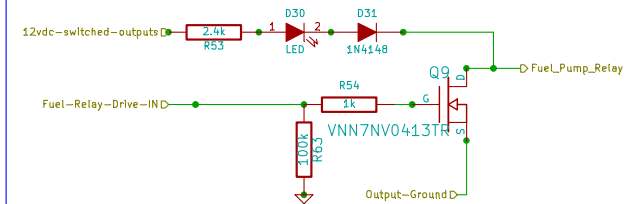
Size: A4

Date: 23 dec 2012

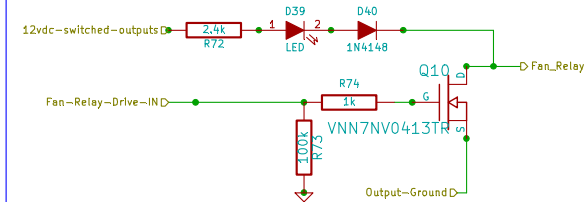
Rev: 0.4-alpha

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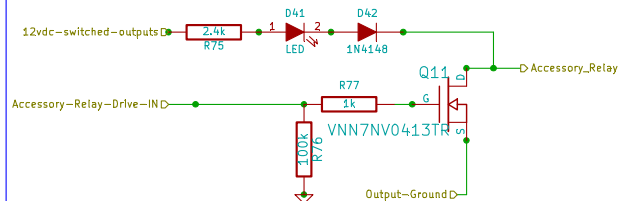
Id: 4/7



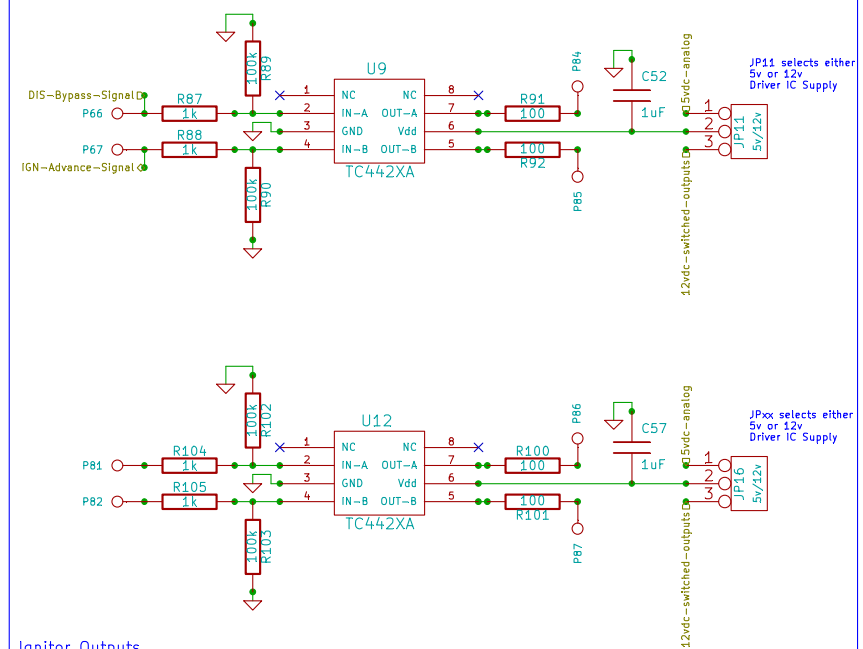
Fuel Pump Relay Output



Low Side Driver #1 Output

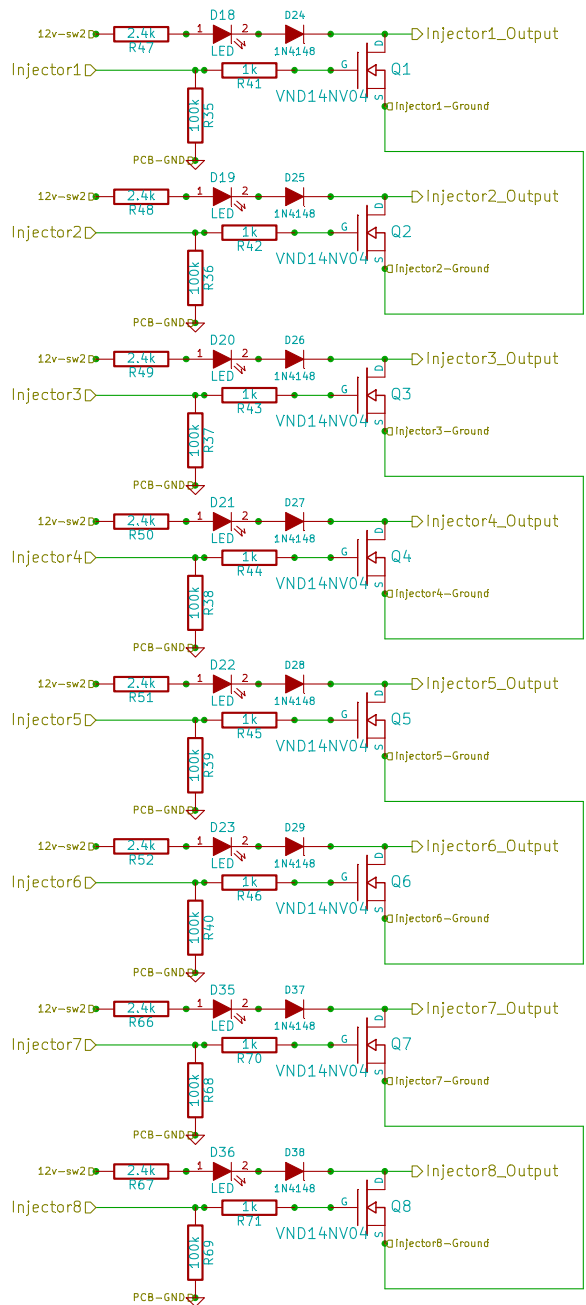


Low Side Driver #2 Output



Ignitor Outputs

git hash: 60790c9fea		
File: Outputs.sch		
Sheet: /Outputs/		
Title: Jaguar PCB for FreeEMS		
Size: A4	Date: 23 dec 2012	Rev: 0.4-alpha
KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable		Id: 5/7



git hash: 60790c9fea

File: Injectors.sch

Sheet: /Injectors/

Title: Jaguar PCB for FreeEMS

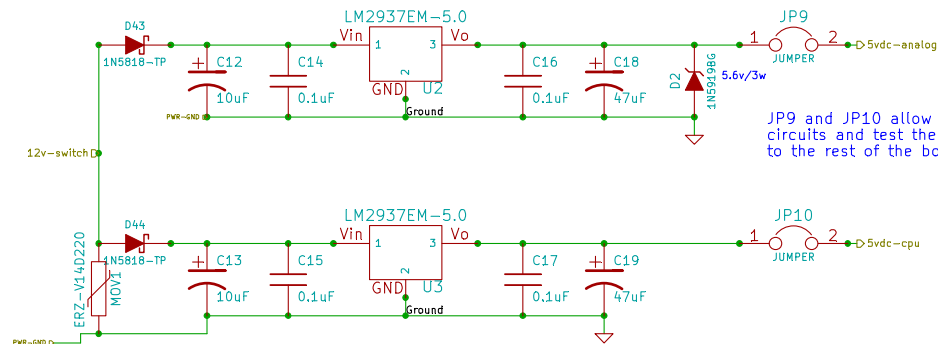
Size: A4

Date: 23 dec 2012

Rev: 0.4-alpha

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Id: 6/7



JP9 and JP10 allow you to build the power supply circuits and test them before connecting them to the rest of the board.

C14, C15, C16 and C17 are 50v X7R Ceramic capacitors.
C12 and C13 are 35v Tantalum capacitors.
C18 and C19 are 10v Tantalum capacitors.

git hash: 60790c9fea		
File: PowerSupplies.sch		
Sheet: /Power Supplies/		
Title: Jaguar PCB for FreeEMS		
Size: A4	Date: 23 dec 2012	Rev: 0.4-alpha
KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable		Id: 7/7