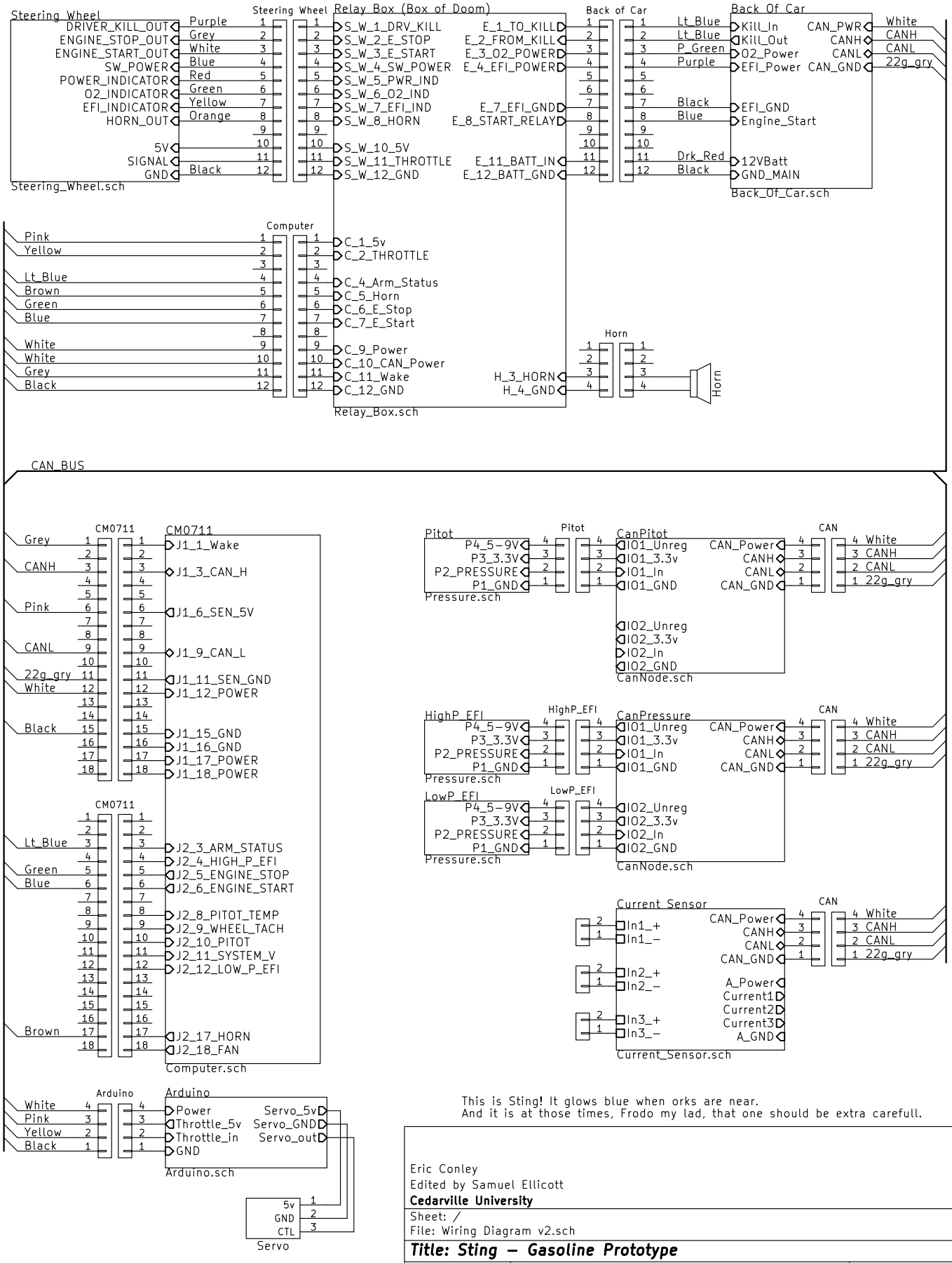


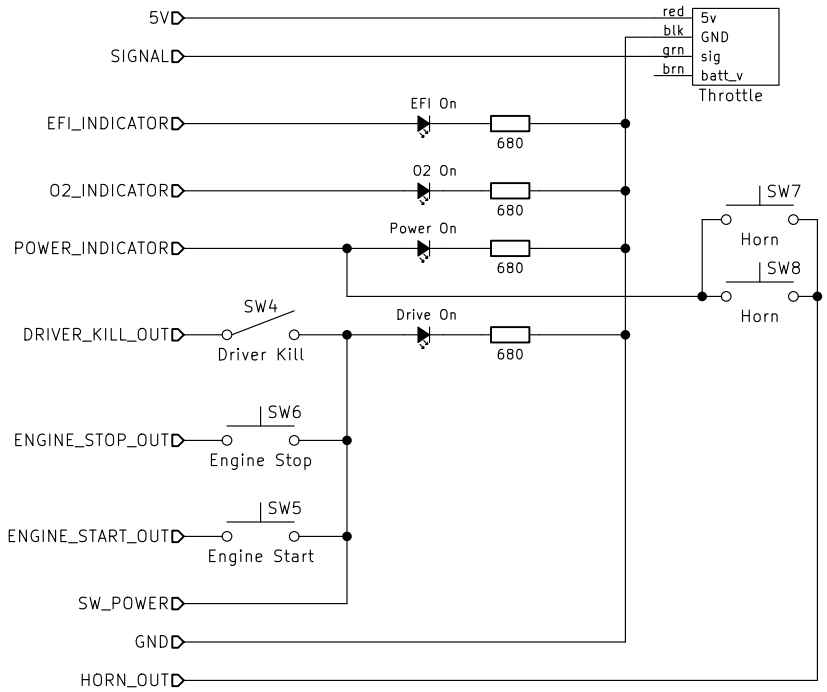
This is Sting! It glows blue when orks are near.
And it is at those times, Frodo my lad, that one should be extra carefull.

Eric Conley
Edited by Samuel Ellicott
Cedarville University

Sheet: /
File: Wiring Diagram v2.sch

Title: Sting – Gasoline Prototype

Size: USLetter	Date: 2016-05-25	**Rev: 1.6**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 1/14

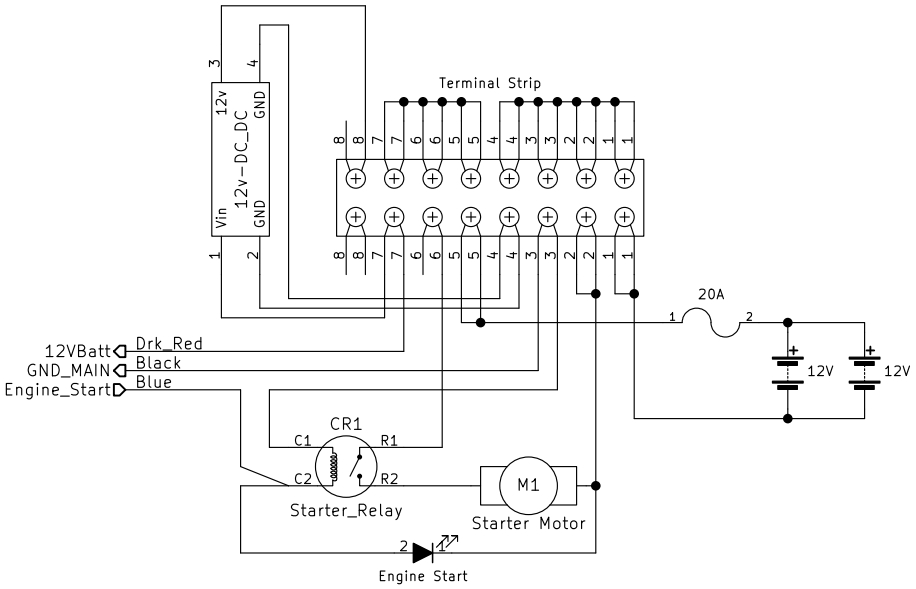


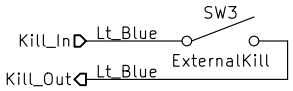
Eric Conley
Edited by Samuel Ellicott
Cedarville University

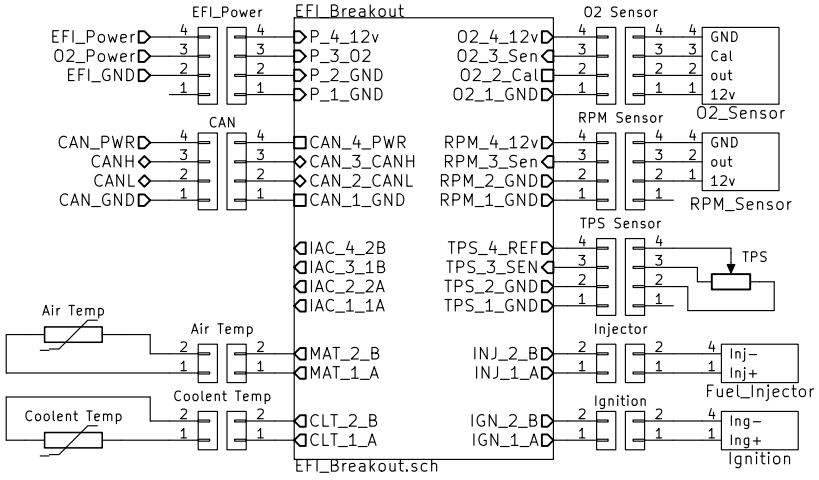
Sheet: /Steering_Wheel/
File: Steering_Wheel.sch

Title: Sting – Gasoline Prototype

Size: USLetter	Date: 2017-01-04	**Rev: 1.2**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 2/14





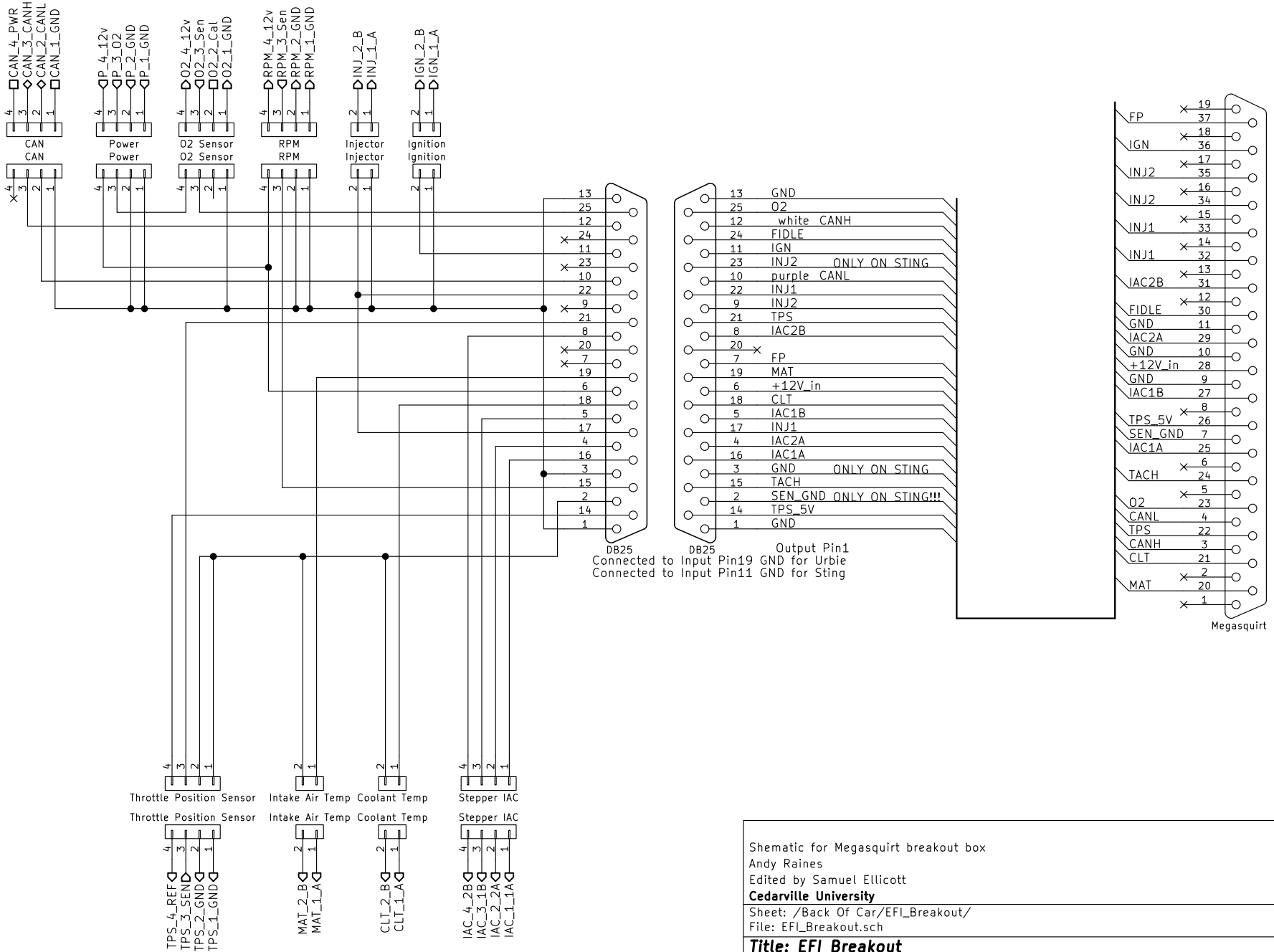


Wiring diagram for the back of Sting
Eric Conley
Edited by Samuel Ellicott
Cedarville University

Sheet: /Back Of Car/
File: Back_Of_Car.sch

Title: Sting – Gasoline Prototype

Size: USLetter	Date: 2017-01-02	**Rev: 1.2**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 3/14

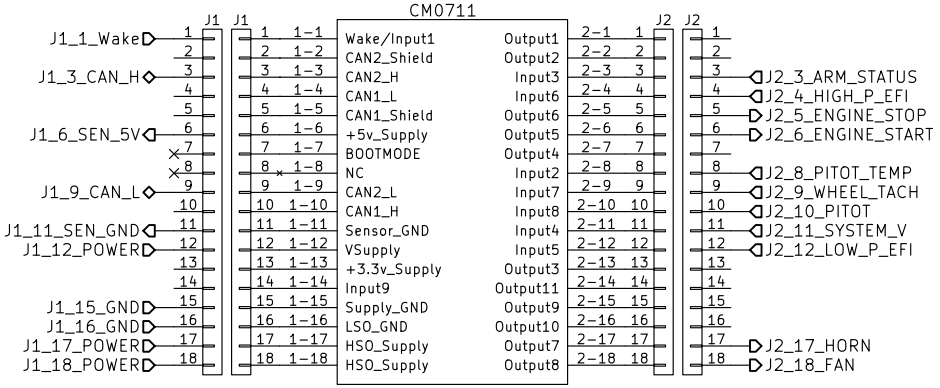


Shematic for Megasquirt breakout box
Andy Raines
Edited by Samuel Ellicott
Cedarville University

Sheet: /Back Of Car/EFI_Breakout/
File: EFI_Breakout.sch

Title: EFI Breakout

Size: USLetter	Date: 2017-01-04	**Rev: 1.7**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 4/14

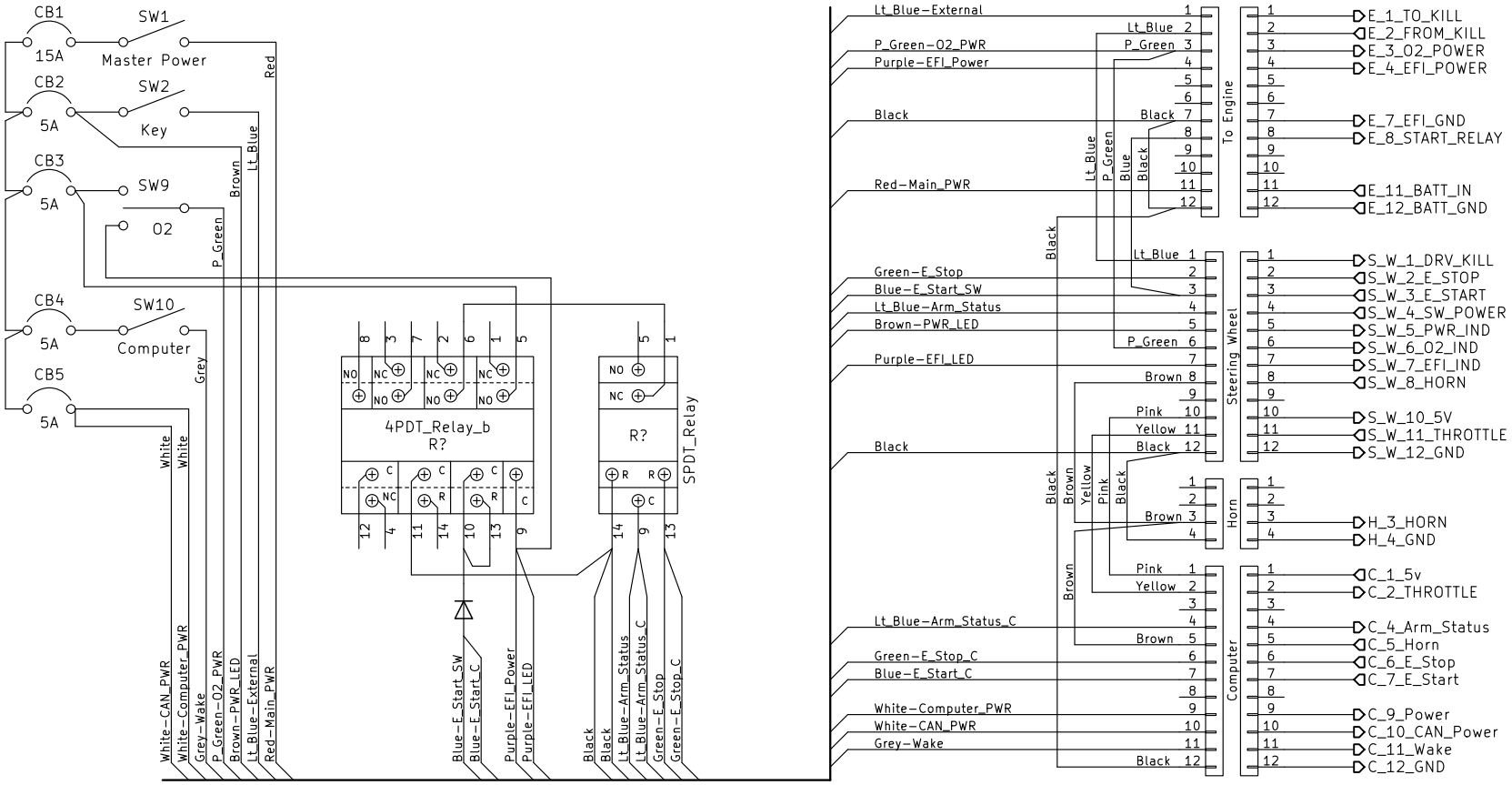


Samuel Ellicott
CM0711 Computer sheet
Cedarville University

Sheet: /CM0711/
File: Computer.sch

Title: Sting – Gasoline Prototype

Size: USLetter	Date: 2017-01-01	**Rev: 1.0**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 5/14



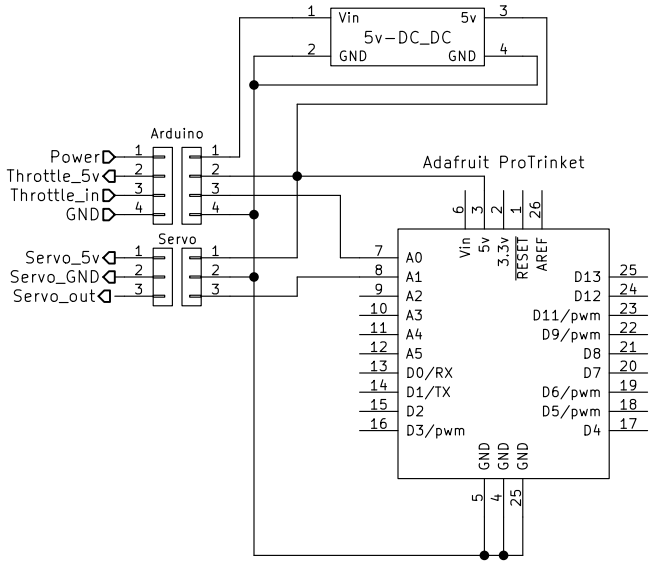
Wires with a C sufix provide the same functionality as the non-C wire but are connected to the computer.

Eric Conley
Edited by Samuel Ellicott
Cedarville University

Sheet: /Relay Box (Box of Doom)/
File: Relay_Box.sch

Title: Sting – Gasoline Prototype

Size: USLetter	Date: 2017-01-04	**Rev: 1.6**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 6/14

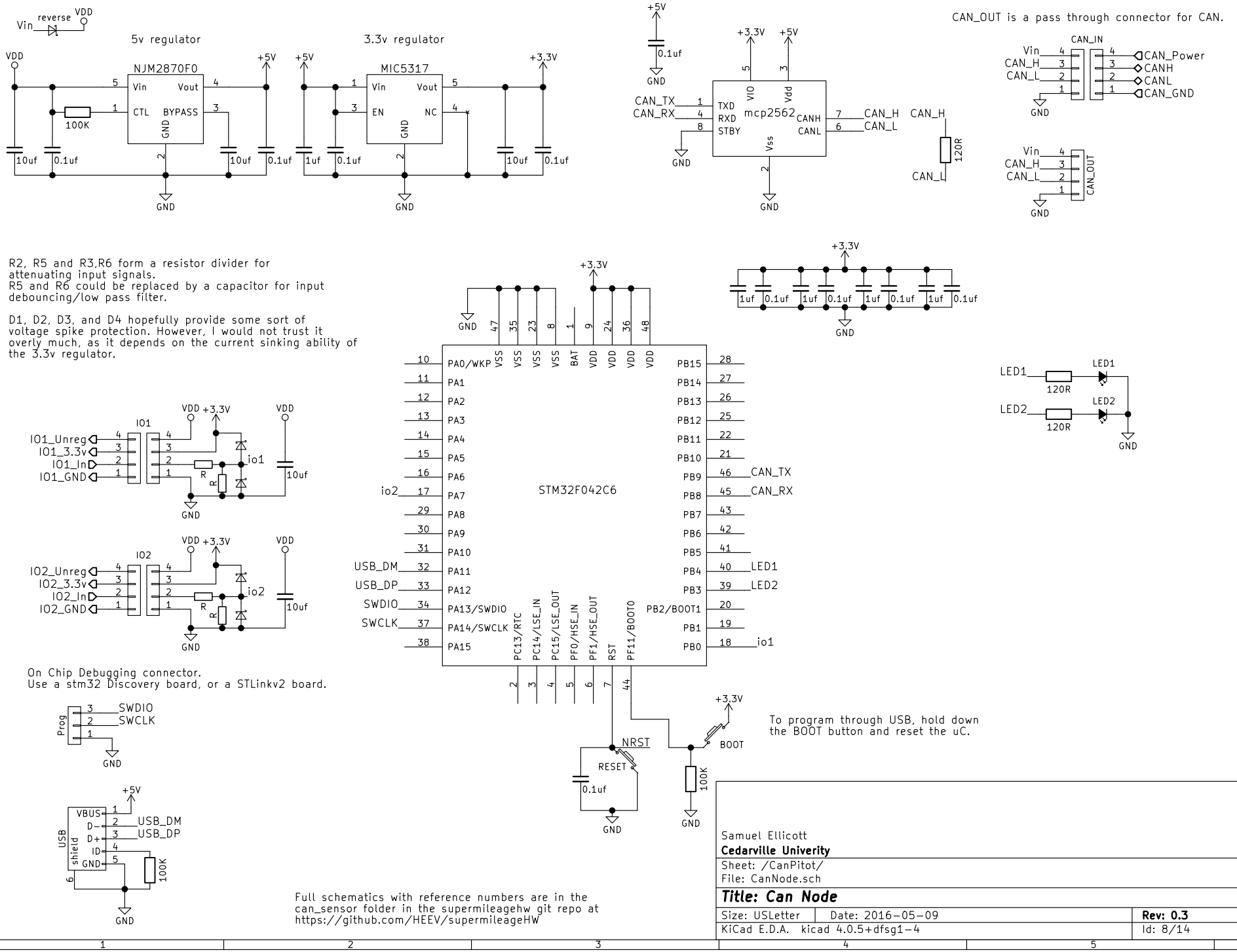


Samuel Ellicott
Cedarville University

Sheet: /Arduino/
File: Arduino.sch

Title: Arduino Breakout

Size: USLetter	Date: 2017-01-04	**Rev: 1.0**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 7/14


reverse
Vin
VDD
5v regulator
NJM2870F0
Vin
Vout
CTL
BYPASS
GND
100K
10uf
0.1uf
+5V
3.3v regulator
MIC5317
EN
NC
1uf
CAN_TX
CAN_RX
mcp2562
TXD
RXD
STBY
VIO
Vdd
Vss
CANH
CANL
CAN_H
CAN_L
120R
CAN_OUT is a pass through connector for CAN.
CAN_IN
CAN_Power
CANH
CANL
CAN_GND
R2, R5 and R3,R6 form a resistor divider for attenuating input signals.
R5 and R6 could be replaced by a capacitor for input debouncing/low pass filter.
D1, D2, D3, and D4 hopefully provide some sort of voltage spike protection. However, I would not trust it overly much, as it depends on the current sinking ability of the 3.3v regulator.
IO1
IO1_Unreg
IO1_3.3v
IO1_In
IO1_GND
io1
IO2
IO2_Unreg
IO2_3.3v
IO2_In
IO2_GND
io2
STM32F042C6
PA0/WKP
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13/SWDIO
PA14/SWCLK
PA15
PB15
PB14
PB13
PB12
PB11
PB10
PB9
PB8
PB7
PB6
PB5
PB4
PB3
PB2/BOOT1
PB1
PB0
USB_DM
USB_DP
SWDIO
SWCLK
LED1
LED2
On Chip Debugging connector.
Use a stm32 Discovery board, or a STLinkv2 board.
Prog
USB
shield
NRST
RESET
BOOT
To program through USB, hold down the BOOT button and reset the uC.
Full schematics with reference numbers are in the can_sensor folder in the supermileagehw git repo at https://github.com/HEEV/supermileageHW
Samuel Ellicott
Cedarville Univerity
Sheet: /CanPitot/
File: CanNode.sch
Title: Can Node
Size: USLetter
Date: 2016-05-09
Rev: 0.3
KiCad E.D.A. kicad 4.0.5+dfsg1-4
Id: 8/14

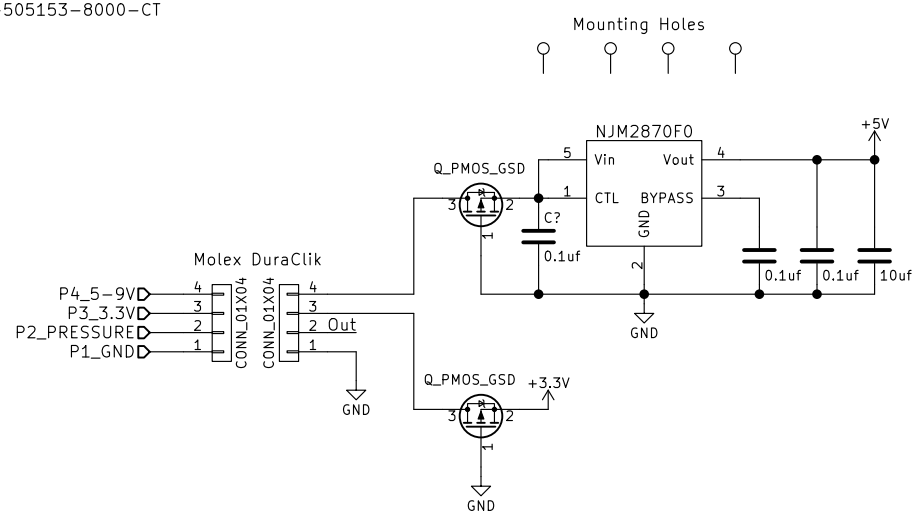
Comments:

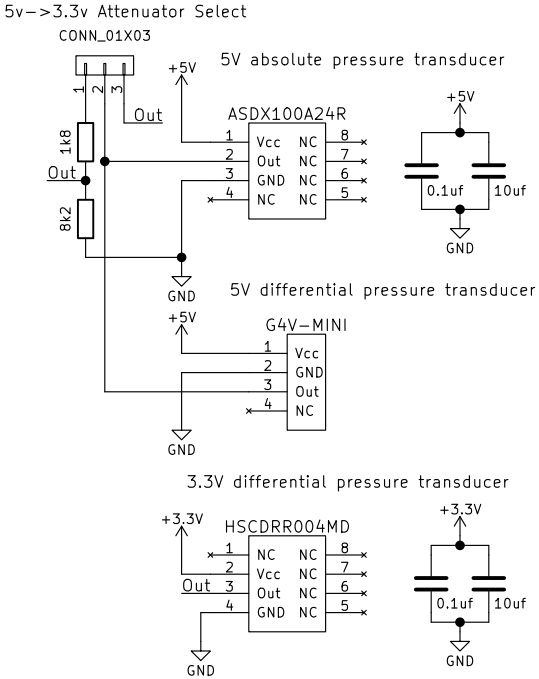
Q1 and Q2 are reverse polarity protection transistors. They are P-Channel Mosfets, so they have a very small resistance when on.
Care should be taken in their selection so that their V-GS threshold is under 1v

U2 is a 5v regulator for the 5v pressure transducer. The output of U3 goes through a selectable attenuator for a full 5v output or a 3.3v output.

There are positions for three pressure transducers on this board; however only one of them can be populated at a time. The top two transducers are 5v and have a selectable attenuator for using with a 3.3v microcontroller. The bottom transducer is 3.3v.

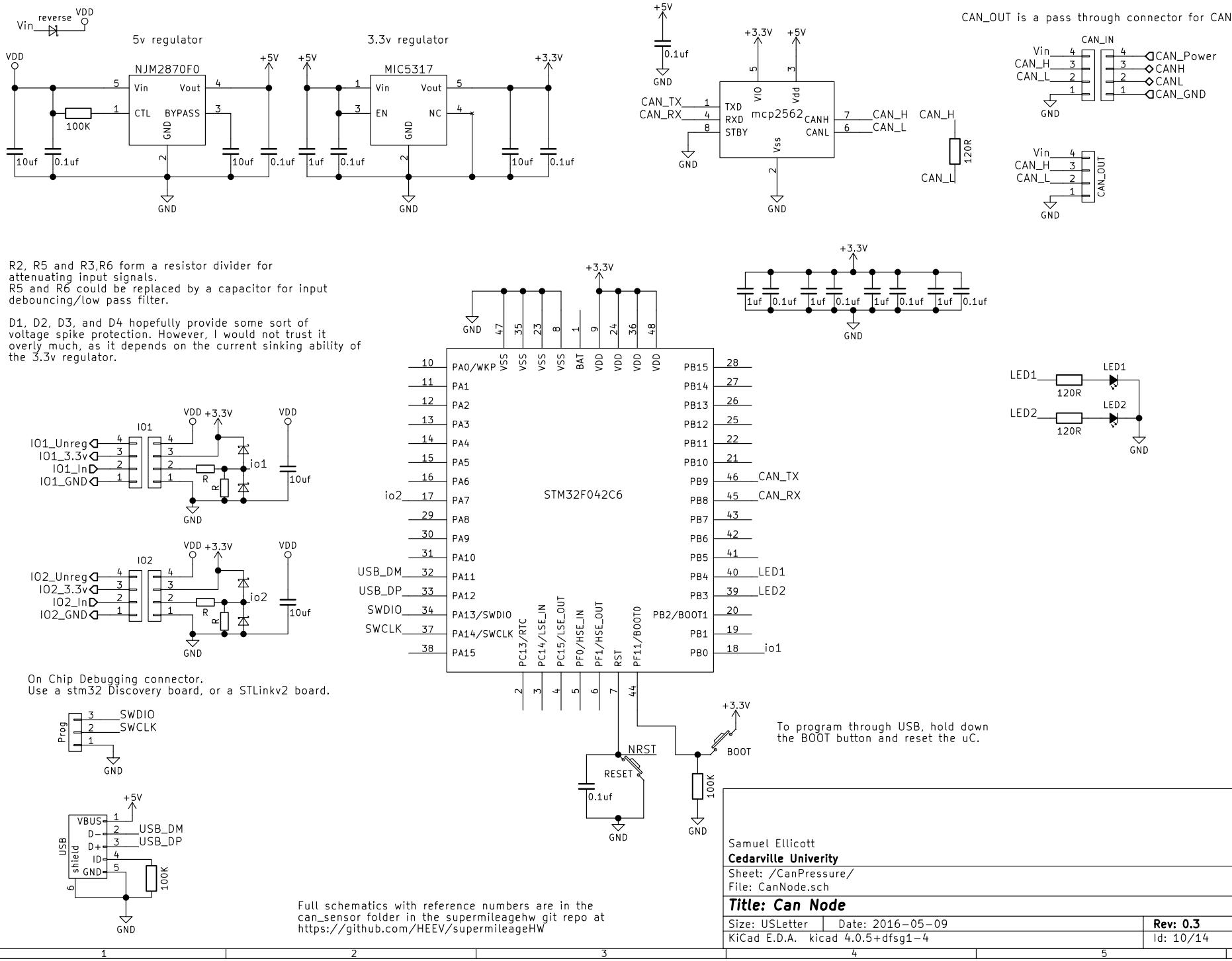
The connector is a Molex DuraClik Part numbers are as follows
Female Socket:
DigiKey: WM12262-ND
Mouser: 538-505151-0400
PCB Header:
DigiKey: WM7171CT-ND
Mouser: 538-502352-0400
Pins:
DigiKey: WM12344CT-ND
Mouser: 538-505153-8000-CT





Full schematics with reference numbers are in the pressure_sensor folder in the supermileagehw git repo at https://github.com/HEEV/supermileageHW

Sam Ellicott	
Cedarville Supermileage	
Sheet: /Pitot/	
File: Pressure.sch	
Title: Pressure Transducer Board	
Size: USLetter | Date: 2016-10-20	**Rev: 2**
KiCad E.D.A. kicad 4.0.5+dfsg1-4	Id: 9/14


reverse
Vin
VDD
5v regulator
NJM2870F0
Vin
Vout
CTL
BYPASS
GND
100K
10uf
0.1uf
+5V
3.3v regulator
MIC5317
EN
NC
1uf
CAN_TX
CAN_RX
mcp2562
TXD
RXD
STBY
VIO
Vdd
Vss
CANH
CANL
CAN_H
CAN_L
120R
CAN_OUT is a pass through connector for CAN.
CAN_IN
CAN_Power
CANH
CANL
CAN_GND
R2, R5 and R3,R6 form a resistor divider for attenuating input signals.
R5 and R6 could be replaced by a capacitor for input debouncing/low pass filter.
D1, D2, D3, and D4 hopefully provide some sort of voltage spike protection. However, I would not trust it overly much, as it depends on the current sinking ability of the 3.3v regulator.
IO1
IO1_Unreg
IO1_3.3v
IO1_In
IO1_GND
io1
IO2
IO2_Unreg
IO2_3.3v
IO2_In
IO2_GND
io2
STM32F042C6
PA0/WKP
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13/SWDIO
PA14/SWCLK
PA15
PB15
PB14
PB13
PB12
PB11
PB10
PB9
PB8
PB7
PB6
PB5
PB4
PB3
PB2/BOOT1
PB1
PB0
USB_DM
USB_DP
SWDIO
SWCLK
LED1
LED2
On Chip Debugging connector.
Use a stm32 Discovery board, or a STLinkv2 board.
Prog
USB
shield
NRST
RESET
BOOT
To program through USB, hold down the BOOT button and reset the uC.
Full schematics with reference numbers are in the can_sensor folder in the supermileagehw git repo at https://github.com/HEEV/supermileageHW
Samuel Ellicott
Cedarville Univerity
Sheet: /CanPressure/
File: CanNode.sch
Title: Can Node
Size: USLetter
Date: 2016-05-09
Rev: 0.3
KiCad E.D.A. kicad 4.0.5+dfsg1-4
Id: 10/14

Comments:

Q1 and Q2 are reverse polarity protection transistors. They are P-Channel Mosfets, so they have a very small resistance when on.
Care should be taken in their selection so that their V-GS threshold is under 1v

U2 is a 5v regulator for the 5v pressure transducer. The output of U3 goes through a selectable attenuator for a full 5v output or a 3.3v output.

There are positions for three pressure transducers on this board; however only one of them can be populated at a time. The top two transducers are 5v and have a selectable attenuator for using with a 3.3v microcontroller. The bottom transducer is 3.3v.

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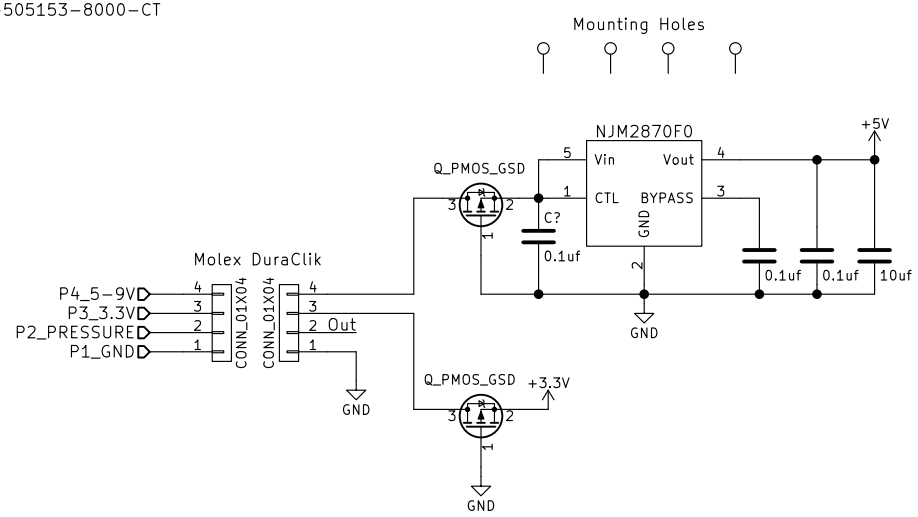
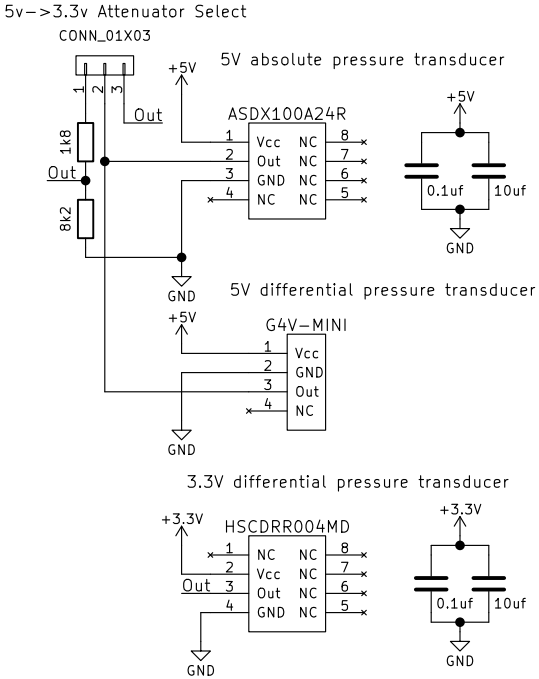
Mouser: 538-505151-0400
PCB Header:
DigiKey: WM7171CT-ND
Mouser: 538-502352-0400
Pins:
DigiKey: WM12344CT-ND
Mouser: 538-505153-8000-CT





Full schematics with reference numbers are in the pressure_sensor folder in the supermileagehw git repo at https://github.com/HEEV/supermileageHW

Sam Ellicott		
Cedarville Supermileage		
Sheet: /HighP_EFI/		
File: Pressure.sch		
Title: Pressure Transducer Board		
Size: USLetter	Date: 2016-10-20	**Rev: 2**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 11/14

Comments:

Q1 and Q2 are reverse polarity protection transistors. They are P-Channel Mosfets, so they have a very small resistance when on.
Care should be taken in their selection so that their V-GS threshold is under 1v

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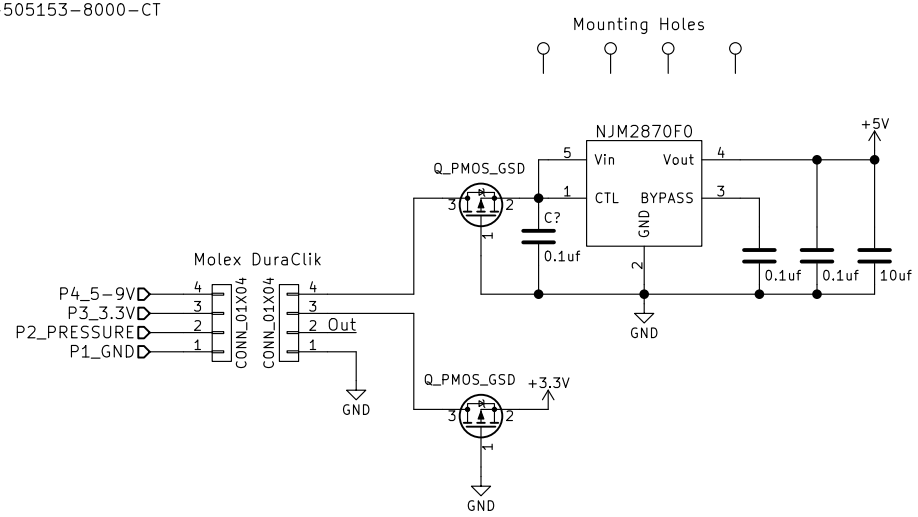
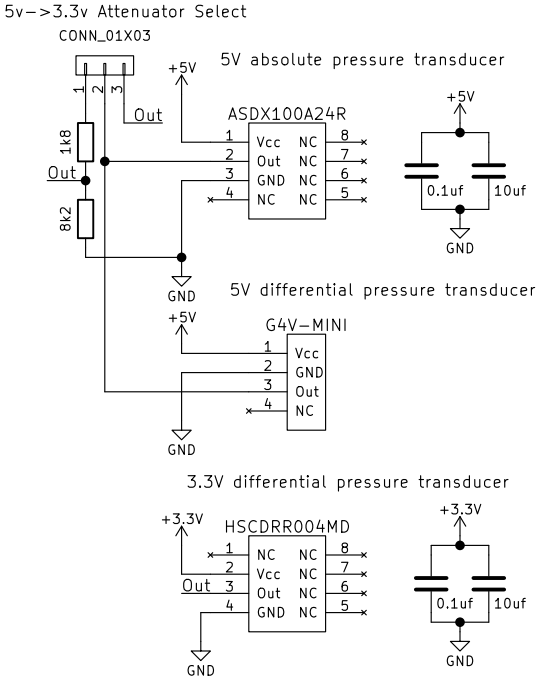
Mouser: 538-505151-0400
PCB Header:
DigiKey: WM7171CT-ND
Mouser: 538-502352-0400
Pins:
DigiKey: WM12344CT-ND
Mouser: 538-505153-8000-CT



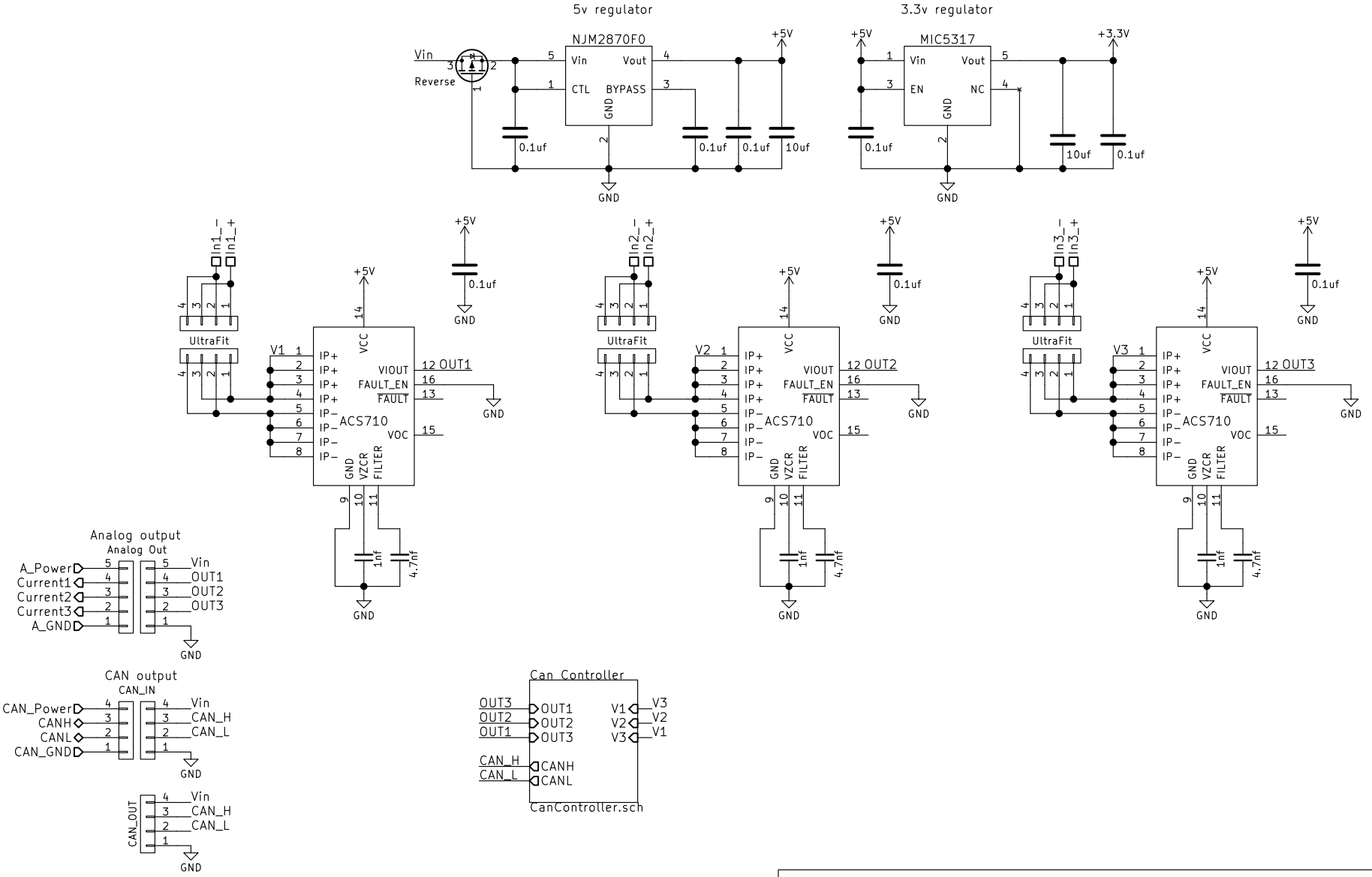


Full schematics with reference numbers are in the pressure_sensor folder in the supermileagehw git repo at https://github.com/HEEV/supermileageHW

Sam Ellicott
Cedarville Supermileage
Sheet: /LowP_EFI/
File: Pressure.sch

Title: Pressure Transducer Board

Size: USLetter	Date: 2016-10-20	**Rev: 2**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 12/14



Full schematics with reference numbers are in the current_sensor folder in the supermileagehw git repo at https://github.com/HEEV/supermileageHW

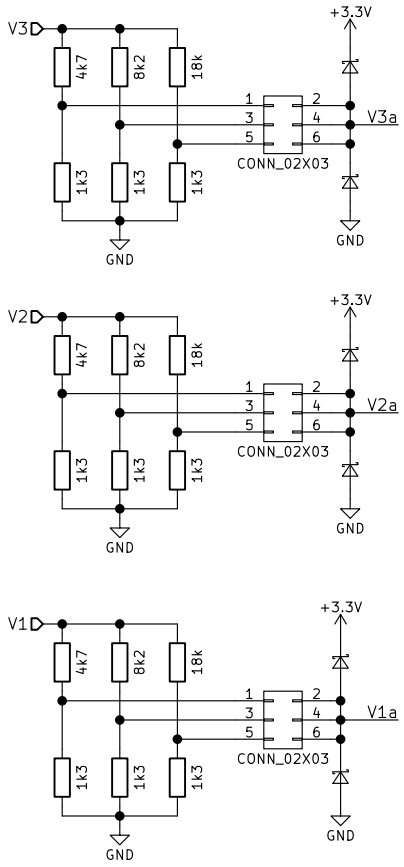
Samuel Ellicott
Cedarville University

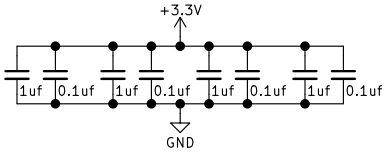
Sheet: /Current Sensor/
File: Current_Sensor.sch

Title: Current Sensor

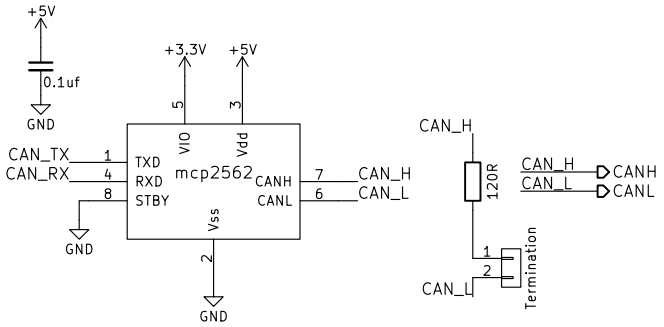
Size: USLetter	Date: 2017-01-05	**Rev: 2.0**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 13/14

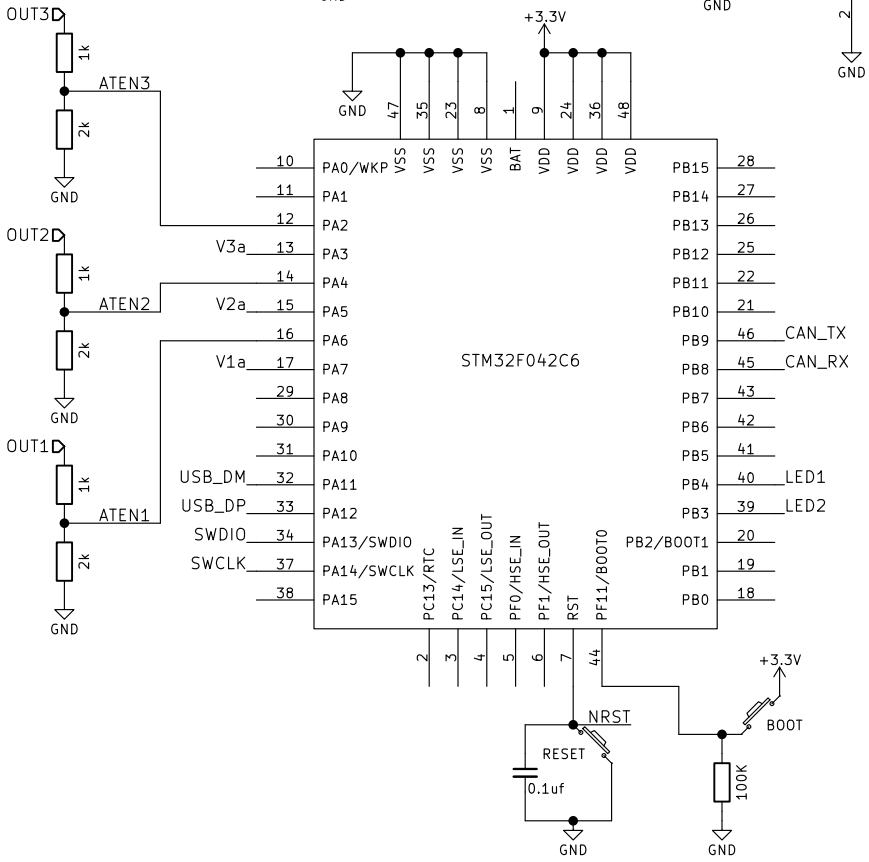
3.3v attenuators for the uC

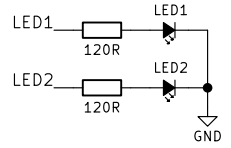


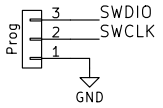


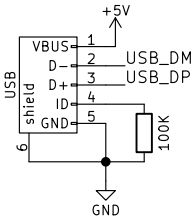
CAN tranciver











Samuel Ellicott
Cedarville University

Sheet: /Current Sensor/Can Controller/
File: CanController.sch

Title: Current Sensor

Size: USLetter	Date: 2016-05-09	**Rev: 2.0**
KiCad E.D.A. kicad 4.0.5+dfsg1-4		Id: 14/14