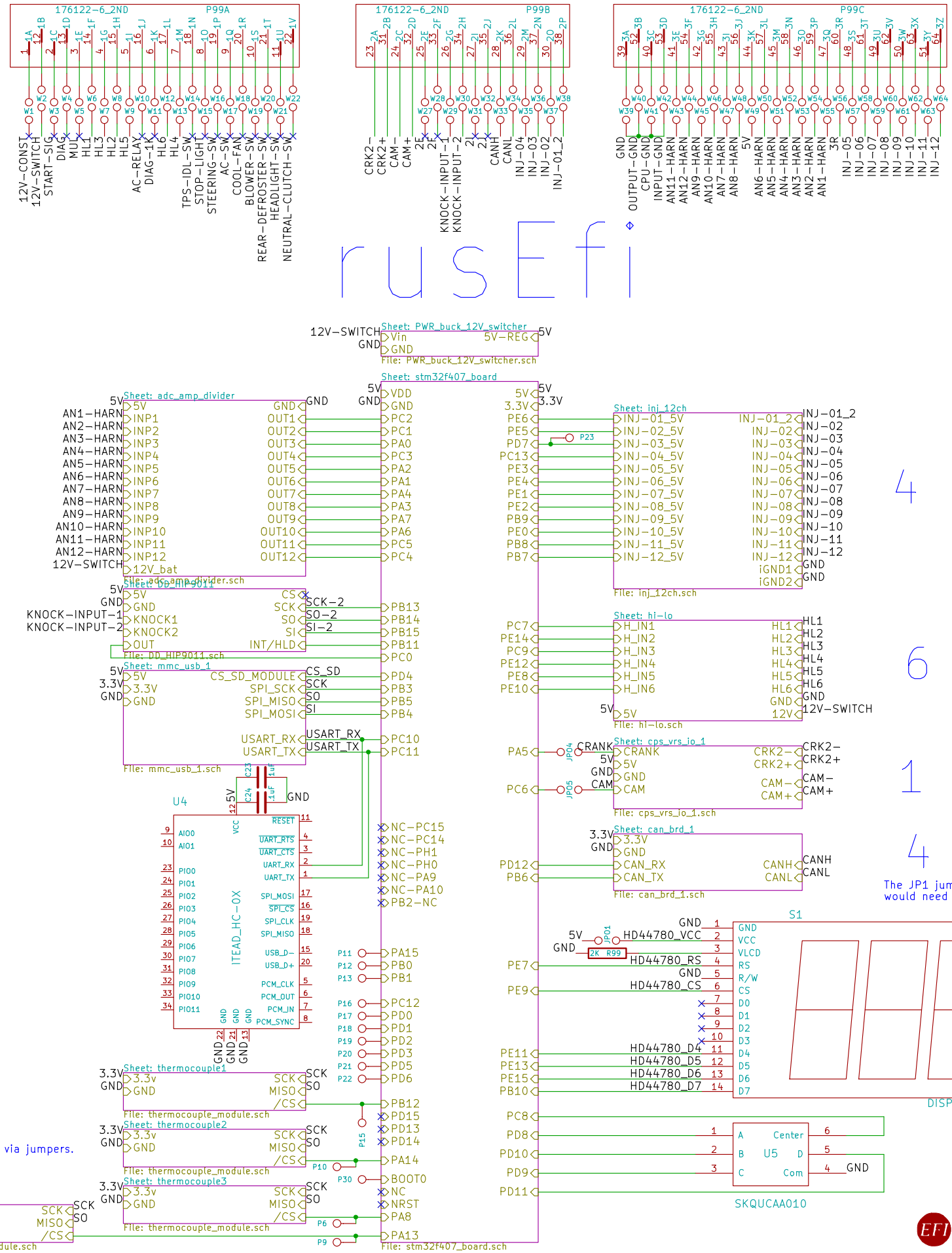
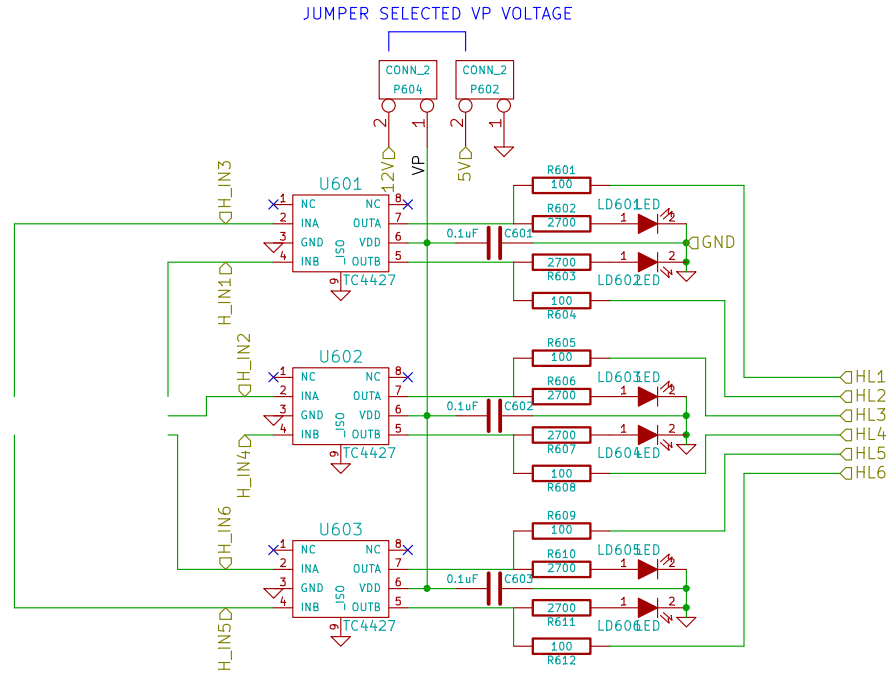
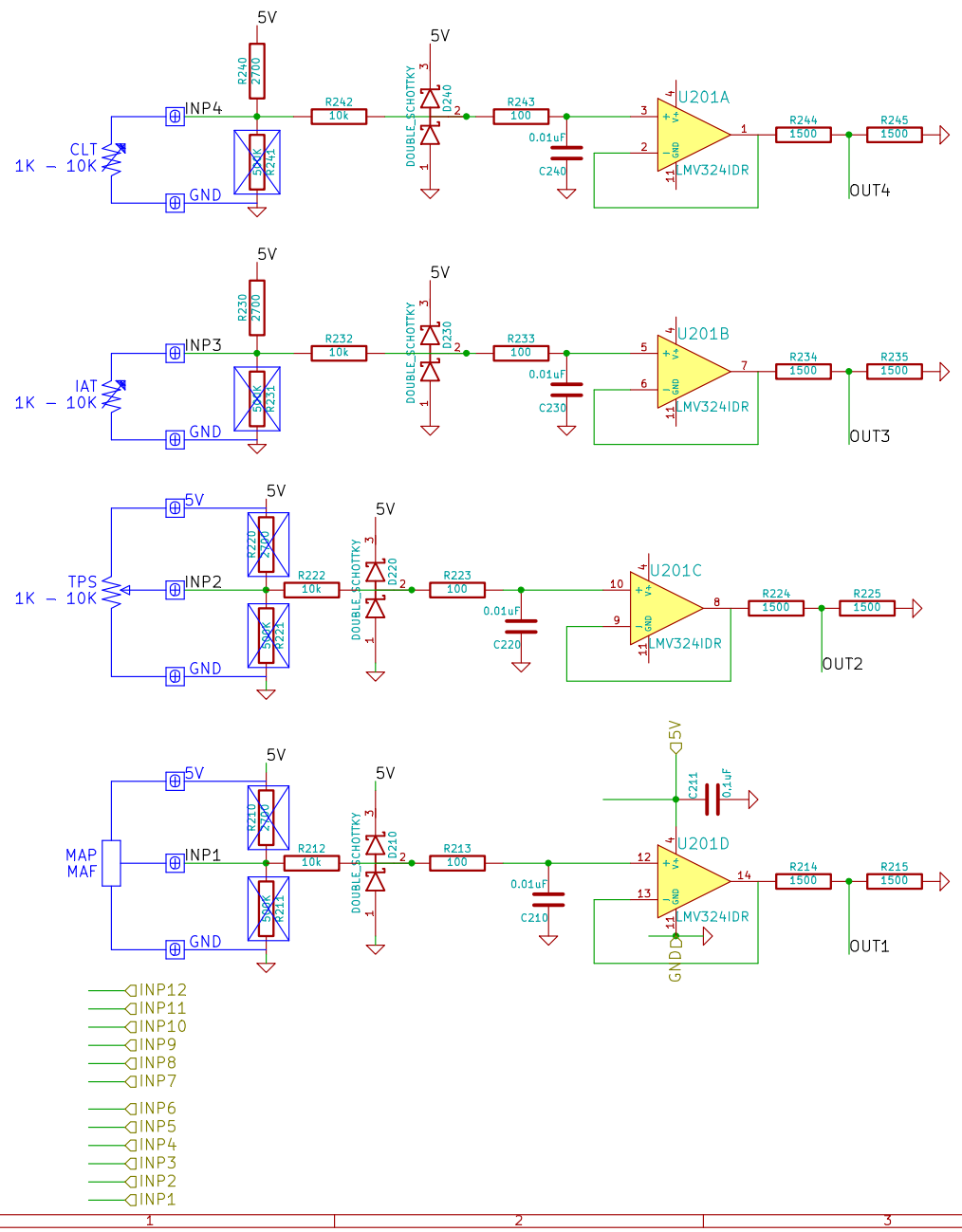

176122-6_2ND
P99A
12V-CONST
12V-SWITCH
START-SIG
DIAG
MUL
HL1
HL3
HL2
HL5
AC-RELAY
DIAG-LIN
HL6
HL4
TPS-IDL-SW
STOP-LIGHT
STEERING-SW
AC-SW
COOL-FAN
BLOWER-SW
REAR-DEFROSTER-SW
HEADLIGHT-SW
NEUTRAL-CLUTCH-SW
176122-6_2ND
P99B
CRK2-
CRK2+
CAM-
CAM+
KNOCK-INPUT-1
KNOCK-INPUT-2
CANH
CANL
INJ-04
INJ-03
INJ-02
INJ-01_2
176122-6_2ND
P99C
GND
OUTPUT-GND
CPU-GND
INPUT-GND
AN11-HARN
AN12-HARN
AN9-HARN
AN10-HARN
AN7-HARN
AN8-HARN
5V
AN6-HARN
AN5-HARN
AN4-HARN
AN3-HARN
AN2-HARN
AN1-HARN
3R
INJ-05
INJ-06
INJ-07
INJ-08
INJ-09
INJ-10
INJ-11
INJ-12
rusEfi
Sheet: PWR_buck_12V_switcher
12V-SWITCH
GND
Vin
GND
5V-REG
5V
File: PWR_buck_12V_switcher.sch
Sheet: stm32f407_board
5V
GND
VDD
GND
PC2
PC1
PA0
PC3
PA2
PA1
PA4
PA3
PA7
PA6
PC5
PC4
PB13
PB14
PB15
PB11
PC0
PD4
PB3
PB5
PB4
USART_RX
USART_TX
PC10
PC11
NC-PC15
NC-PC14
NC-PH1
NC-PH0
NC-PA9
NC-PA10
PB2-NC
P11
P12
P13
P16
P17
P18
P19
P20
P21
P22
P15
P14
P10
P30
P6
P9
PA15
PB0
PB1
PC12
PD0
PD1
PD2
PD3
PD5
PD6
PB12
PD15
PD13
PD14
PA14
BOOT0
NC
NRST
PA8
PA13
File: stm32f407_board.sch
Sheet: adc_amp_divider
5V
AN1-HARN
AN2-HARN
AN3-HARN
AN4-HARN
AN5-HARN
AN6-HARN
AN7-HARN
AN8-HARN
AN9-HARN
AN10-HARN
AN11-HARN
AN12-HARN
12V-SWITCH
5V
INP1
INP2
INP3
INP4
INP5
INP6
INP7
INP8
INP9
INP10
INP11
INP12
12V_bat
GND
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
OUT9
OUT10
OUT11
OUT12
GND
File: adc_amp_divider.sch
Sheet: DD_HIP9011
5V
GND
KNOCK-INPUT-1
KNOCK-INPUT-2
5V
GND
KNOCK1
KNOCK2
OUT
CS
SCK
SO
SI
INT/HLD
SCK-2
SO-2
SI-2
File: DD_HIP9011.sch
Sheet: mmc_usb_1
5V
3.3V
GND
5V
3.3V
GND
CS_SD_MODULE
SPI_SCK
SPI_MISO
SPI_MOSI
CS_SD
SCK
SO
SI
USART_RX
USART_TX
File: mmc_usb_1.sch
C23
1uF
C24
1uF
12-5V
GND
U4
ITEAD_HC-0X
VCC
AIO0
AIO1
PIO0
PIO1
PIO2
PIO3
PIO4
PIO5
PIO6
PIO7
PIO8
PIO9
PIO10
PIO11
GND
GND
GND
RESET
UART_RTS
UART_CTS
UART_RX
UART_TX
SPI_MOSI
SPI_CS
SPI_CLK
SPI_MISO
USB_D-
USB_D+
PCM_CLK
PCM_OUT
PCM_IN
PCM_SYNC
11
4
3
2
1
17
16
19
18
15
20
5
6
7
8
GND22
GND21
GND13
Sheet: thermocouple1
3.3V
GND
3.3V
GND
SCK
MISO
/CS
SCK
SO
File: thermocouple_module.sch
Sheet: thermocouple2
3.3V
GND
3.3V
GND
SCK
MISO
/CS
SCK
SO
File: thermocouple_module.sch
Sheet: thermocouple3
3.3V
GND
3.3V
GND
SCK
MISO
/CS
SCK
SO
File: thermocouple_module.sch
Sheet: thermocouple4
3.3V
GND
3.3V
GND
SCK
MISO
/CS
SCK
SO
File: thermocouple_module.sch
5V
3.3V
PE6
PE5
PD7
PC13
PE3
PE4
PE1
PE2
PB9
PE0
PB8
PB7
P23
Sheet: inj_12ch
INJ-01_5V
INJ-02_5V
INJ-03_5V
INJ-04_5V
INJ-05_5V
INJ-06_5V
INJ-07_5V
INJ-08_5V
INJ-09_5V
INJ-10_5V
INJ-11_5V
INJ-12_5V
INJ-01_2
INJ-02
INJ-03
INJ-04
INJ-05
INJ-06
INJ-07
INJ-08
INJ-09
INJ-10
INJ-11
INJ-12
iGND1
iGND2
GND
GND
File: inj_12ch.sch
Sheet: hi-lo
PC7
PE14
PC9
PE12
PE8
PE10
H_IN1
H_IN2
H_IN3
H_IN4
H_IN5
H_IN6
5V
5V
HL1
HL2
HL3
HL4
HL5
HL6
GND
12V
HL1
HL2
HL3
HL4
HL5
HL6
GND
12V-SWITCH
File: hi-lo.sch
PA5
PC6
JP04
JP05
CRANK
5V
GND
CAM
Sheet: cps_vrs_io_1
CRANK
5V
GND
CAM
CRK2-
CRK2+
CAM-
CAM+
CRK2-
CRK2+
CAM-
CAM+
File: cps_vrs_io_1.sch
3.3V
GND
PD12
PB6
Sheet: can_brd_1
3.3V
GND
CAN_RX
CAN_TX
CANH
CANL
CANH
CANL
File: can_brd_1.sch
S1
GND
5V
GND
JP01
2K R99
PE7
PE9
PE11
PE13
PE15
PB10
PC8
PD8
PD10
PD9
PD11
HD44780_VCC
HD44780_RS
HD44780_CS
HD44780_D4
HD44780_D5
HD44780_D6
HD44780_D7
GND
VCC
VLCD
RS
R/W
CS
D0
D1
D2
D3
D4
D5
D6
D7
A
K
HD44780_VCC
GND
DISPLAY_BL
U5
SKQUCAA010
A
B
C
Center
D
Com
1
2
3
6
5
4
GND
These two jumpers are here to accomodate stm32f4discovery
GND
GND
GND
GND
JP03
JP02
That's alternative signal OUTPUT – these traces should be routable to PC6 and PA5 via jumpers.
Aleternative to W212 and W212 routung of op-amps ch 11 and ch 12
CRANK
CAM
JP04
JP05
The JP1 jumper is needed because we cannot feed the screen via USB – we would need to disconnect it while the board is on a bench
rusEFI.com
File: frankenso.sch
Sheet: /
Title: Frankenso
Size: B
Date: 11 jul 2014
Rev: .01
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable
Id: 1/14

6 channel high / low side driver

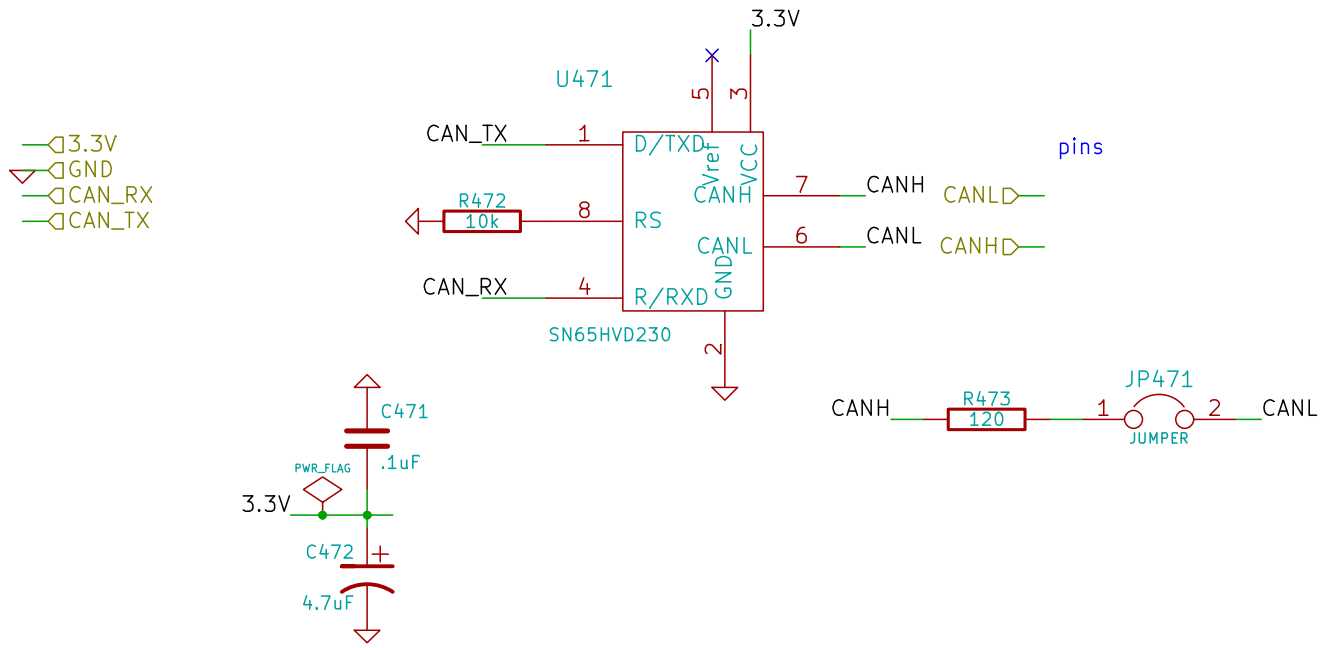


rusEFI.com		
File: hi-lo.sch		
Sheet: /hi-lo/		
Title: Frankenso		
Size: B	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 2/14

SUGGESTED ENGINE WIRING IN BLUE



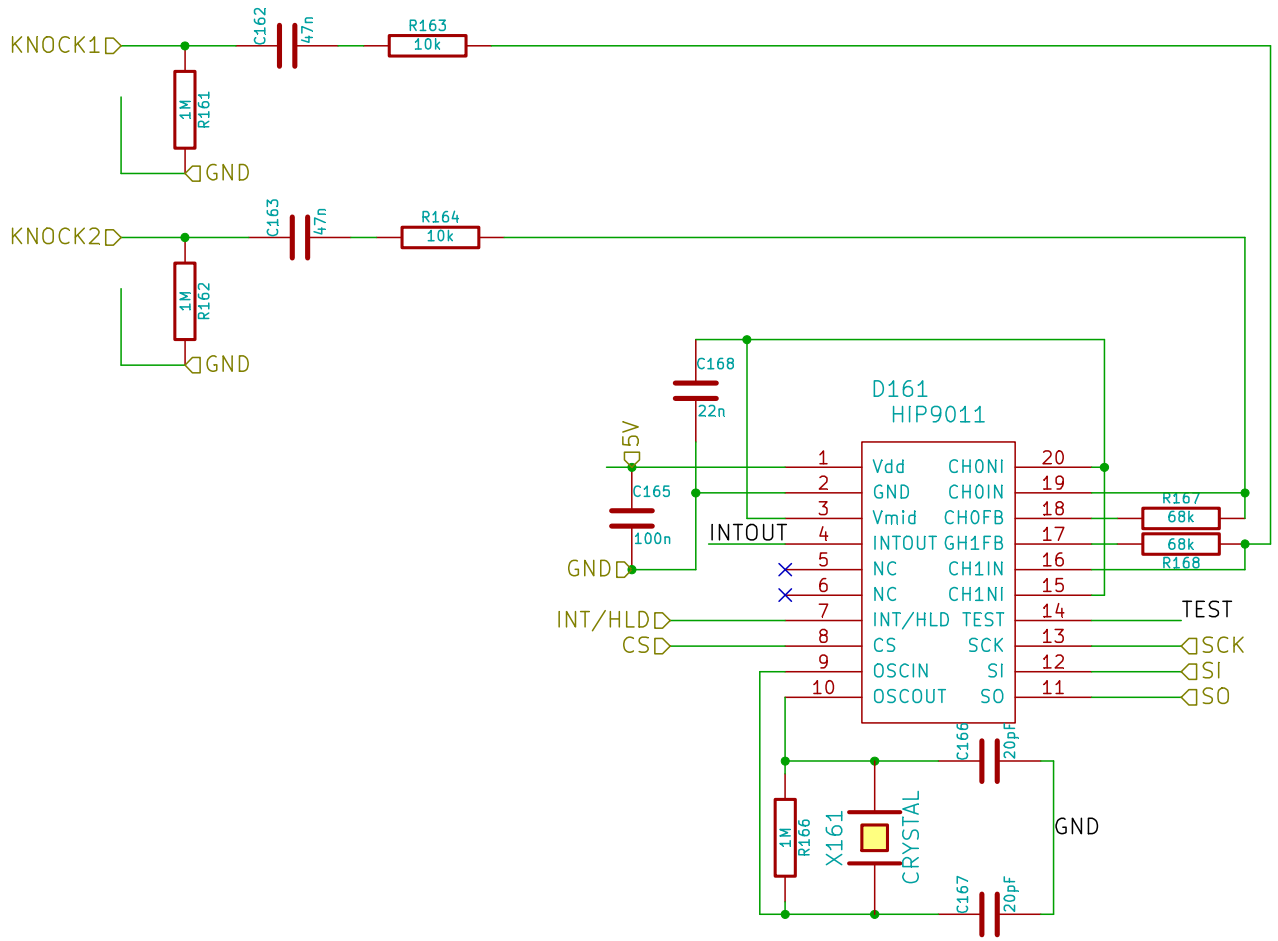
rusEFI.com		
File: adc_amp_divider.sch		
Sheet: /adc_amp_divider/		
Title: Frankenso		
Size: B	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 3/14

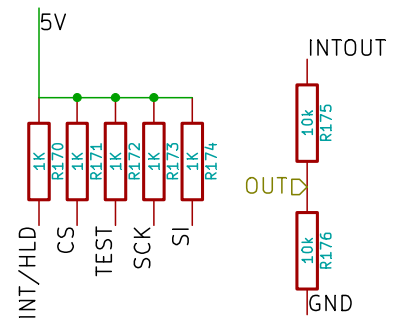


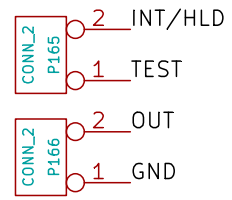
CAN level shifter

rusEFI.com		
File: can_brd_1.sch		
Sheet: /can_brd_1/		
Title: Frankenso		
Size: A4	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 4/14

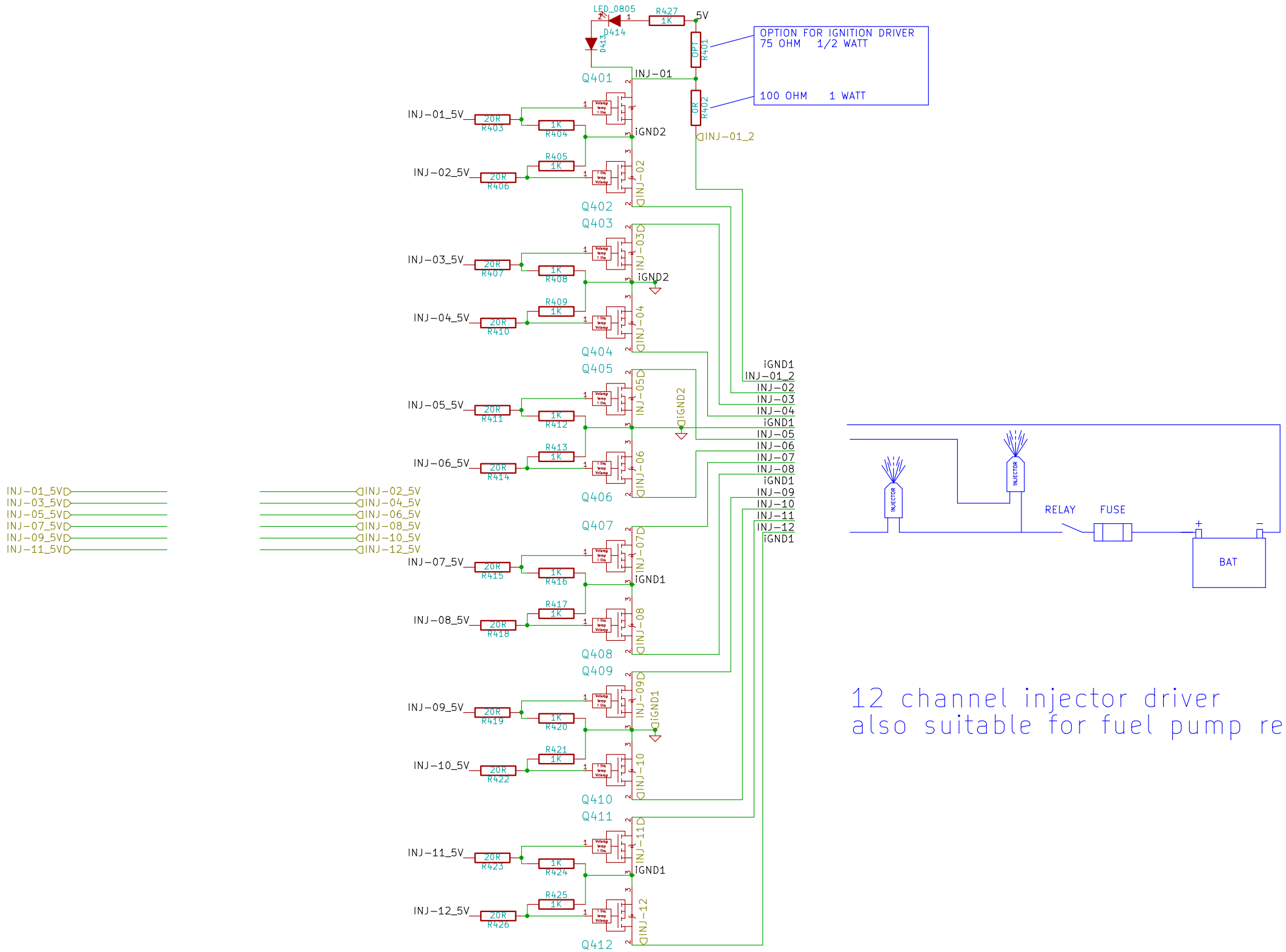
DD_HIP9011 ver.2
RusEfi.com







rusEFI.com		
File: DD_HIP9011.sch		
Sheet: /DD_HIP9011/		
Title: Frankenso		
Size: A4	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 5/14



12 channel injector driver
also suitable for fuel pump relay, IAC solenoid etc

MISC NOTES

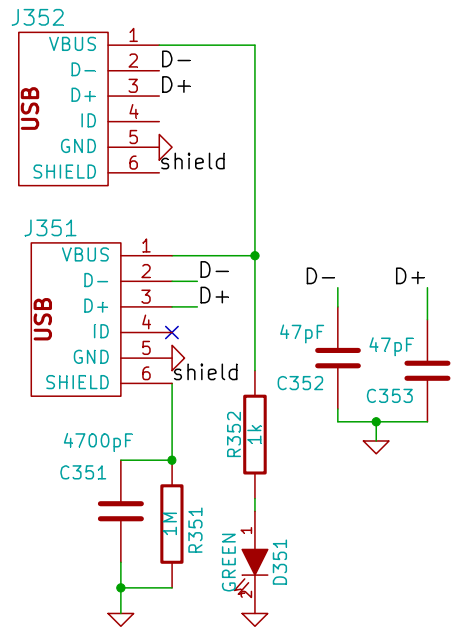
THE GENERAL SYSTEM LAYOUT IS SHOWN IN BLUE. THIS IS NOT
THE SUGGESTED SYSTEM WIRING, IT DOES SHOW THE GENERAL
OVERALL CIRCUIT LAYOUT TOPOLOGY.

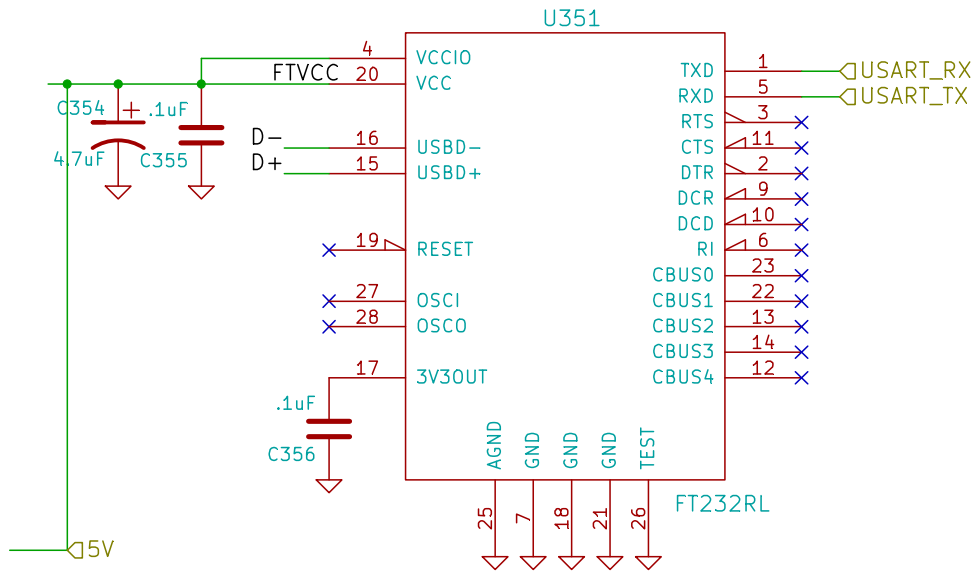
THE PCB WIRING IS SHOWN IN RED, GREEN WITH A BLUE BUS.

Screw terminals 1760500000

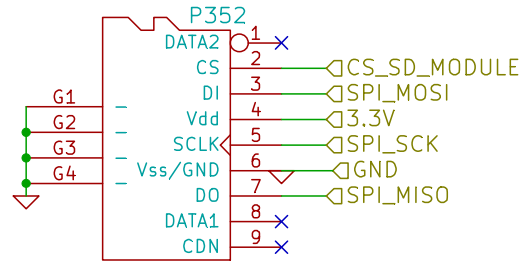
Screw connector PCB http://octopart.com/39522-1007-molex-655409
Screw connector harness http://octopart.com/partsearch#search/requestData&q=39520-0007

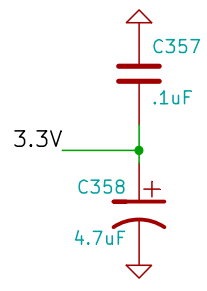
rusEFI.com		
File: inj_12ch.sch		
Sheet: /inj_12ch/		
Title: Frankenso		
Size: B	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 6/14





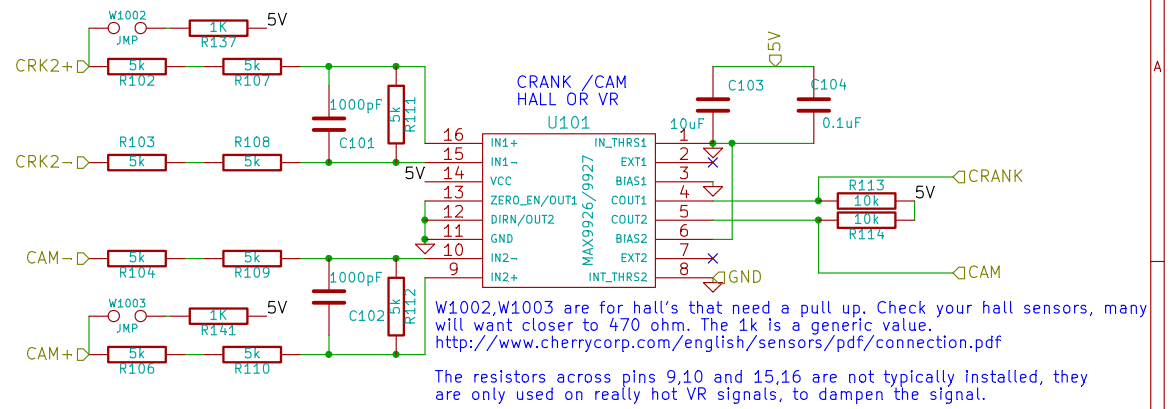
For right conn



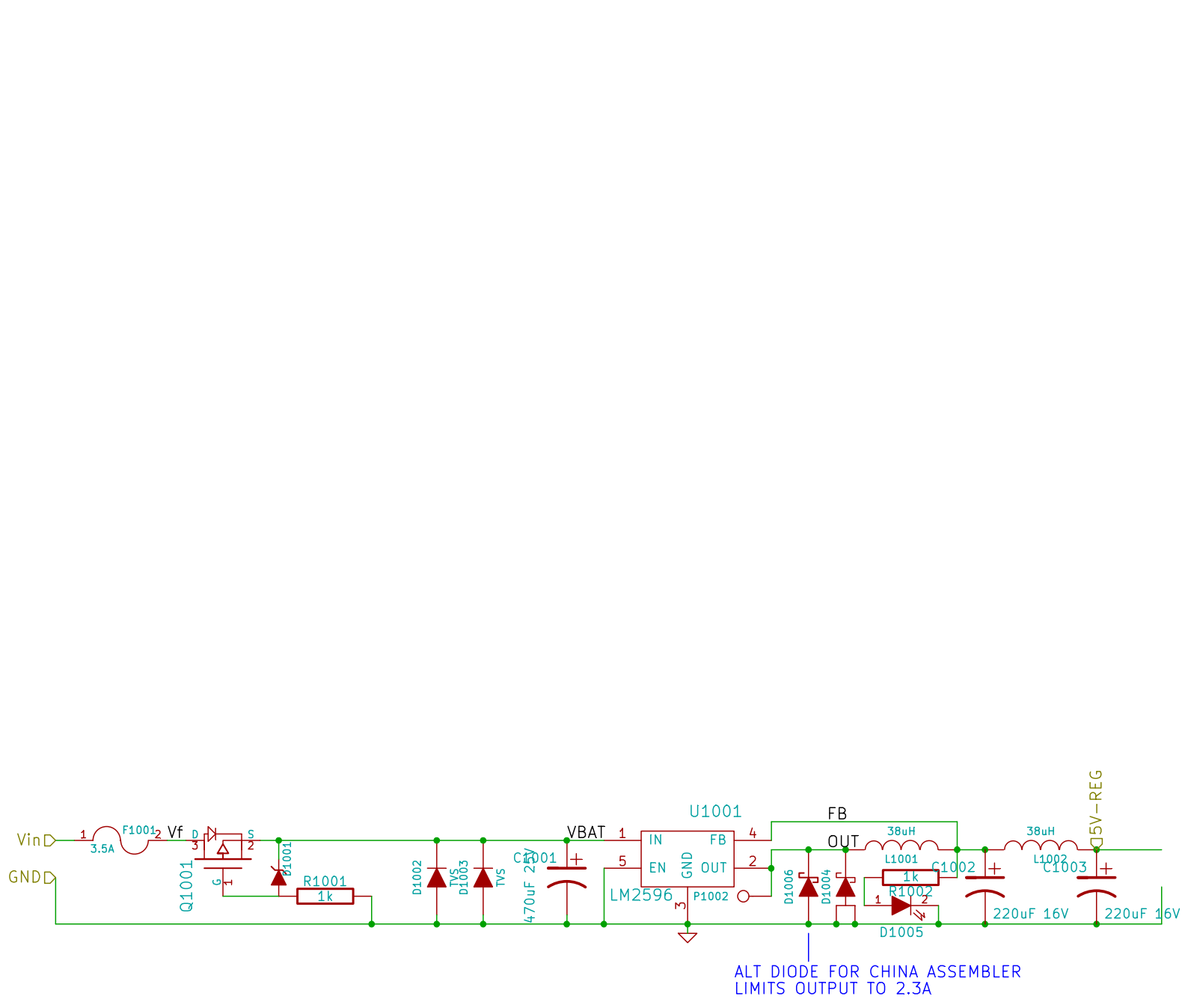


SD card slot
USB TTL module

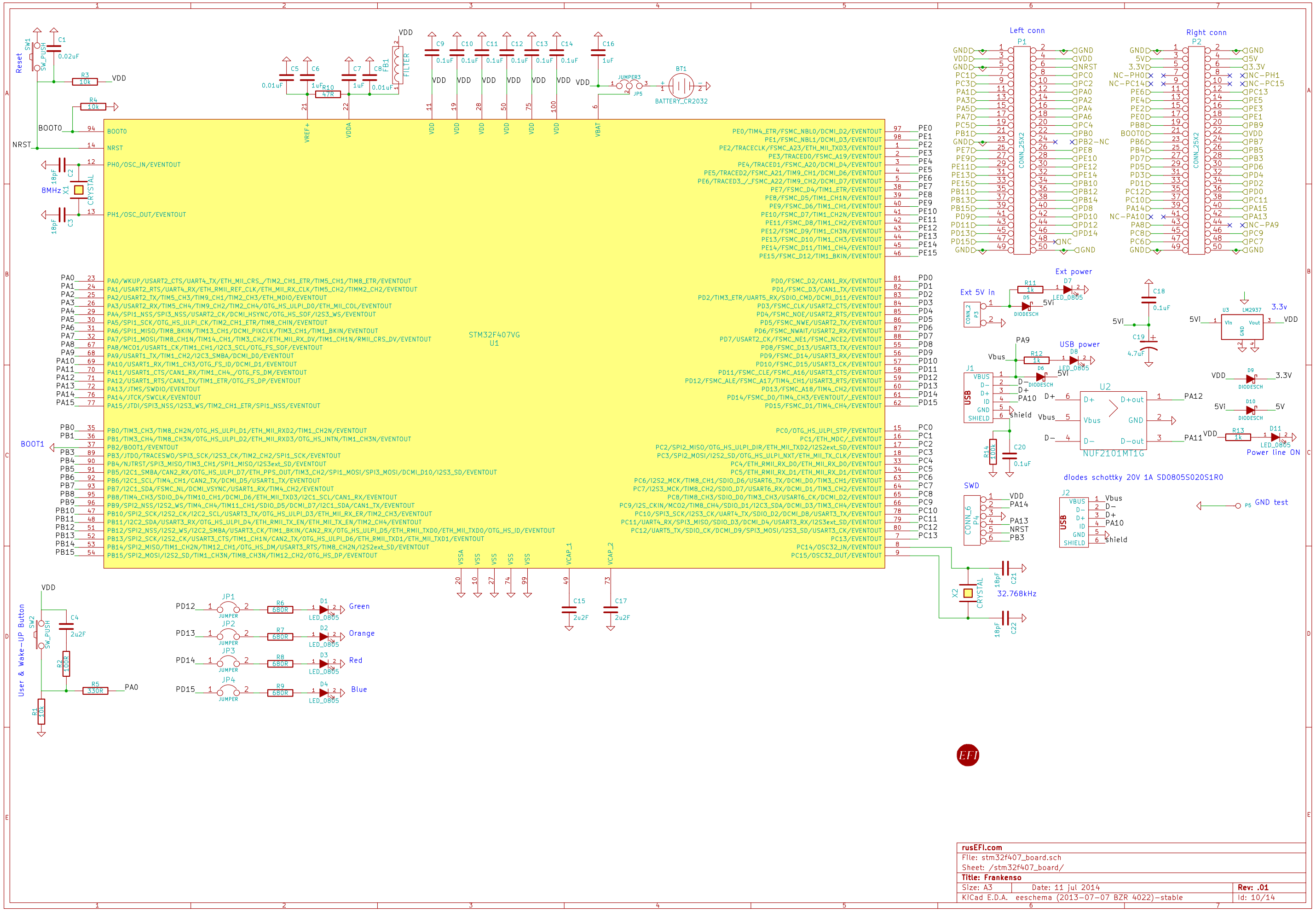
rusEFI.com		
File: mmc_usb_1.sch		
Sheet: /mmc_usb_1/		
Title: Frankenso		
Size: A4	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 7/14

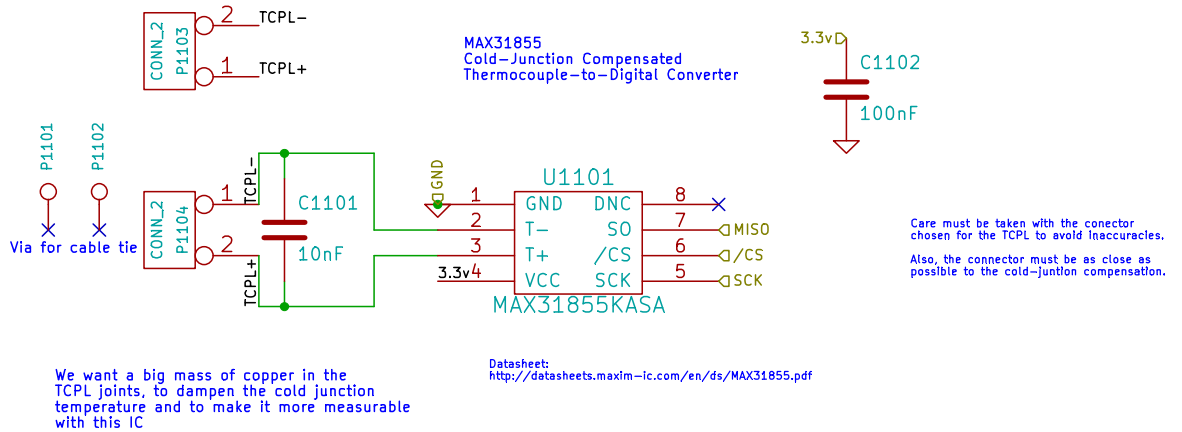


rusEFI.com		
File: cps_vrs_io_1.sch		
Sheet: /cps_vrs_io_1/		
Title: Frankenso		
Size: B	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 8/14

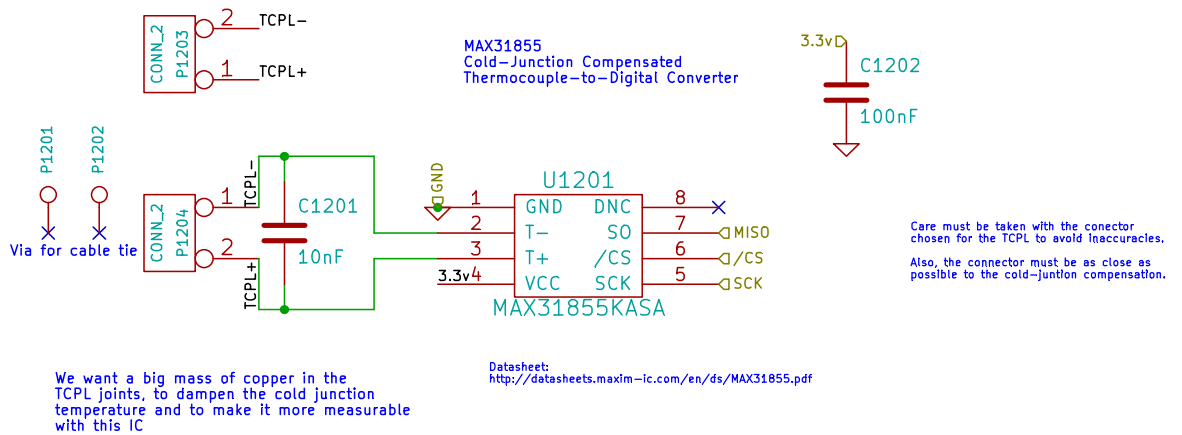


rusEFI.com		
File: PWR_buck_12V_switcher.sch		
Sheet: /PWR_buck_12V_switcher/		
Title: Frankenso		
Size: A	Date: 11 jul 2014	**Rev: .01**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 9/14

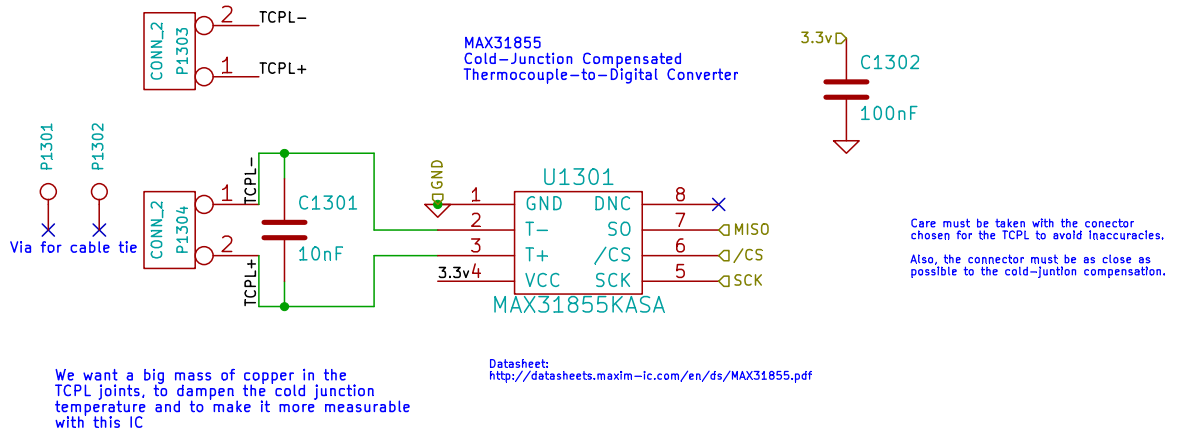

STM32F407VG
U1
Left conn
P1
Right conn
P2
Ext power
Ext 5V in
USB power
SWD
Power line ON
diodes schottky 20V 1A SD0805S020S1R0
P5 GND test
User & Wake-UP Button
32.768kHz
NUF2101MT1G
rusEFI.com
File: stm32f407_board.sch
Sheet: /stm32f407_board/
Title: Frankenso
Size: A3
Date: 11 jul 2014
Rev: .01
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable
Id: 10/14



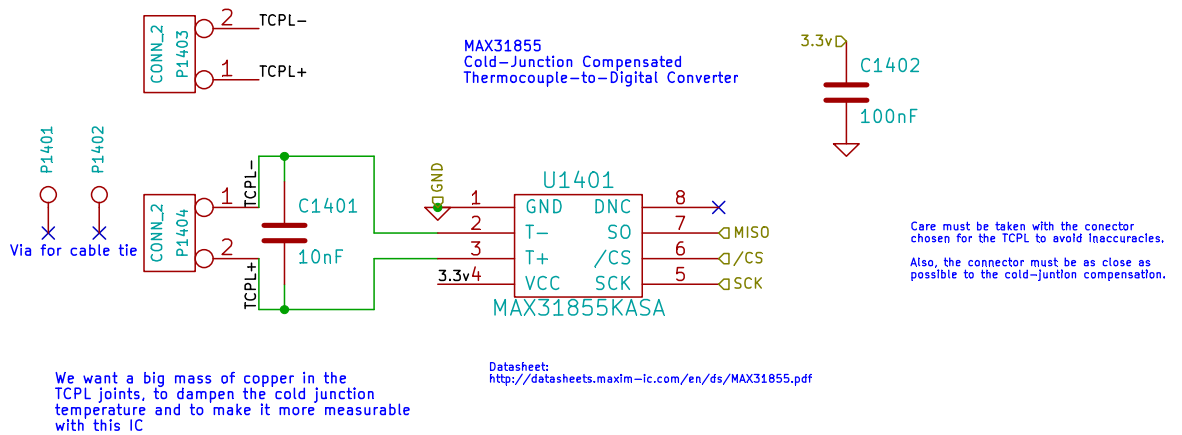
Mrk Industries		
File: thermocouple_module.sch		
Sheet: /thermocouple1/		
Title: Electronic Industrial Temperature Interface (EITI)		
Size: A4	Date: 11 jul 2014	**Rev: .001**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 11/14



Mrk Industries		
File: thermocouple_module.sch		
Sheet: /thermocouple2/		
Title: Electronic Industrial Temperature Interface (EITI)		
Size: A4	Date: 11 jul 2014	**Rev: .001**
KiCad E.D.A.	eeschema (2013-07-07 BZR 4022)-stable	Id: 12/14



Mrk Industries		
File: thermocouple_module.sch		
Sheet: /thermocouple3/		
Title: Electronic Industrial Temperature Interface (EITI)		
Size: A4	Date: 11 jul 2014	**Rev: .001**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 13/14



Mrk Industries		
File: thermocouple_module.sch		
Sheet: /thermocouple4/		
Title: Electronic Industrial Temperature Interface (EITI)		
Size: A4	Date: 11 jul 2014	**Rev: .001**
KiCad E.D.A. eeschema (2013-07-07 BZR 4022)-stable		Id: 14/14