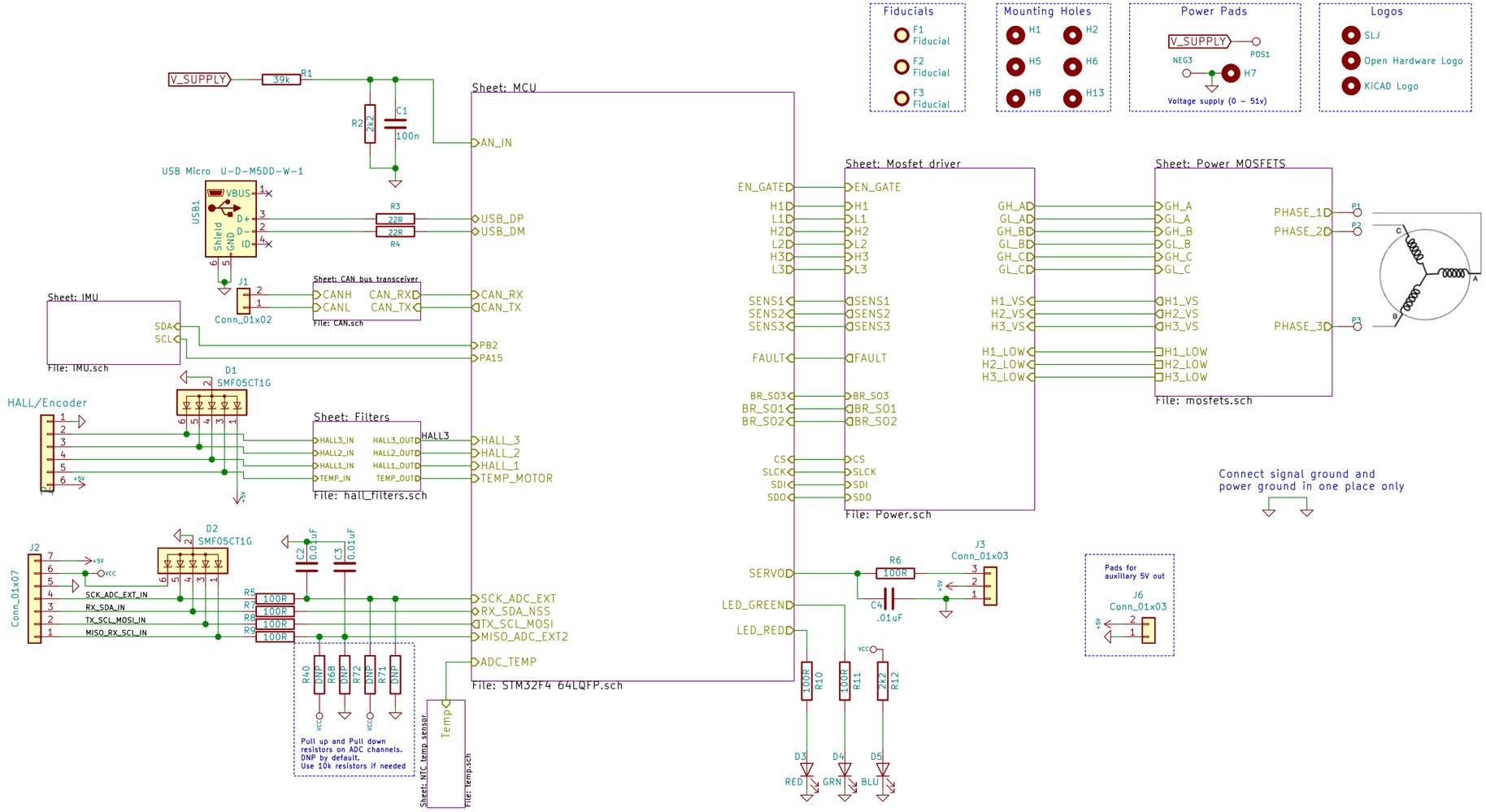
# Cheap FOCer 2




Top level

Root

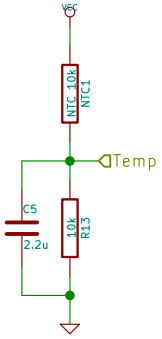
**Shaman Systems**

Sheet: /

File: Cheap FOCer 2 60mm.sch

***Title: Cheap FOCer 2***

| Size: A3 | Date: 2020-04-08 | **Rev: 0.9** |
|---|---|---|
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 1/8 |

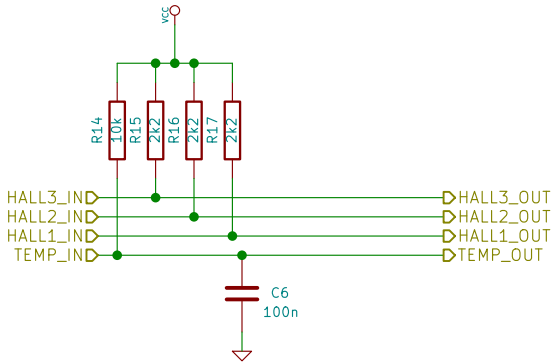



Top level

Root
**Shaman Systems**
Sheet: /NTC temp sensor/
File: temp.sch

***Title: Cheap FOCer 2***

| Size: A4 | Date: 2020-04-08 | **Rev: 0.9** |
|---|---|---|
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 2/8 |




Top level

Root

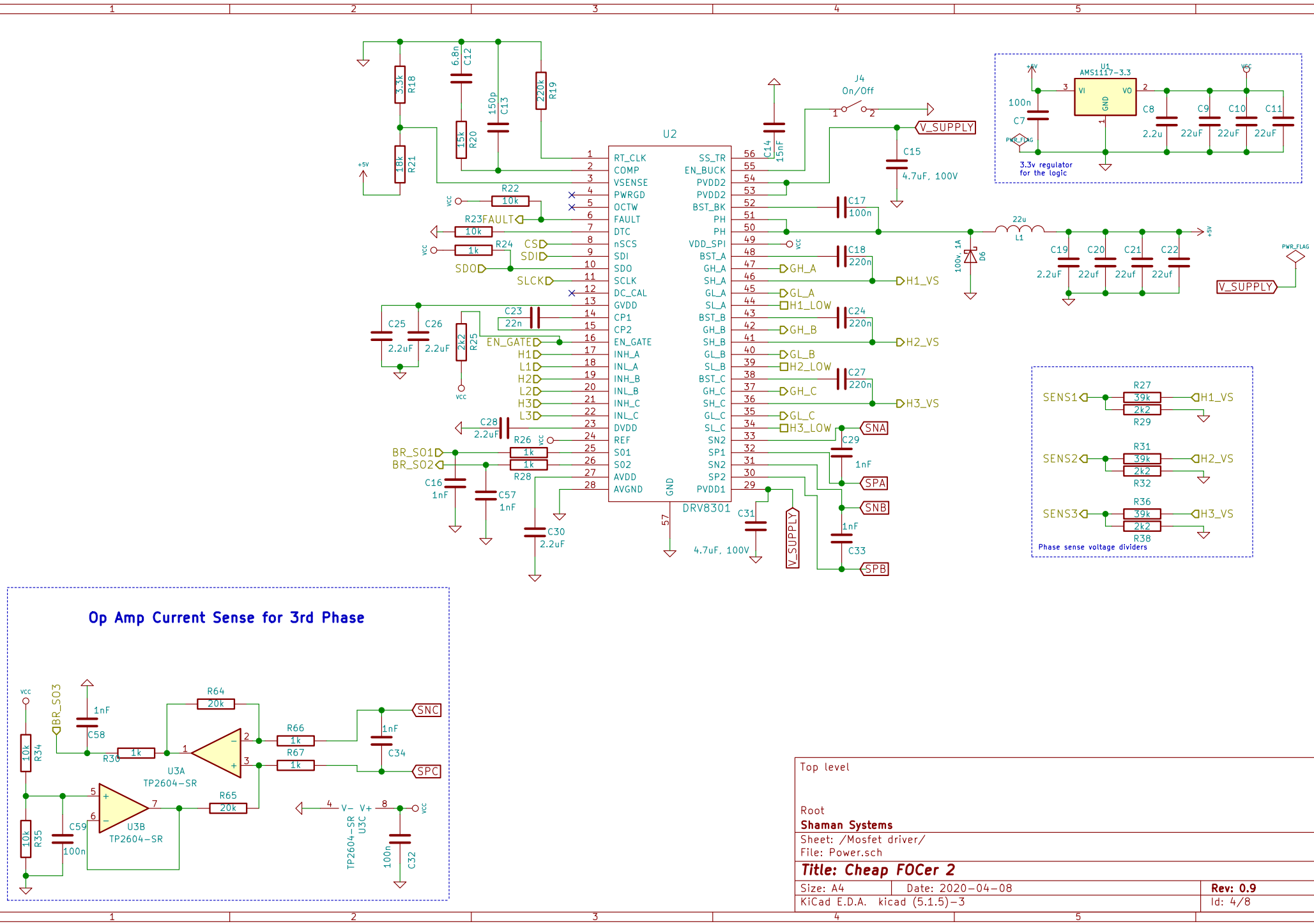
**Shaman Systems**

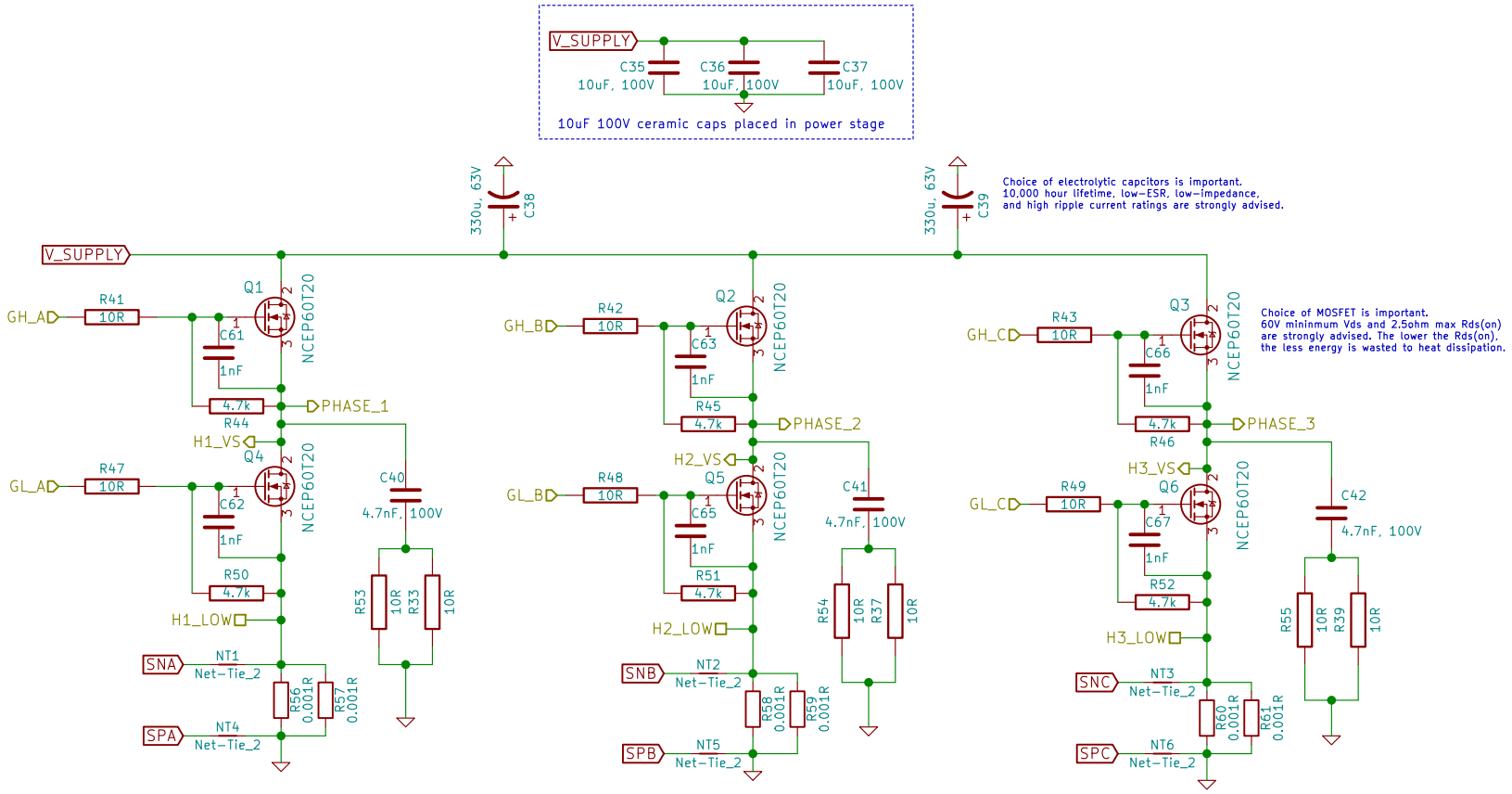
Sheet: /Filters/

File: hall_filters.sch

***Title: Cheap FOCer 2***

| Size: User | Date: 2020-04-08 | **Rev: 0.9** |
|---|---|---|
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 3/8 |

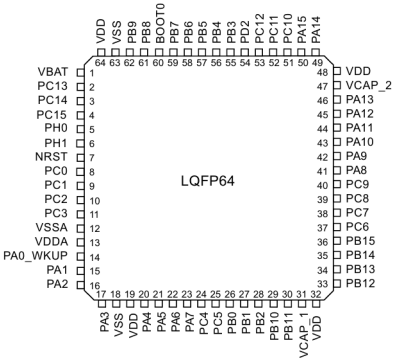

U2
DRV8301
RT_CLK
COMP
VSENSE
PWRGD
OCTW
FAULT
DTC
nSCS
SDI
SDO
SCLK
DC_CAL
GVDD
CP1
CP2
EN_GATE
INH_A
INL_A
INH_B
INL_B
INH_C
INL_C
DVDD
REF
SO1
SO2
AVDD
AVGND
SS_TR
EN_BUCK
PVDD2
PVDD2
BST_BK
PH
PH
VDD_SPI
BST_A
GH_A
SH_A
GL_A
SL_A
BST_B
GH_B
SH_B
GL_B
SL_B
BST_C
GH_C
SH_C
GL_C
SL_C
SN2
SP1
SN2
SP2
PVDD1
GND
J4
On/Off
V_SUPPLY
C15
4.7uF, 100V
C14
15nF
C17
100n
C18
220n
C24
220n
C27
220n
C29
1nF
C31
4.7uF, 100V
C33
1nF
C30
2.2uF
C16
1nF
C57
1nF
C28
2.2uF
C25
2.2uF
C26
2.2uF
C23
22n
R18
3.3k
R19
220k
R20
15k
R21
18k
R22
10k
R23
10k
R24
1k
R25
2k2
R26
1k
R28
1k
C12
6.8n
C13
150p
H1_VS
H2_VS
H3_VS
GH_A
GL_A
H1_LOW
GH_B
GL_B
H2_LOW
GH_C
GL_C
H3_LOW
SNA
SPA
SNB
SPB
FAULT
CS
SDI
SDO
SLCK
EN_GATE
H1
L1
H2
L2
H3
L3
BR_SO1
BR_SO2
3.3v regulator
for the logic
U1
AMS1117-3.3
C7
100n
C8
2.2u
C9
22uF
C10
22uF
C11
22uF
D6
100v 1A
L1
22u
C19
2.2uF
C20
22uf
C21
22uf
C22
22uf
SENS1
SENS2
SENS3
R27
39k
2k2
R29
R31
39k
2k2
R32
R36
39k
2k2
R38
Phase sense voltage dividers
Op Amp Current Sense for 3rd Phase
R64
20k
R65
20k
R66
1k
R67
1k
R30
1k
R34
10k
R35
10k
C58
1nF
C59
100n
C34
1nF
C32
100n
U3A
TP2604-SR
U3B
TP2604-SR
U3C
TP2604-SR
SNC
SPC
BR_SO3
Top level
Root
Shaman Systems
Sheet: /Mosfet driver/
File: Power.sch
Title: Cheap FOCer 2
Size: A4
Date: 2020-04-08
Rev: 0.9
KiCad E.D.A. kicad (5.1.5)-3
Id: 4/8

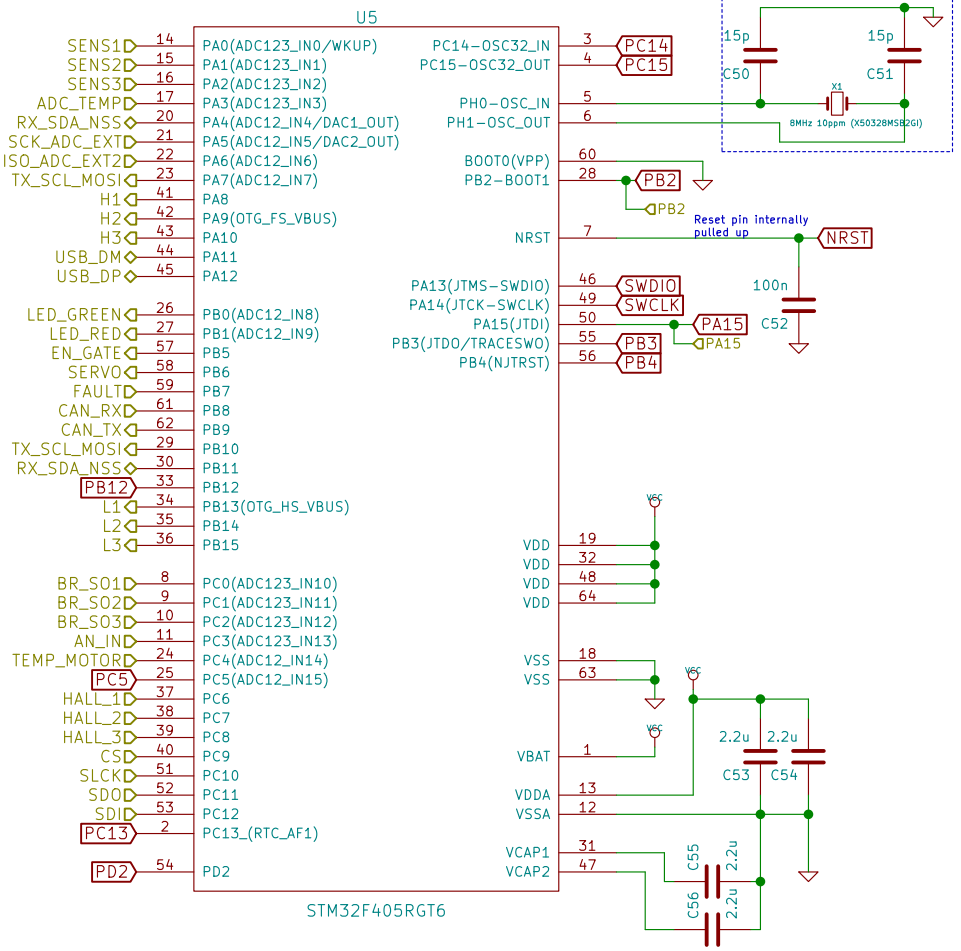


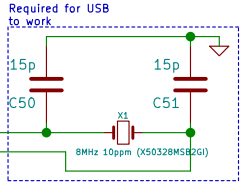

| | | |
|---|---|---|
| Top level | | |
| Root | | |
| **Shaman Systems** | | |
| Sheet: /Power MOSFETS/ | | |
| File: mosfets.sch | | |
| ***Title: Cheap FOCer 2*** | | |
| Size: A4 | Date: 2020-04-08 | **Rev: 0.9** |
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 5/8 |

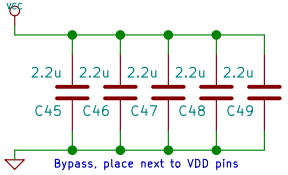
**STM32F405xx**
**STM32F407xx**

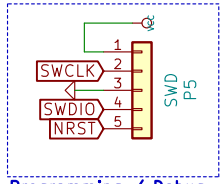
ARM Cortex-M4 32b MCU+FPU, 210DMIPS, up to 1MB Flash/192+4KB RAM, USB OTG HS/FS, Ethernet, 17 TIMs, 3 ADCs, 15 comm. interfaces & camera



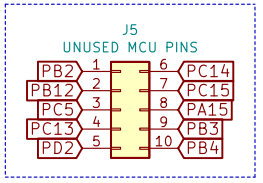




Programming / Debug connector




Unused MCU Pins







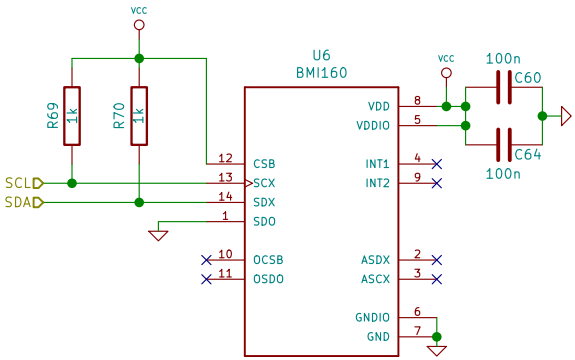
Reset pin internally pulled up

Top level

Root
**Shaman Systems**
Sheet: /MCU/
File: STM32F4 64LQFP.sch

***Title: Cheap FOCer 2***

| Size: A4 | Date: 2020-04-08 | **Rev: 0.9** |
|---|---|---|
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 6/8 |




Top level

Root

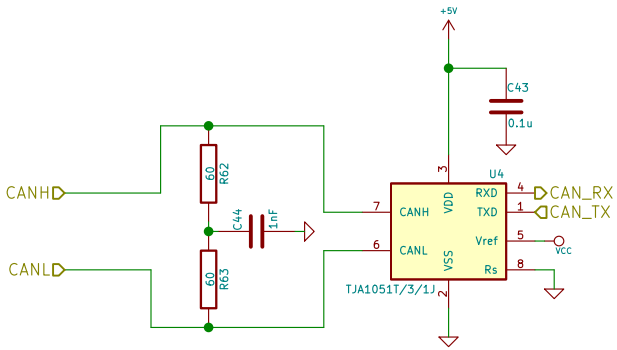
**Shaman Systems**

Sheet: /IMU/

File: IMU.sch

***Title: Cheap FOCer 2***

| Size: User | Date: 2020-04-08 | **Rev: 0.9** |
|---|---|---|
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 7/8 |




Top level

Root

**Shaman Systems**

Sheet: /CAN bus transceiver/

File: CAN.sch

***Title: Cheap FOCer 2***

| Size: User | Date: 2020-04-08 | **Rev: 0.9** |
|---|---|---|
| KiCad E.D.A. kicad (5.1.5)-3 | | Id: 8/8 |