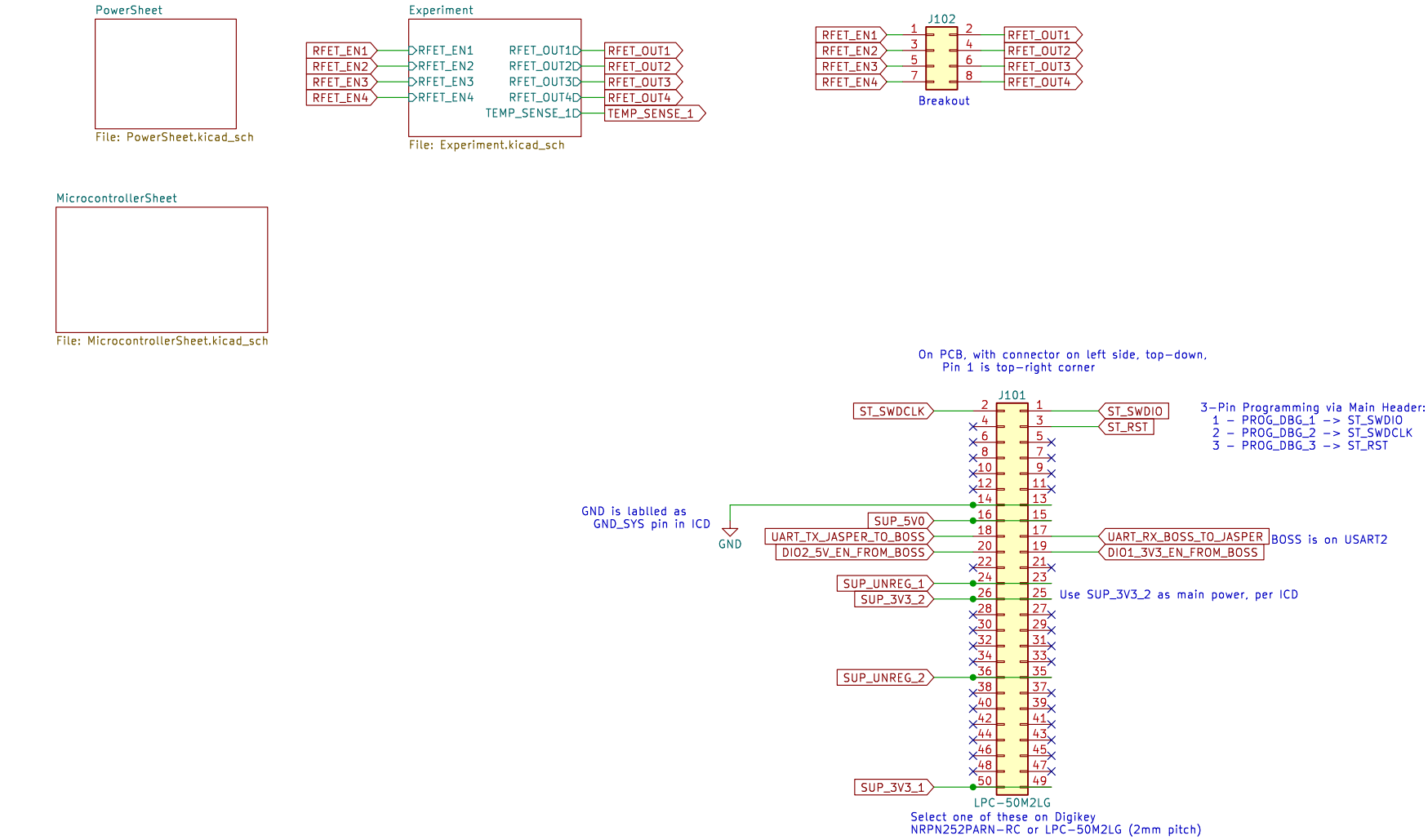
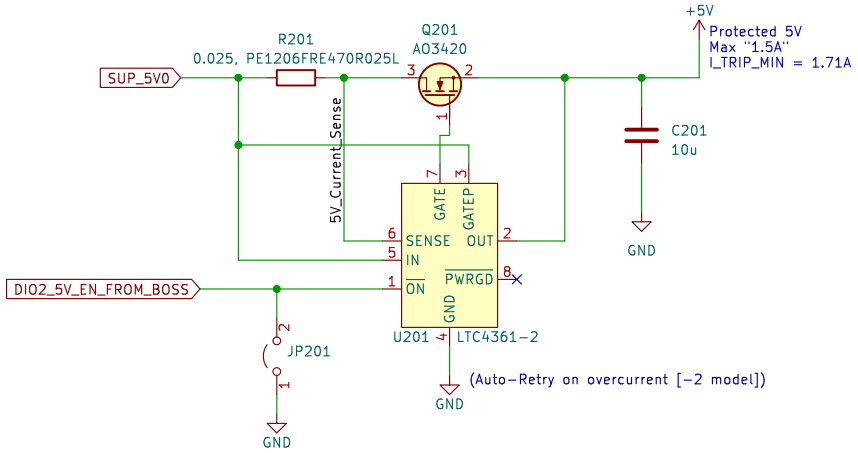
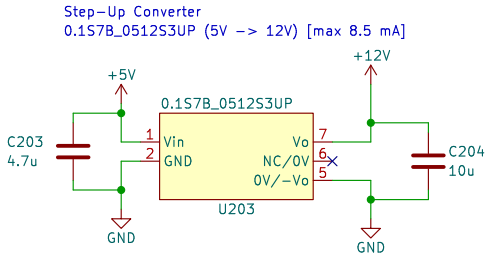
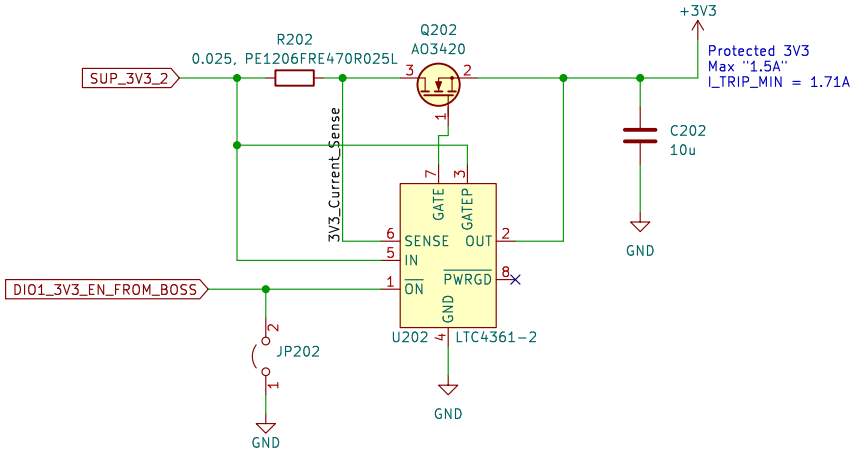
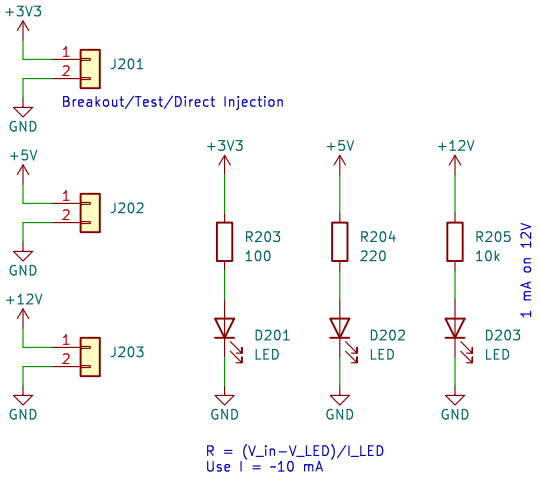

PowerSheet
File: PowerSheet.kicad_sch
Experiment
RFET_EN1
RFET_EN2
RFET_EN3
RFET_EN4
RFET_OUT1D
RFET_OUT2D
RFET_OUT3D
RFET_OUT4D
TEMP_SENSE_1D
RFET_OUT1
RFET_OUT2
RFET_OUT3
RFET_OUT4
TEMP_SENSE_1
File: Experiment.kicad_sch
J102
Breakout
MicrocontrollerSheet
File: MicrocontrollerSheet.kicad_sch
On PCB, with connector on left side, top-down,
Pin 1 is top-right corner
J101
ST_SWDCLK
ST_SWDIO
ST_RST
3-Pin Programming via Main Header:
1 - PROG_DBG_1 -> ST_SWDIO
2 - PROG_DBG_2 -> ST_SWDCLK
3 - PROG_DBG_3 -> ST_RST
GND is lablled as
GND_SYS pin in ICD
GND
SUP_5V0
UART_TX_JASPER_TO_BOSS
DIO2_5V_EN_FROM_BOSS
UART_RX_BOSS_TO_JASPER
DIO1_3V3_EN_FROM_BOSS
BOSS is on USART2
SUP_UNREG_1
SUP_3V3_2
Use SUP_3V3_2 as main power, per ICD
SUP_UNREG_2
SUP_3V3_1
LPC-50M2LG
Select one of these on Digikey
NRPN252PARN-RC or LPC-50M2LG (2mm pitch)
H101
MountingHole
H102
MountingHole
H103
MountingHole
H104
MountingHole
Sheet: /
File: BIRDS-X-PCB.kicad_sch
Title:
Size: USLetter
Date:
Rev:
KiCad E.D.A. kicad 7.0.2
Id: 1/4

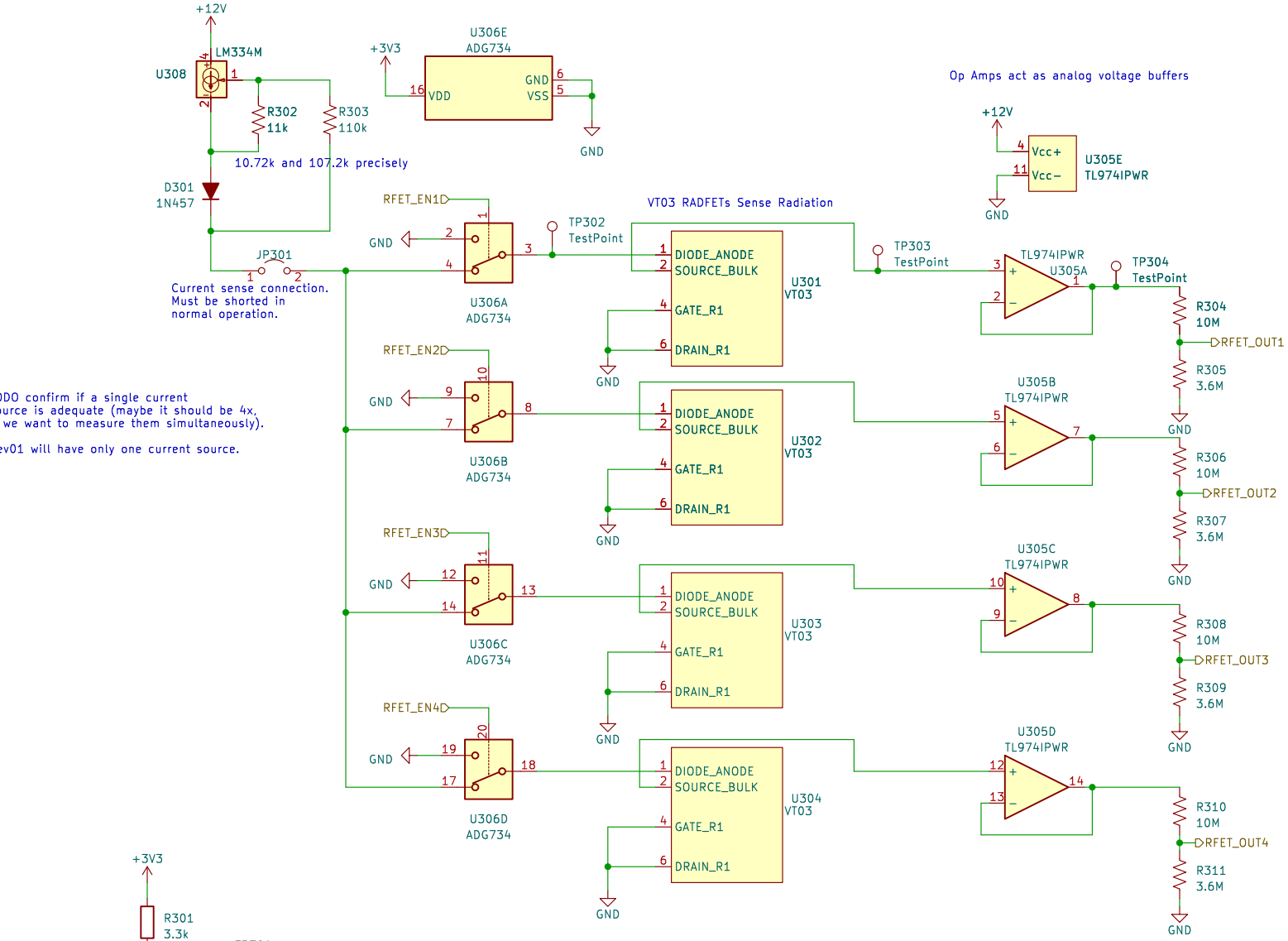


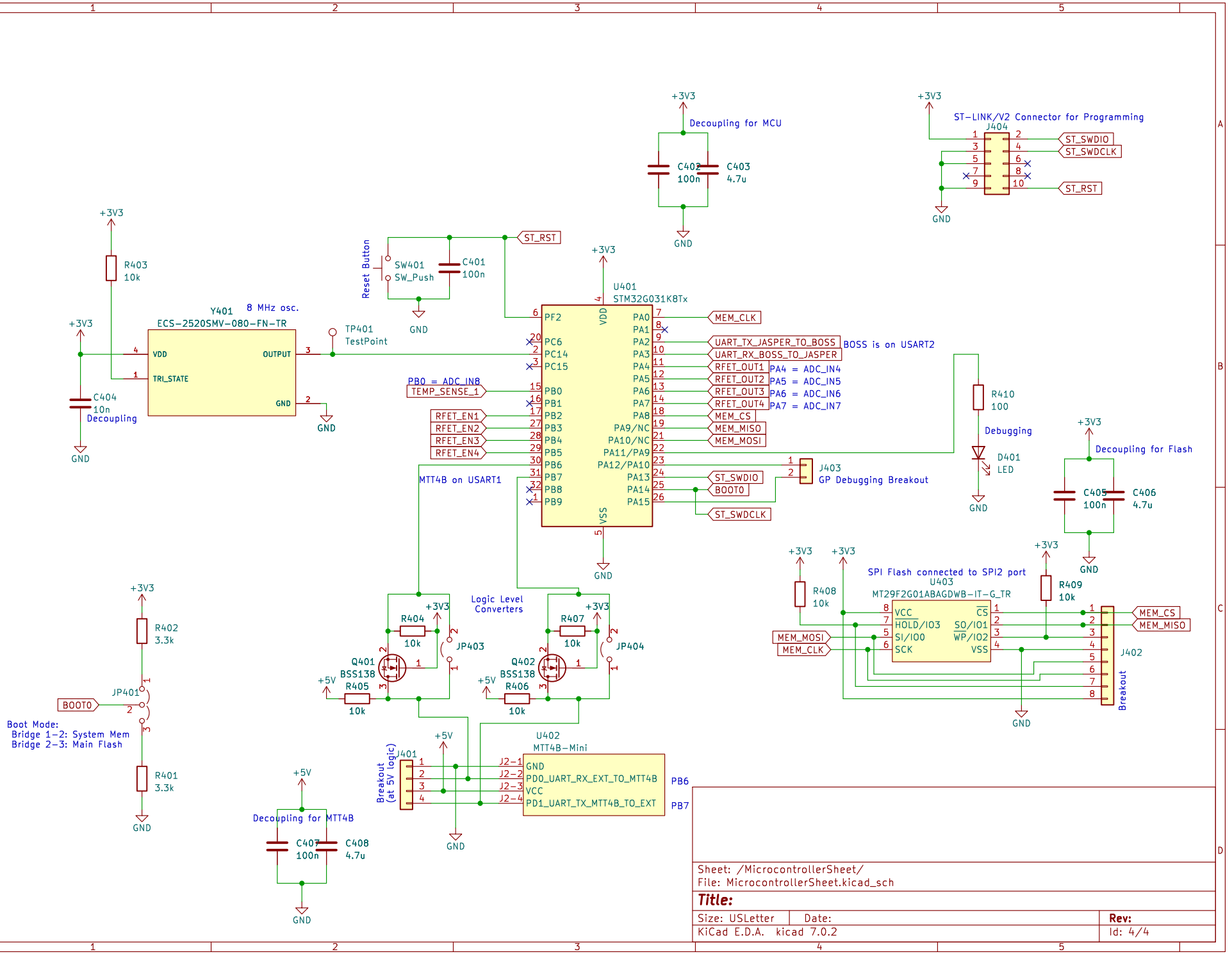




| | | |
|---|---|---|
| Sheet: /PowerSheet/<br>File: PowerSheet.kicad_sch | | |
| **Title:** | | |
| Size: USLetter | Date: | **Rev:** |
| KiCad E.D.A. kicad 7.0.2 | | Id: 2/4 |


+12V
U308
LM334M
R302
11k
R303
110k
10.72k and 107.2k precisely
D301
1N457
JP301
Current sense connection.
Must be shorted in
normal operation.
+3V3
U306E
ADG734
VDD
GND
VSS
GND
Op Amps act as analog voltage buffers
+12V
U305E
TL974IPWR
Vcc+
Vcc−
GND
TODO confirm if a single current
source is adequate (maybe it should be 4x,
if we want to measure them simultaneously).
Rev01 will have only one current source.
RFET_EN1
RFET_EN2
RFET_EN3
RFET_EN4
GND
U306A
ADG734
U306B
ADG734
U306C
ADG734
U306D
ADG734
TP302
TestPoint
VT03 RADFETs Sense Radiation
DIODE_ANODE
SOURCE_BULK
GATE_R1
DRAIN_R1
U301
VT03
U302
VT03
U303
VT03
U304
VT03
TP303
TestPoint
TL974IPWR
U305A
TP304
TestPoint
U305B
TL974IPWR
U305C
TL974IPWR
U305D
TL974IPWR
R304
10M
R305
3.6M
R306
10M
R307
3.6M
R308
10M
R309
3.6M
R310
10M
R311
3.6M
RFET_OUT1
RFET_OUT2
RFET_OUT3
RFET_OUT4
+3V3
R301
3.3k
TP301
TestPoint
TEMP_SENSE_1
U307
LM335DT
V+
ADJ
V−
GND
This radiation detection experiment utilizes four RADFETs to detect the
cumulative dosage of radiation exposed to the RADFETs. Each RADFET
will be covered with different shielding.
Sheet: /Experiment/
File: Experiment.kicad_sch
Title:
Size: USLetter
Date:
Rev:
KiCad E.D.A. kicad 7.0.2
Id: 3/4


Decoupling for MCU
C402
100n
C403
4.7u
ST-LINK/V2 Connector for Programming
J404
ST_SWDIO
ST_SWDCLK
ST_RST
R403
10k
Y401
8 MHz osc.
ECS-2520SMV-080-FN-TR
VDD
OUTPUT
TRI_STATE
GND
C404
10n
Decoupling
TP401
TestPoint
Reset Button
SW401
SW_Push
C401
100n
U401
STM32G031K8Tx
PB0 = ADC_IN8
TEMP_SENSE_1
RFET_EN1
RFET_EN2
RFET_EN3
RFET_EN4
MTT4B on USART1
MEM_CLK
UART_TX_JASPER_TO_BOSS
UART_RX_BOSS_TO_JASPER
BOSS is on USART2
RFET_OUT1
RFET_OUT2
RFET_OUT3
RFET_OUT4
PA4 = ADC_IN4
PA5 = ADC_IN5
PA6 = ADC_IN6
PA7 = ADC_IN7
MEM_CS
MEM_MISO
MEM_MOSI
ST_SWDIO
BOOT0
ST_SWDCLK
J403
GP Debugging Breakout
R410
100
Debugging
D401
LED
Decoupling for Flash
C405
100n
C406
4.7u
SPI Flash connected to SPI2 port
U403
MT29F2G01ABAGDWB-IT-G_TR
R408
10k
R409
10k
J402
Breakout
Logic Level
Converters
R404
10k
R407
10k
JP403
JP404
Q401
BSS138
Q402
BSS138
R405
10k
R406
10k
+5V
R402
3.3k
JP401
BOOT0
Boot Mode:
Bridge 1-2: System Mem
Bridge 2-3: Main Flash
R401
3.3k
U402
MTT4B-Mini
J401
Breakout
(at 5V logic)
GND
PD0_UART_RX_EXT_TO_MTT4B
VCC
PD1_UART_TX_MTT4B_TO_EXT
PB6
PB7
Decoupling for MTT4B
C407
100n
C408
4.7u
Sheet: /MicrocontrollerSheet/
File: MicrocontrollerSheet.kicad_sch
Title:
Size: USLetter
Date:
Rev:
KiCad E.D.A. kicad 7.0.2
Id: 4/4