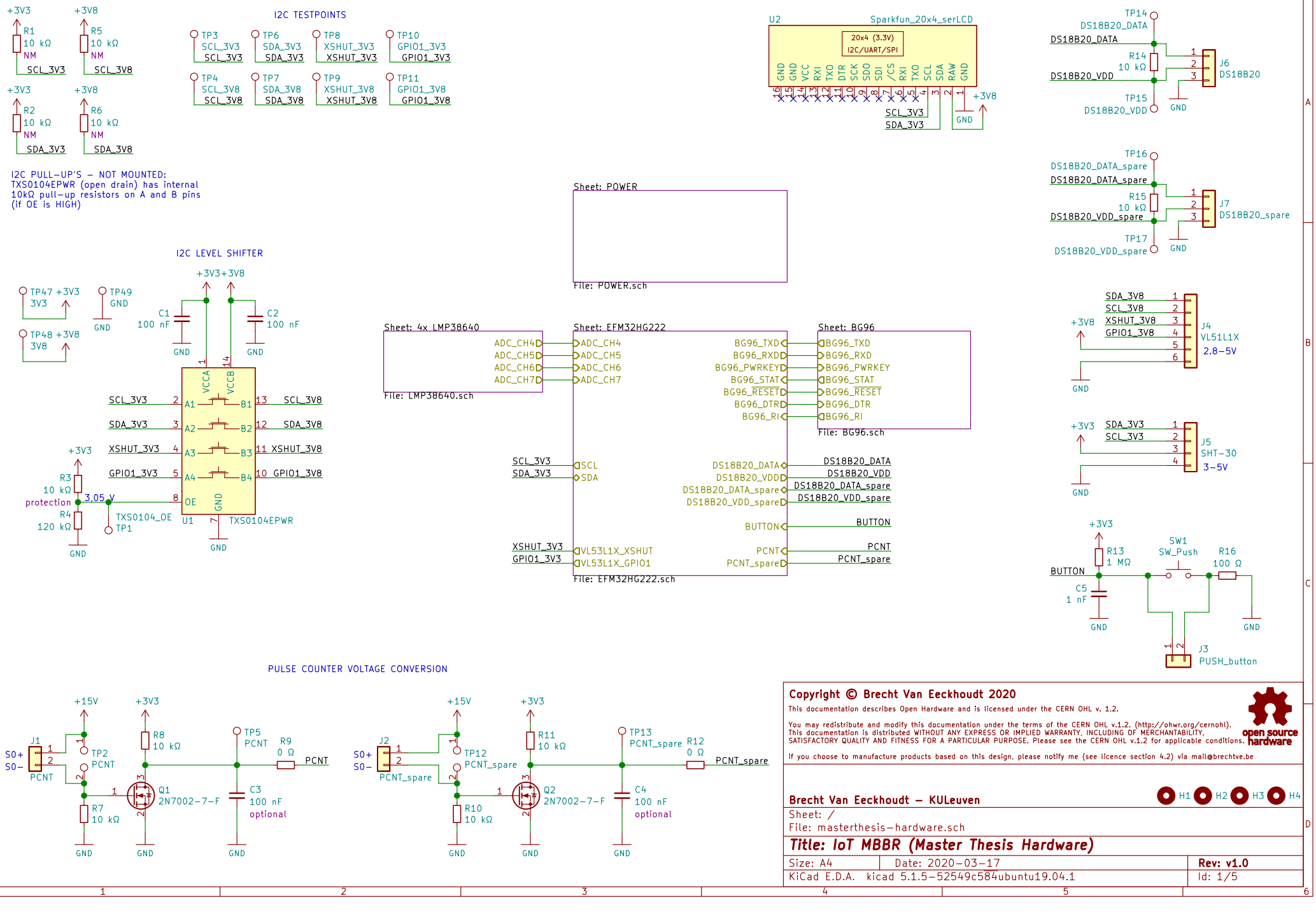
I2C TESTPOINTS
I2C PULL-UP'S – NOT MOUNTED:
TXS0104EPWR (open drain) has internal
10kΩ pull-up resistors on A and B pins
(if OE is HIGH)
I2C LEVEL SHIFTER
Sheet: POWER
File: POWER.sch
Sheet: 4x LMP38640
File: LMP38640.sch
Sheet: EFM32HG222
File: EFM32HG222.sch
Sheet: BG96
File: BG96.sch
U2
Sparkfun_20x4_serLCD
20x4 (3.3V)
I2C/UART/SPI
PULSE COUNTER VOLTAGE CONVERSION
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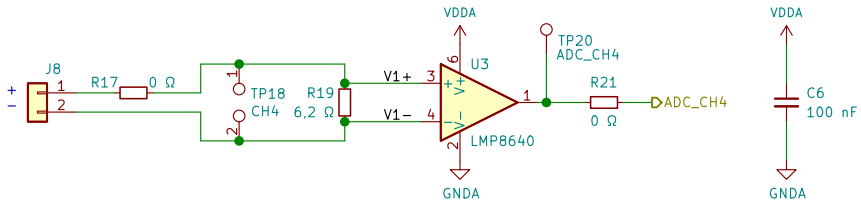
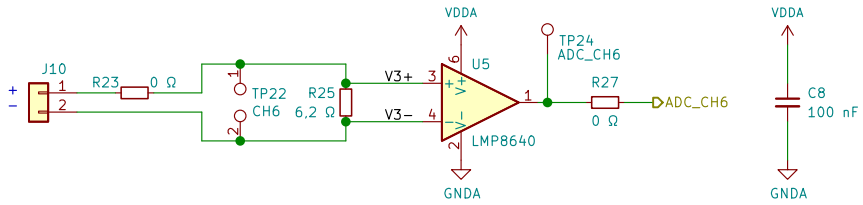
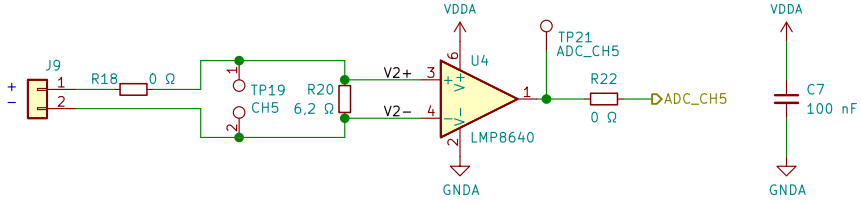
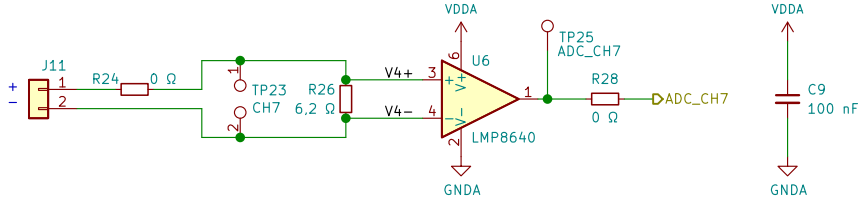
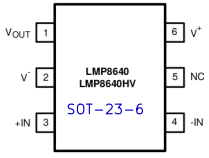
Sheet: /
File: masterthesis-hardware.sch
Title: IoT MBBR (Master Thesis Hardware)
Size: A4
Date: 2020-03-17
Rev: v1.0
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu19.04.1
Id: 1/5











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Size: A4	Date: 2020-03-17	**Rev: v1.0**
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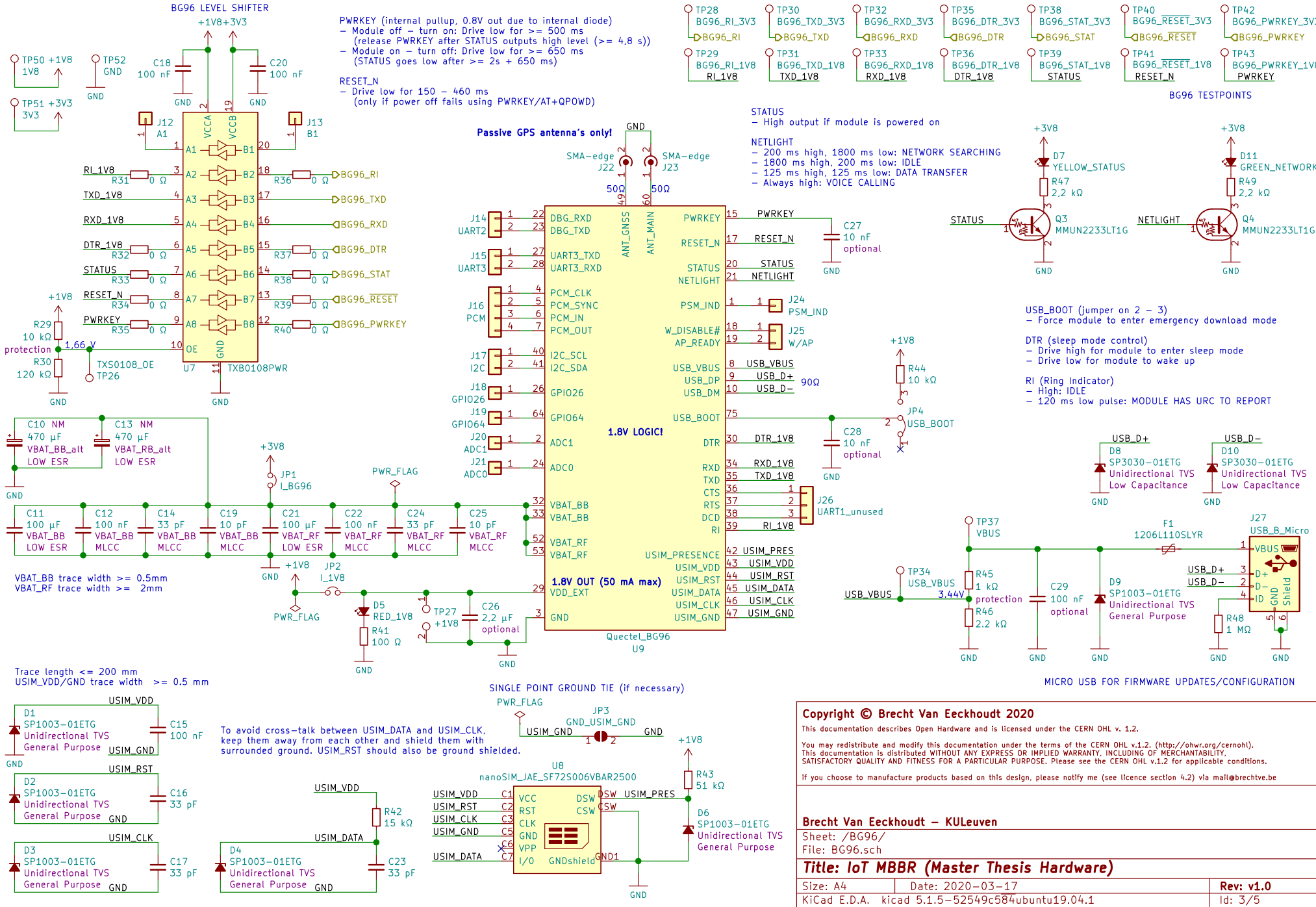
BG96 LEVEL SHIFTER
PWRKEY (internal pullup, 0.8V out due to internal diode)
– Module off – turn on: Drive low for >= 500 ms
(release PWRKEY after STATUS outputs high level (>= 4,8 s))
– Module on – turn off: Drive low for >= 650 ms
(STATUS goes low after >= 2s + 650 ms)
RESET_N
– Drive low for 150 – 460 ms
(only if power off fails using PWRKEY/AT+QPOWD)
BG96 TESTPOINTS
Passive GPS antenna's only!
STATUS
– High output if module is powered on
NETLIGHT
– 200 ms high, 1800 ms low: NETWORK SEARCHING
– 1800 ms high, 200 ms low: IDLE
– 125 ms high, 125 ms low: DATA TRANSFER
– Always high: VOICE CALLING
USB_BOOT (jumper on 2 – 3)
– Force module to enter emergency download mode
DTR (sleep mode control)
– Drive high for module to enter sleep mode
– Drive low for module to wake up
RI (Ring Indicator)
– High: IDLE
– 120 ms low pulse: MODULE HAS URC TO REPORT
1.8V LOGIC!
1.8V OUT (50 mA max)
Quectel_BG96
U9
VBAT_BB trace width >= 0.5mm
VBAT_RF trace width >= 2mm
Trace length <= 200 mm
USIM_VDD/GND trace width >= 0.5 mm
To avoid cross-talk between USIM_DATA and USIM_CLK, keep them away from each other and shield them with surrounded ground. USIM_RST should also be ground shielded.
SINGLE POINT GROUND TIE (if necessary)
MICRO USB FOR FIRMWARE UPDATES/CONFIGURATION
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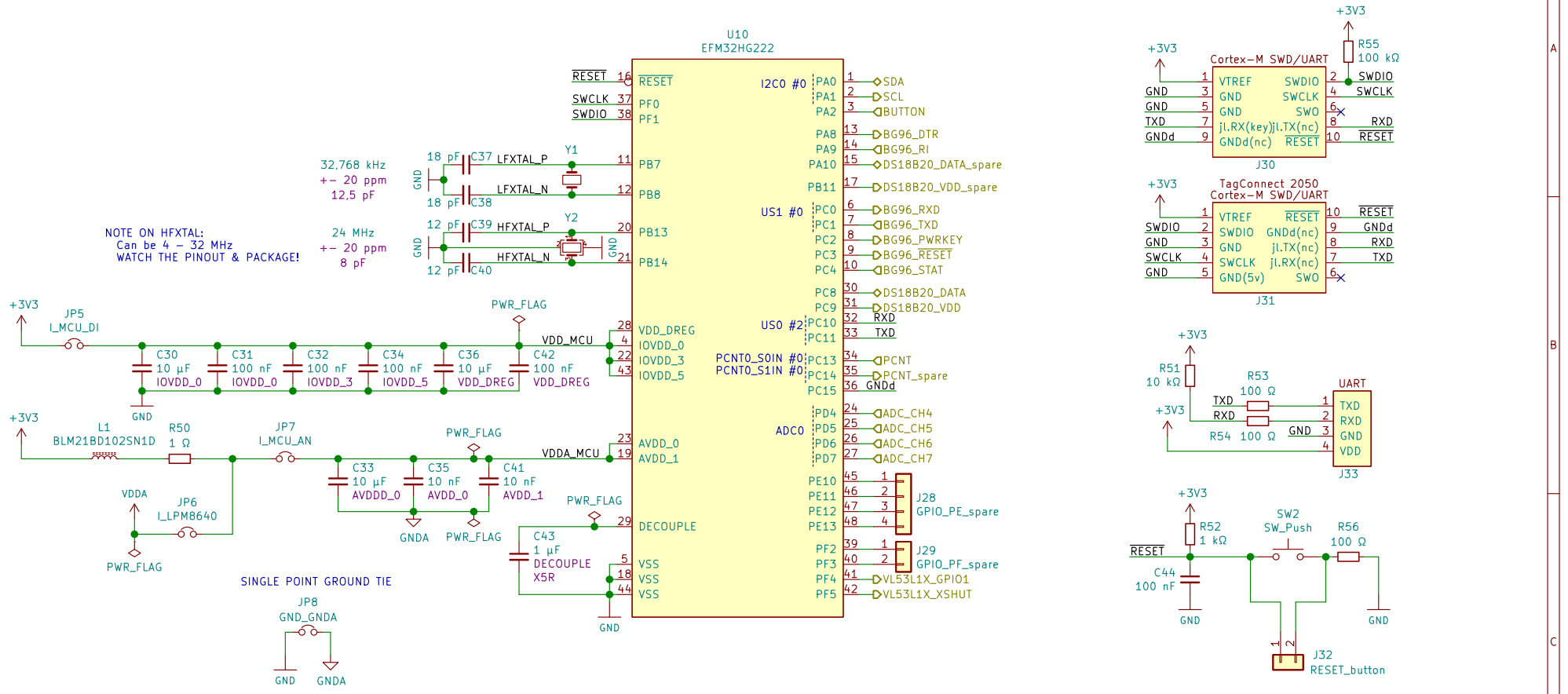
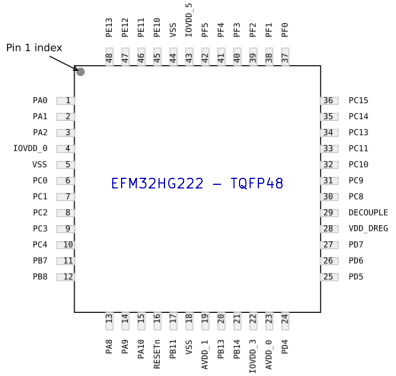
Id: 3/5





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Title: IoT MBBR (Master Thesis Hardware)

Size: A4	Date: 2020-03-17	**Rev: v1.0**
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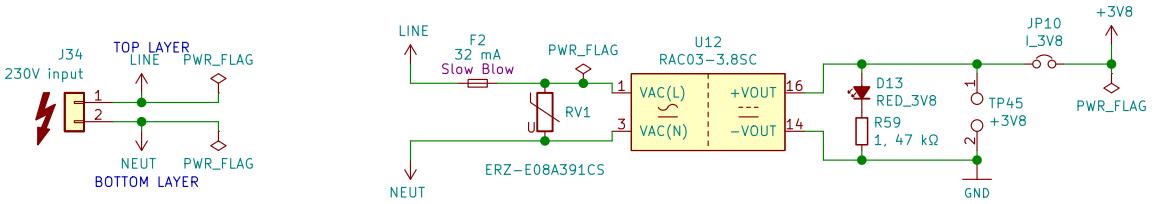

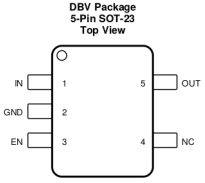

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Sheet: /POWER/
File: POWER.sch

Title: IoT MBBR (Master Thesis Hardware)

Size: A4	Date: 2020-03-17	**Rev: v1.0**
KiCad E.D.A. kicad 5.1.5-52549c584ubuntu19.04.1		Id: 5/5