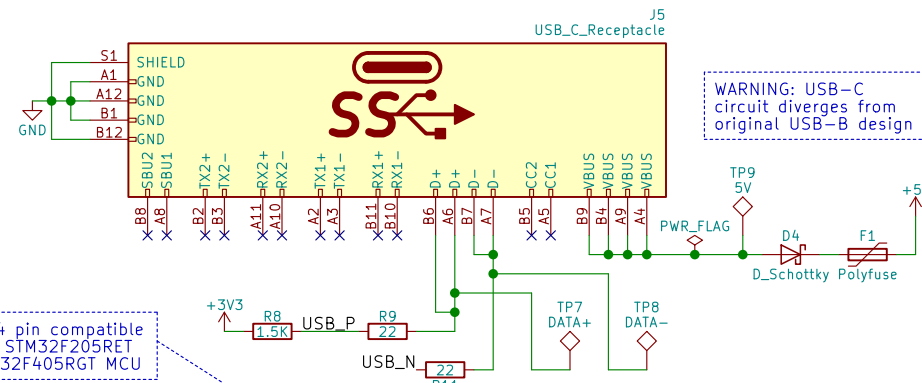


Monerologo-mid



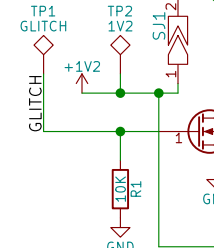
MCU decoupling capacitors, place next to VBAT, VDD1-4, and VDDA



WARNING: USB-C circuit diverges from original USB-B design

LQFP-64 pin compatible between STM32F205RET and STM32F405RGT MCU

WARNING! Danger of internal 1.2V GND short. Adequately long glitch intervals will destroy the MCU.



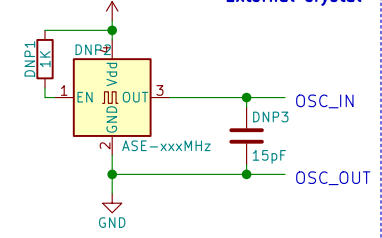
WARNING: SMT oscillator circuit diverges from original THF design

NOTE: According to STM AN2867 section 3.3 CL Load Capacitance, $CL = (C1 + C2) / (C1 + C2) + C_{stray}$... or $C1, C2 = 2 * CL - 2 * C_{stray}$. So our 10pF CL requires 12pF C1/C2.

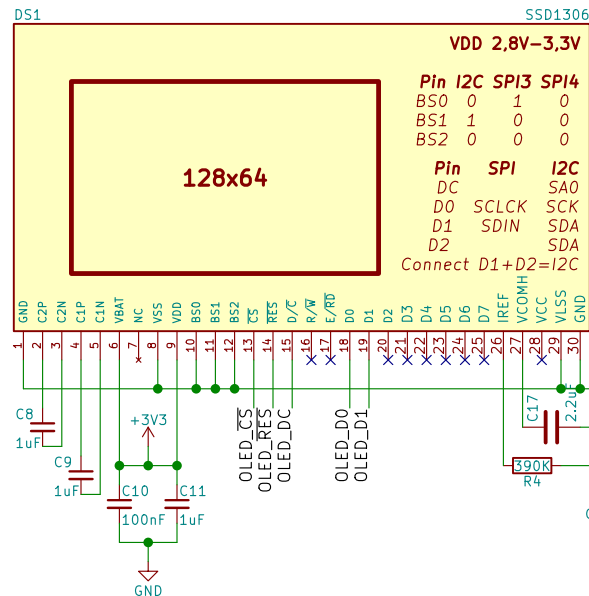
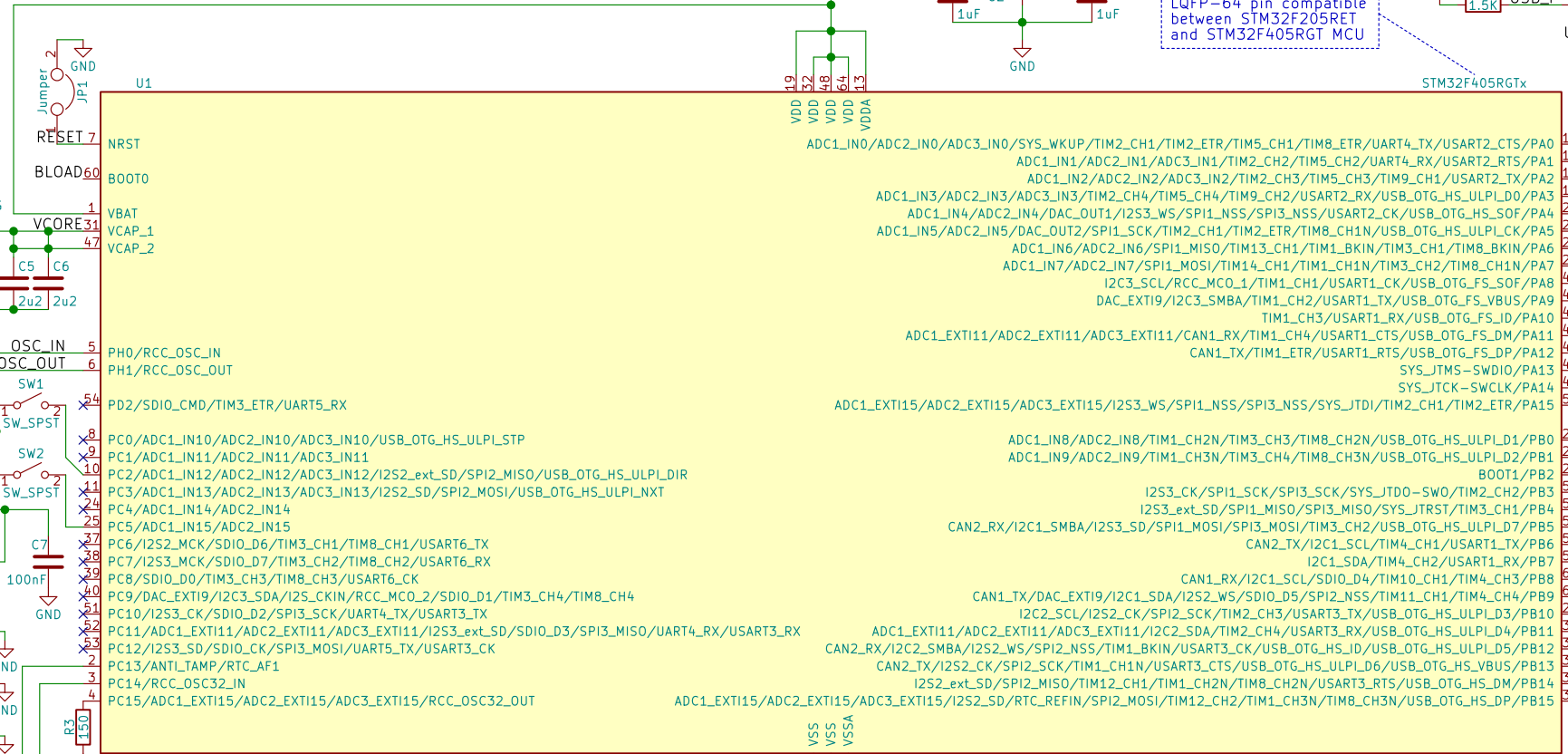
Fast pins 12, 13, and 15 are reserved for advanced CPA.

CONN_LED3 indicates power

External crystal



Equivalent (but more expensive) crystal oscillator replacement circuit. We specify a simple nonoscillating crystal instead.



Pin	I2C	SPI	I2C
BS0	0	1	0
BS1	1	0	0
BS2	0	0	0

Pin	SPI	I2C
DC		SA0
D0	SCLK	SCK
D1	SDIN	SDA
D2		SDA

Connect D1+D2=I2C

Secure firmware bootstrap via Monero Project secret

TODO

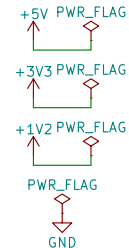
CR2450 battery clip and VBAT circuit here

SDHC storage SPI circuit here

Ambient light based intrusion detection circuit here

Secure element coprocessor SPI circuit here

Empty area for USB-C connector, at pin 15



Warning, untested prototype!
Pending quality assurance testing
Fulfilling the developer edition role
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Sheet: /	File: breakneck.sch	Title: Breakneck Hardware Wallet
Size: A3	Date: 2018-01-10	Rev: 0.7.0
KiCad E.D.A. kicad 4.0.6+dfsg1-1		Id: 1/1