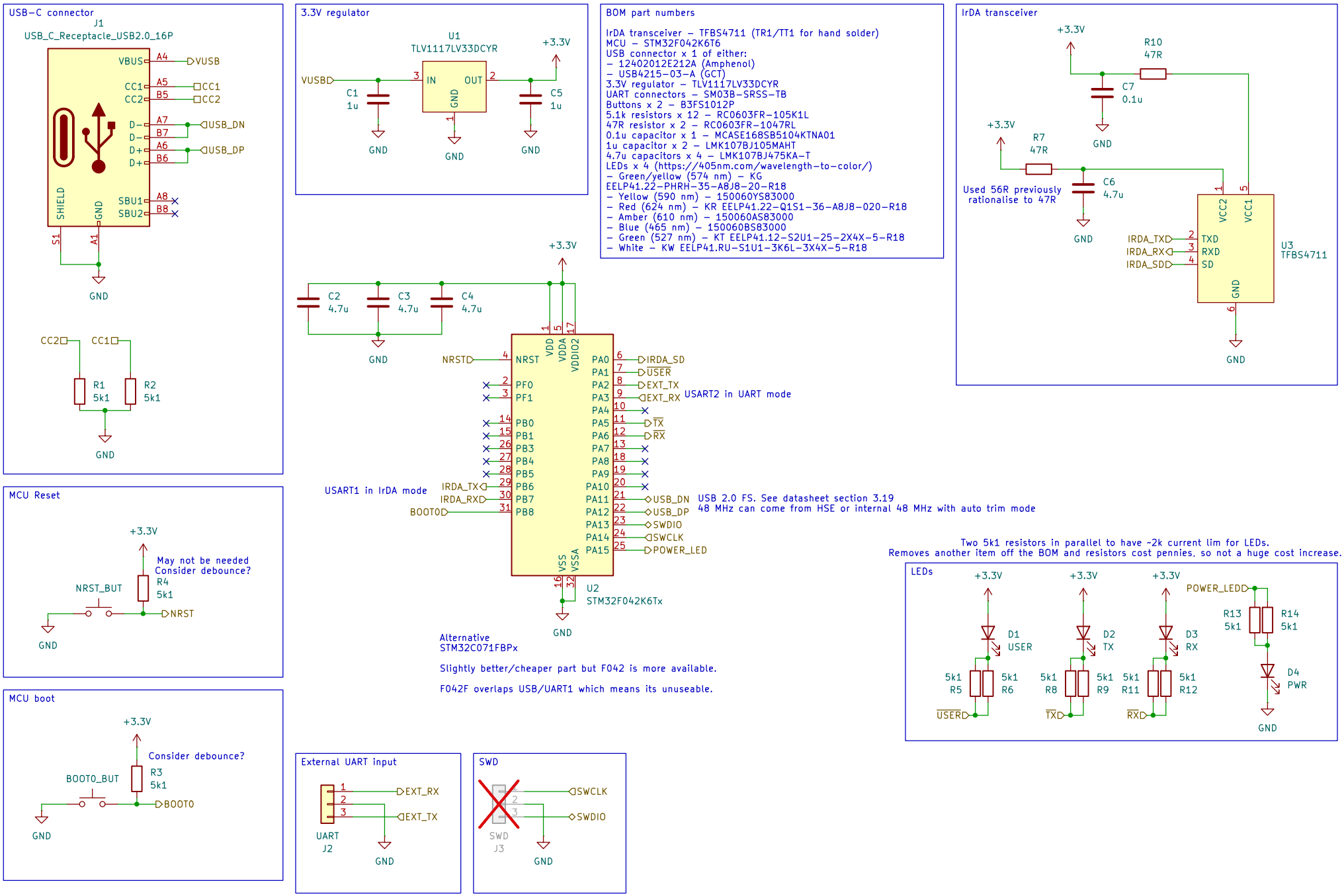
USB-C connector
J1
USB_C_Receptacle_USB2.0_16P
VBUS
A4
VUSB
CC1
A5
CC1
CC2
B5
CC2
D-
A7
B7
USB_DN
D+
A6
B6
USB_DP
SHIELD
GND
SBU1
A8
SBU2
B8
S1
A1
GND
CC2
CC1
R1
5k1
R2
5k1
GND
3.3V regulator
U1
TLV1117LV33DCYR
VUSB
IN
OUT
GND
C1
1u
C5
1u
+3.3V
GND
GND
BOM part numbers
IrDA transceiver – TFBS4711 (TR1/TT1 for hand solder)
MCU – STM32F042K6T6
USB connector x 1 of either:
– 12402012E212A (Amphenol)
– USB4215-03-A (GCT)
3.3V regulator – TLV1117LV33DCYR
UART connectors – SM03B-SRSS-TB
Buttons x 2 – B3FS1012P
5.1k resistors x 12 – RC0603FR-105K1L
47R resistor x 2 – RC0603FR-1047RL
0.1u capacitor x 1 – MCASE168SB5104KTNA01
1u capacitor x 2 – LMK107BJ105MAHT
4.7u capacitors x 4 – LMK107BJ475KA-T
LEDs x 4 (https://405nm.com/wavelength-to-color/)
– Green/yellow (574 nm) – KG
EELP41.22-PHRH-35-A8J8-20-R18
– Yellow (590 nm) – 150060YS83000
– Red (624 nm) – KR EELP41.22-Q1S1-36-A8J8-020-R18
– Amber (610 nm) – 150060AS83000
– Blue (465 nm) – 150060BS83000
– Green (527 nm) – KT EELP41.12-S2U1-25-2X4X-5-R18
– White – KW EELP41.RU-S1U1-3K6L-3X4X-5-R18
IrDA transceiver
+3.3V
R10
47R
C7
0.1u
GND
+3.3V
R7
47R
Used 56R previously
rationalise to 47R
C6
4.7u
GND
IRDA_TXD
IRDA_RX
IRDA_SD
TXD
RXD
SD
VCC2
VCC1
GND
U3
TFBS4711
GND
+3.3V
C2
4.7u
C3
4.7u
C4
4.7u
GND
NRST
VDD
VDDA
VDDIO2
NRST
PF0
PF1
PB0
PB1
PB3
PB4
PB5
PB6
PB7
PB8
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13
PA14
PA15
IRDA_SD
USER
EXT_TX
EXT_RX
USART2 in UART mode
TX
RX
USART1 in IrDA mode
IRDA_TX
IRDA_RX
BOOT0
USB_DN
USB_DP
SWDIO
SWCLK
POWER_LED
USB 2.0 FS. See datasheet section 3.19
48 MHz can come from HSE or internal 48 MHz with auto trim mode
VSS
VSSA
U2
STM32F042K6Tx
GND
Alternative
STM32C071FBPx
Slightly better/cheaper part but F042 is more available.
F042F overlaps USB/UART1 which means its unuseable.
Two 5k1 resistors in parallel to have ~2k current lim for LEDs.
Removes another item off the BOM and resistors cost pennies, so not a huge cost increase.
LEDs
+3.3V
D1
USER
5k1
R5
5k1
R6
USER
+3.3V
D2
TX
5k1
R8
5k1
R9
TX
+3.3V
D3
RX
5k1
R11
5k1
R12
RX
POWER_LED
R13
5k1
R14
5k1
D4
PWR
GND
MCU Reset
+3.3V
May not be needed
Consider debounce?
NRST_BUT
R4
5k1
NRST
GND
MCU boot
+3.3V
Consider debounce?
BOOT0_BUT
R3
5k1
BOOT0
GND
External UART input
1
2
3
EXT_RX
EXT_TX
UART
J2
GND
SWD
SWCLK
SWDIO
SWD
J3
GND