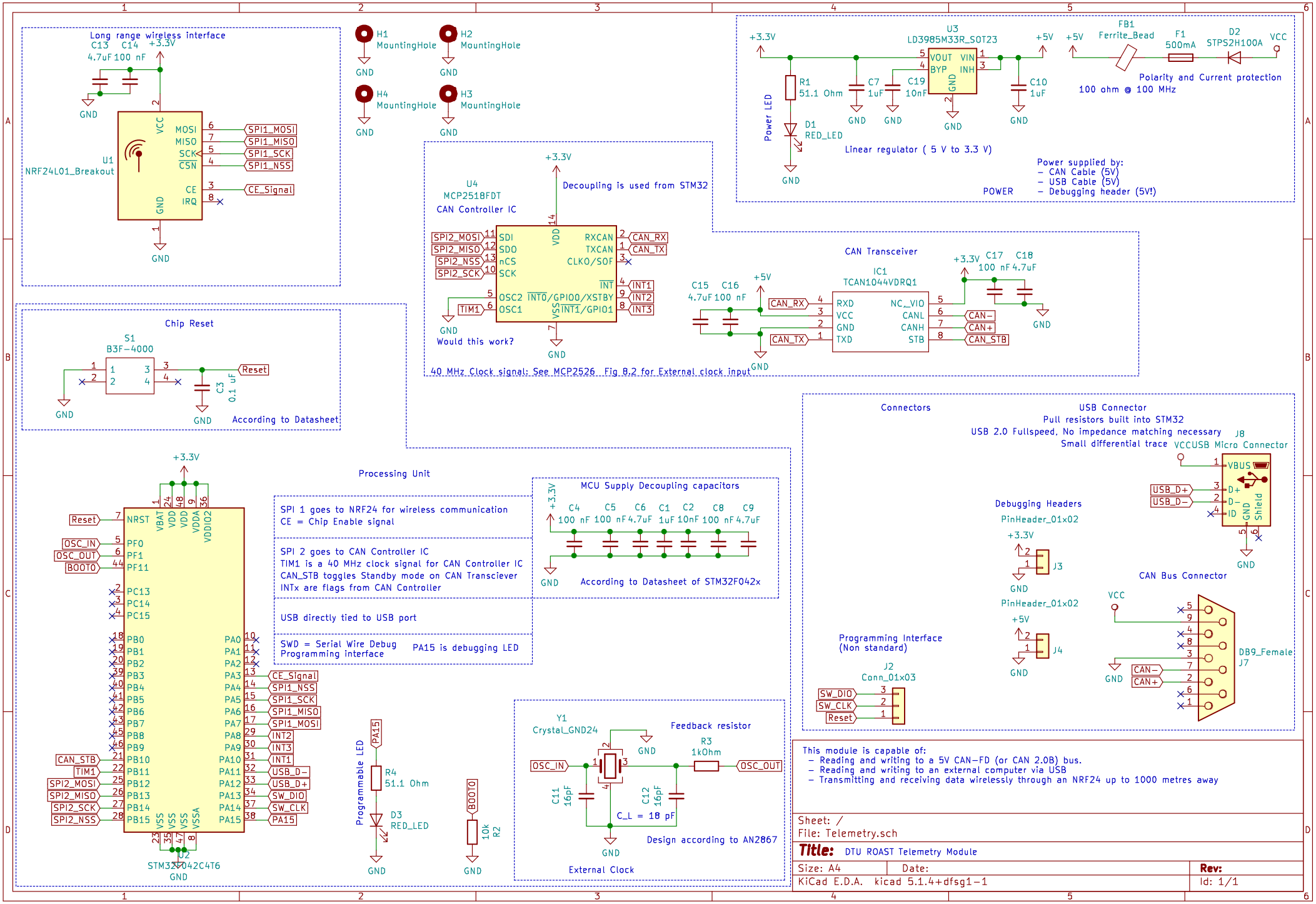
Long range wireless interface
C13 4.7uF
C14 100 nF
+3.3V
GND
U1
NRF24L01_Breakout
VCC
MOSI
MISO
SCK
CSN
CE
IRQ
GND
SPI1_MOSI
SPI1_MISO
SPI1_SCK
SPI1_NSS
CE_Signal
H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole
U3
LD3985M33R_SOT23
VOUT
BYP
VIN
INH
R1 51.1 Ohm
C7 1uF
C19 10nF
C10 1uF
Power LED
D1 RED_LED
Linear regulator (5 V to 3.3 V)
+5V
FB1 Ferrite_Bead
F1 500mA
D2 STPS2H100A
VCC
Polarity and Current protection
100 ohm @ 100 MHz
POWER
Power supplied by:
- CAN Cable (5V)
- USB Cable (5V)
- Debugging header (5V!)
U4
MCP2518FDT
CAN Controller IC
Decoupling is used from STM32
SDI
SDO
nCS
SCK
VDD
RXCAN
TXCAN
CLKO/SOF
INT
OSC2
OSC1
INT0/GPIO0/XSTBY
INT1/GPIO1
VSS
SPI2_MOSI
SPI2_MISO
SPI2_NSS
SPI2_SCK
TIM1
CAN_RX
CAN_TX
INT1
INT2
INT3
Would this work?
40 MHz Clock signal: See MCP2526 Fig 8.2 for External clock input
CAN Transceiver
IC1
TCAN1044VDRQ1
C15 4.7uF
C16 100 nF
C17 100 nF
C18 4.7uF
RXD
VCC
GND
TXD
NC_VIO
CANL
CANH
STB
CAN-
CAN+
CAN_STB
Chip Reset
S1
B3F-4000
Reset
C3 0.1 uF
According to Datasheet
Processing Unit
NRST
VBAT
VDD
VDDA
VDDIO2
PF0
PF1
PF11
PC13
PC14
PC15
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
PB8
PB9
PB10
PB11
PB12
PB13
PB14
PB15
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13
PA14
PA15
VSS
VSSA
OSC_IN
OSC_OUT
BOOT0
CAN_STB
USB_D-
USB_D+
SW_DIO
SW_CLK
STM32F042C4T6
U2
SPI 1 goes to NRF24 for wireless communication
CE = Chip Enable signal
SPI 2 goes to CAN Controller IC
TIM1 is a 40 MHz clock signal for CAN Controller IC
CAN_STB toggles Standby mode on CAN Transciever
INTx are flags from CAN Controller
USB directly tied to USB port
SWD = Serial Wire Debug Programming interface
PA15 is debugging LED
MCU Supply Decoupling capacitors
C4 100 nF
C5 100 nF
C6 4.7uF
C1 1uF
C2 10nF
C8 100 nF
C9 4.7uF
According to Datasheet of STM32F042x
Programmable LED
R4 51.1 Ohm
D3 RED_LED
R2 10k
Y1
Crystal_GND24
C11 16pF
C12 16pF
C_L = 18 pF
Feedback resistor
R3 1kOhm
Design according to AN2867
External Clock
Connectors
USB Connector
Pull resistors built into STM32
USB 2.0 Fullspeed, No impedance matching necessary
Small differential trace
J8
USB Micro Connector
VBUS
D+
D-
ID
GND
Shield
USB_D+
USB_D-
Debugging Headers
PinHeader_01x02
J3
J4
CAN Bus Connector
DB9_Female
J7
Programming Interface
(Non standard)
J2
Conn_01x03
This module is capable of:
- Reading and writing to a 5V CAN-FD (or CAN 2.0B) bus.
- Reading and writing to an external computer via USB
- Transmitting and receiving data wirelessly through an NRF24 up to 1000 metres away
Sheet: /
File: Telemetry.sch
Title: DTU ROAST Telemetry Module
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 5.1.4+dfsg1-1
Id: 1/1