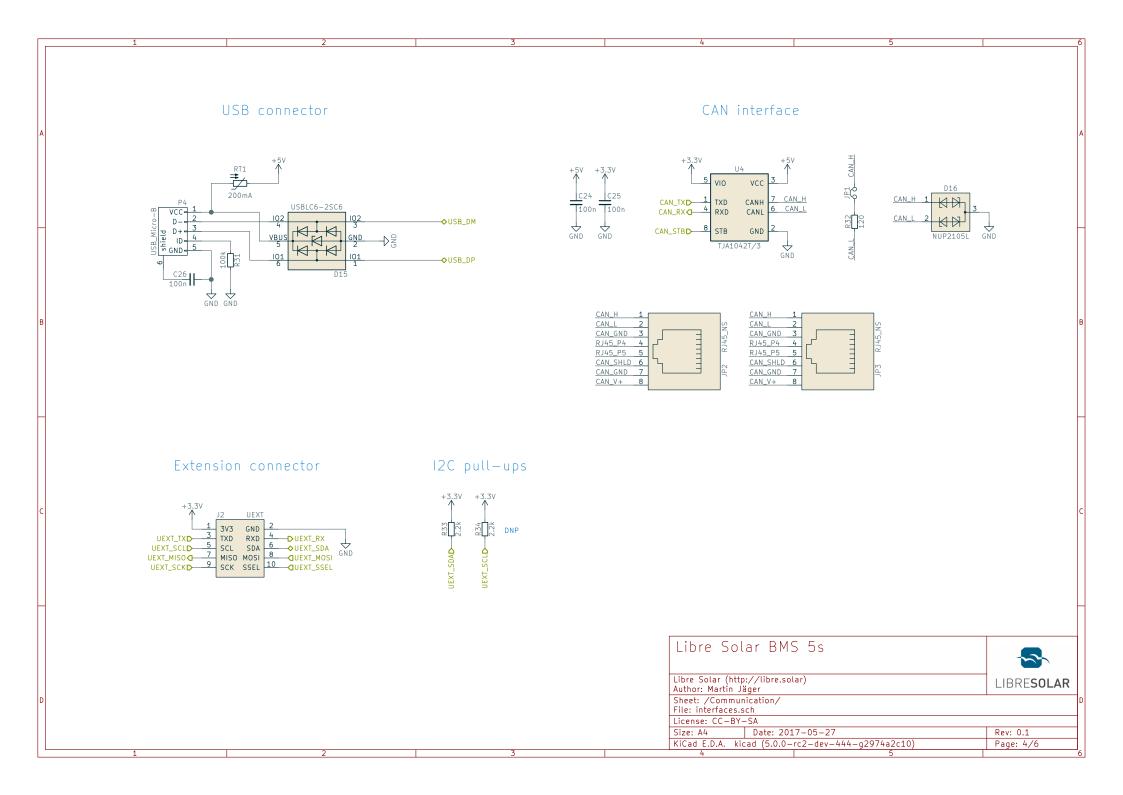


Battery to 5V (SMPS) D13 1N4148W-7-F PWR_FLAG PWR_FLAG O TP1 5V Vin BOOST BAT+D-4 EN PWR_END-____C16 C17 SW C18 MCP16331-CH GND GND GND C19 C20 25V GND GND 5V to 3.3V (LDO) O TP2 +3.3V 3.3V OUT BP 25V AP2210-3.3 GND GND GND GND Max current output: 150mA Libre Solar BMS 5s Libre Solar (http://libre.solar) Author: Martin Jäger LIBRE**SOLAR** Sheet: /Power Supply/ File: power_supply.sch License: CC-BY-SA Date: 2017-05-27 Rev: 0.1 Size: A4

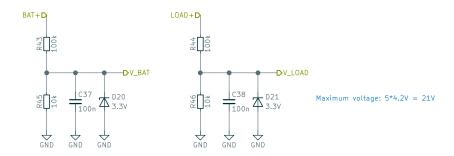
KiCad E.D.A. kicad (5.0.0-rc2-dev-444-g2974a2c10)

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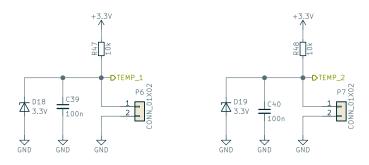


MCU STM32F072 MCU reset and boot circuit PWR_FLAG Y1 OSC_IN 1 OSC_OUT C27 8kHz 0.1% 9 VDDA 24 VDD_1 +3.3V 36 VDD_2 for CAN interface 48 VDD_3 B00T0 PC15-0SC32_OUT 1 VBAT NRST PAO-WKUP 10 V_REF Equations: tau = R39 * C36 = 2.2 s V(t) = Vmax * (1-exp(-t/tau)) --> t = -tau * ln(1-V/Vmax) 5 PDO-OSC_IN C30 44 BOOT0 PB0 19 PB1 Normal startup: BOOTO < 0.69 V C31 11 PA1 20 SSEL**a** PB2 -DPCHG_EN BSS138 100n 12 PA2 39 Press SW1 < 0.51 s USART2_TX PB3 -DSPI1_SCK 13 PA3 40 USART2_RXD-PB4 SPI1_MISO USB bootloader: BOOTO > 1.61 V Press SW1 > 1.47 s 14 PA4 V_BATD PB5 SPI1_MOSI 15 PA5 V_LOAD D PB6 -DI2C1_SCL 16 PA6 43 GND GND GND GND TEMP_1D PB7 **♦**12C1_SDA 17 PA7 45 TEMP_2D PB8 CAN_RX SW_POWERD_USART1_TX 30 PA9 46 CAN_TX PB9 PB10 DI2C2_SCL USART1_RX 31 PA10 PB11 -**♦**12C2_SDA 32 PA11 25 PB12 — □ALERT_IN USB_DM♦ 33 PA12 PB13 26 USB_DP > —DTS1_BQ PB14 27 LED1 SWDIO 34 PA13 37 PA14 PB15 28 LED2 SWCLK +3.3V +3.3V +3.3V +3.3V 38 PA15 CAN_STB < Voltage reference Status LEDs C32 C33 C34 C35 8 VSSA 23 VSS_1 100n 35 VSS_2 +3.3V min. 65 uA 47 VSS_3 operating GND GND GND GND current STM32F072CB GND V_REF LED3 V, LED1 LED4 LED2 D17 LM4040CYM3-2.5 GND GND GND EEPROM STM Nucleo SWD and USART U6 SWD1 24AA01 1 VCC P5 X SWCLK 2 SWCLK 12C2_SCLD 1 SCL 12C2_SDAD 5DA VCC C36 3 GND USART1_TX WP SWDIO 4 RESET 5 NRST USART1_RX GND Libre Solar BMS 5s ×6 SWO BQ769x0 ID either 0x08 or 0x18 GND ST_Nucleo_SWD 24AA01 has 0b1010XXX --> 0K Libre Solar (http://libre.solar) LIBRE**SOLAR** Author: Martin Jäger Sheet: /MCU/ File: mcu.sch License: CC-BY-SA Size: A4 Date: 2017-05-27 Rev: 0.1 KiCad E.D.A. kicad (5.0.0-rc2-dev-444-g2974a2c10) Page: 5/6

Battery and load voltage



Temperature (ext./int.)



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If not stated otherwise, all MLCC 50V X7R