

BADGE.TEAM

Sheet: /
File: mch2021.sch

Title: MCH2021 badge – Overview

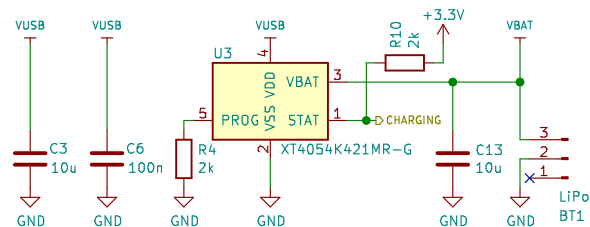
Size: A4 Date: 2020-12-06

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Rev: 2

Id: 1/9

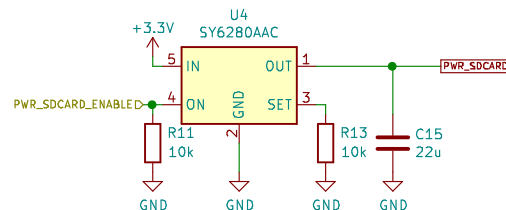
Battery & battery charger



CHARGING is an open-drain output that gets pulled low when the charger is active (charging the battery)

Switched power: 3.3v for SDCARD

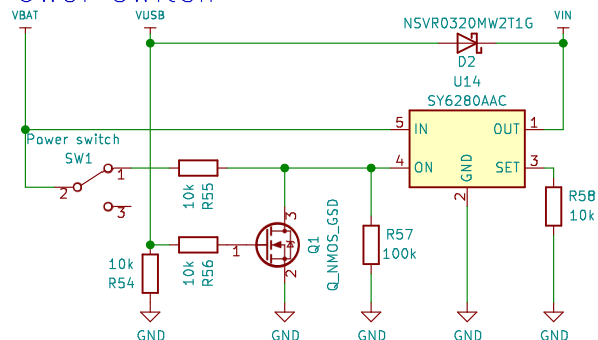
$I_{set} = 0.58A = 6800 / 10k\Omega m$



Note:

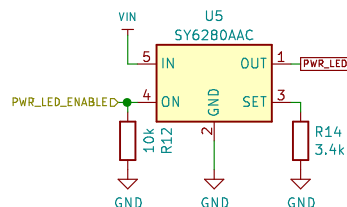
All control signals are hierarchical labels while all power rails are global

Power switch

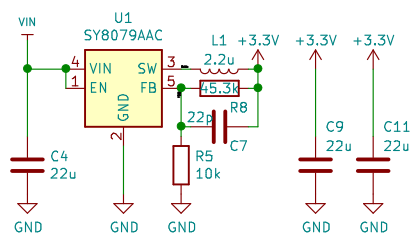


Switched power: Vin for LEDs

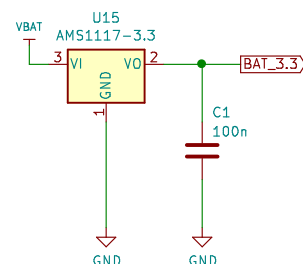
$I_{set} = 2A = 6800 / 3.4k\Omega m$



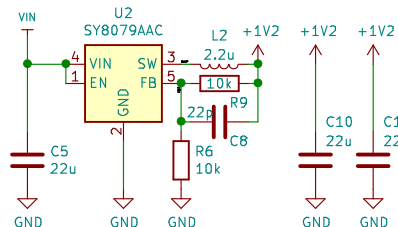
3.3v voltage regulator



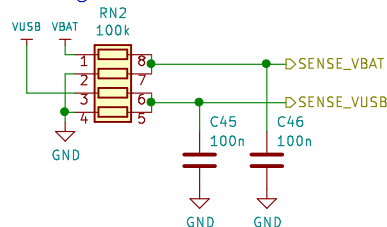
3.3v voltage regulator for RTC backup



1.2v voltage regulator



Voltage sensing



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Sheet: /POWER/

File: power.sch

Title: MCH2021 badge – Power management

Size: A4

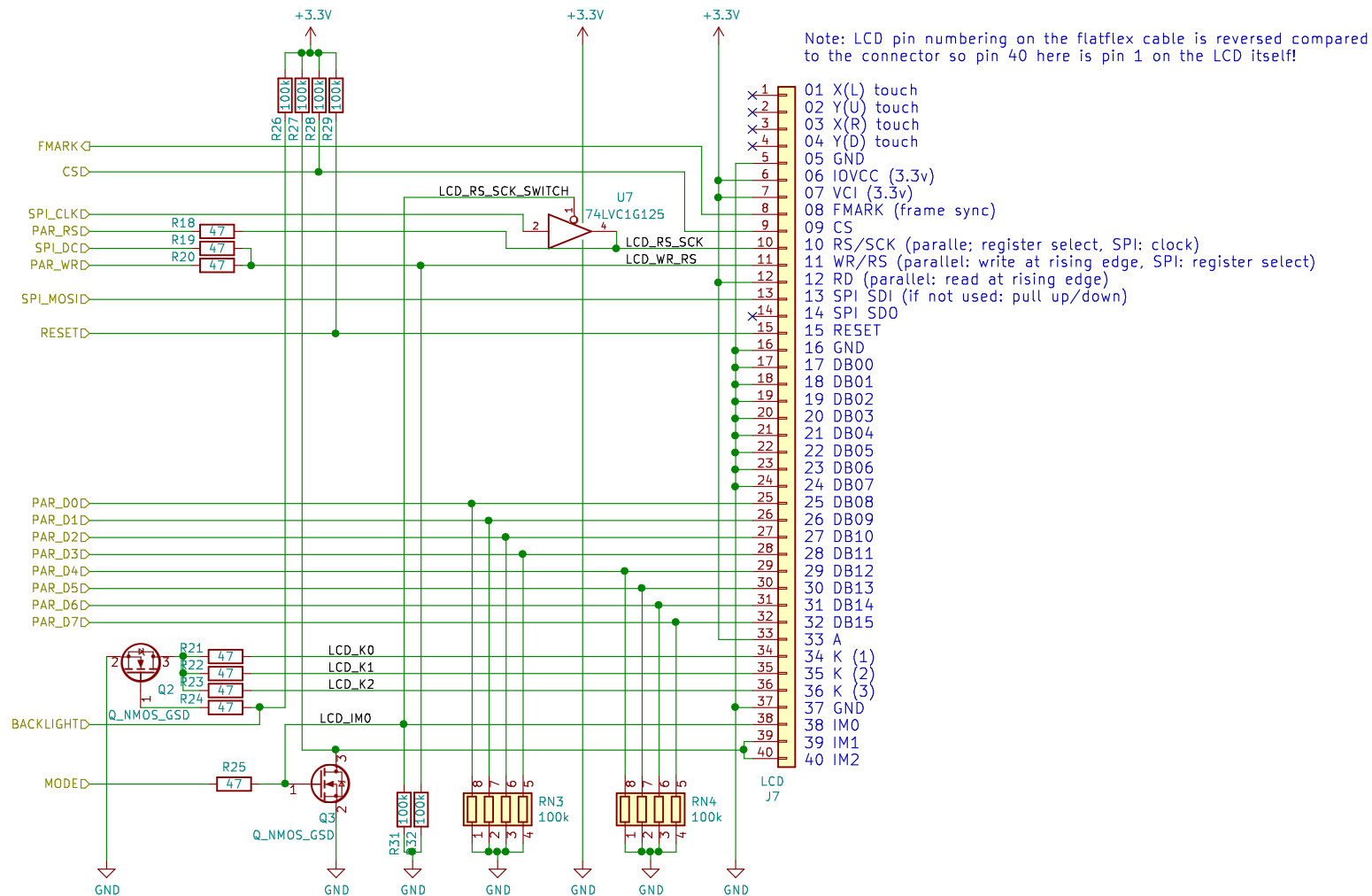
Date: 2020-11-29

Rev: 2

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Id: 2/9

LCD
Type: Z240IT008
Controller: ILI9341
Size: 2.4 inch



SPI: IM0 = 0, IM1 = 1, IM2 = 1
PAR: IM0 = 1, IM1 = 0, IM2 = 0

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Sheet: /LCD/

File: lcd.sch

Title: MCH2021 badge - LCD

Size: A4

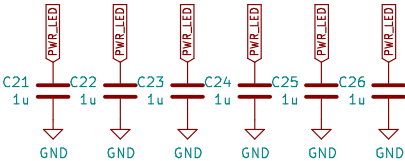
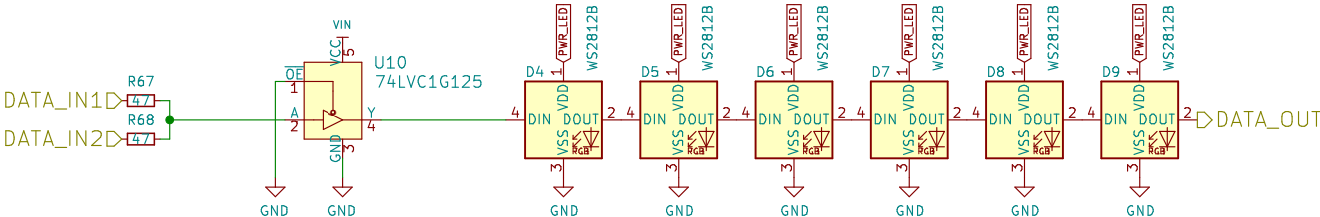
Date: 2020-11-29

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Rev: 2

Id: 3/9

WS2812B LEDs



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Sheet: /LED/
File: led.sch

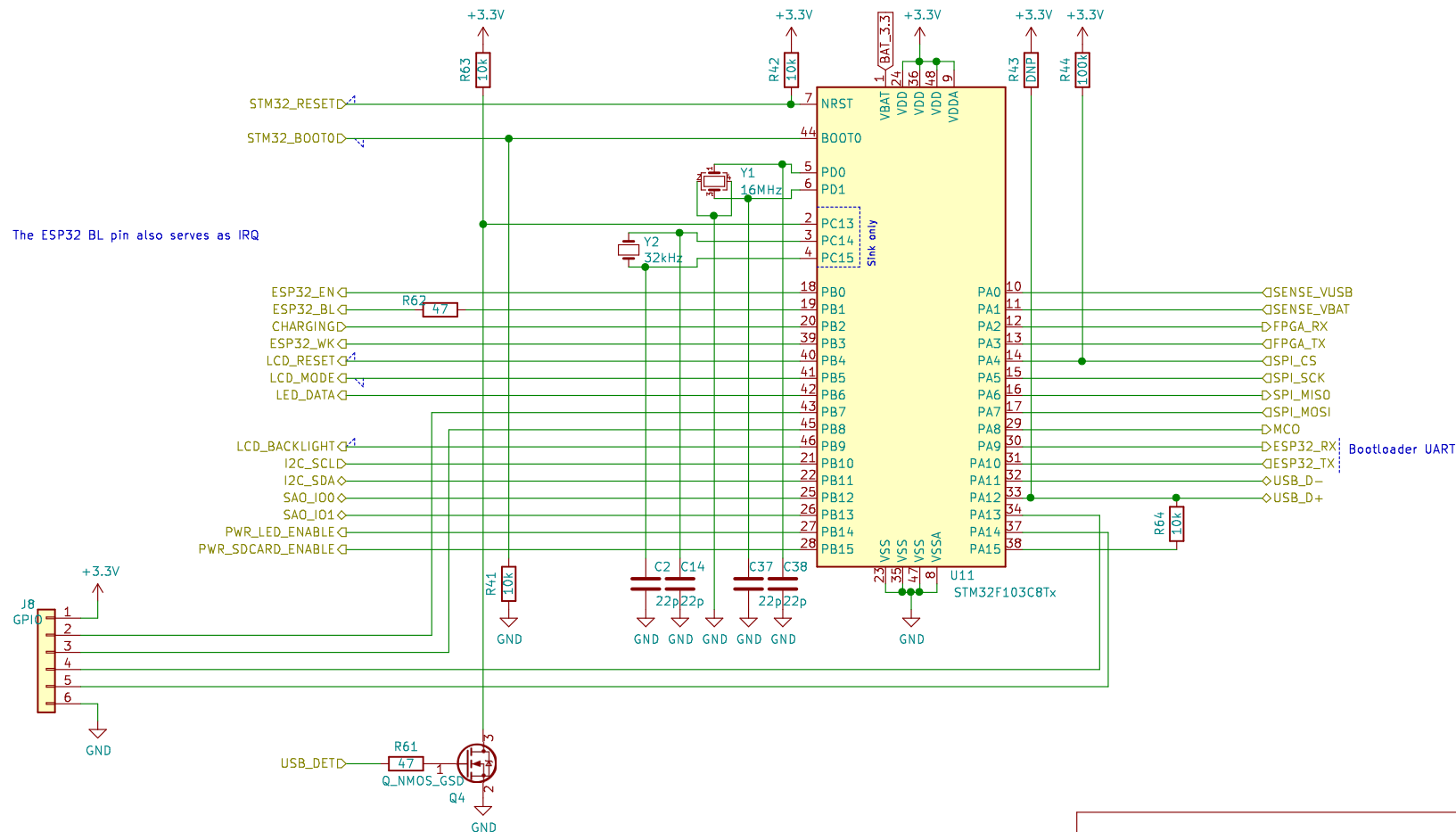
Title:

Size: A4
Date: 2020-11-29
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Rev: 2
Id: 4/9

STM32 microcontroller

The ESP32 BL pin also serves as IRQ



if using hardware time and the aproach of DMA > Timer Output
compare register you will need bridge pb15 and pb11 so we can
select or spi or tim

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Sheet: /STM32/

File: stm32.sch

Title: MCH2021 badge – STM32 microcontroller

Size: A4

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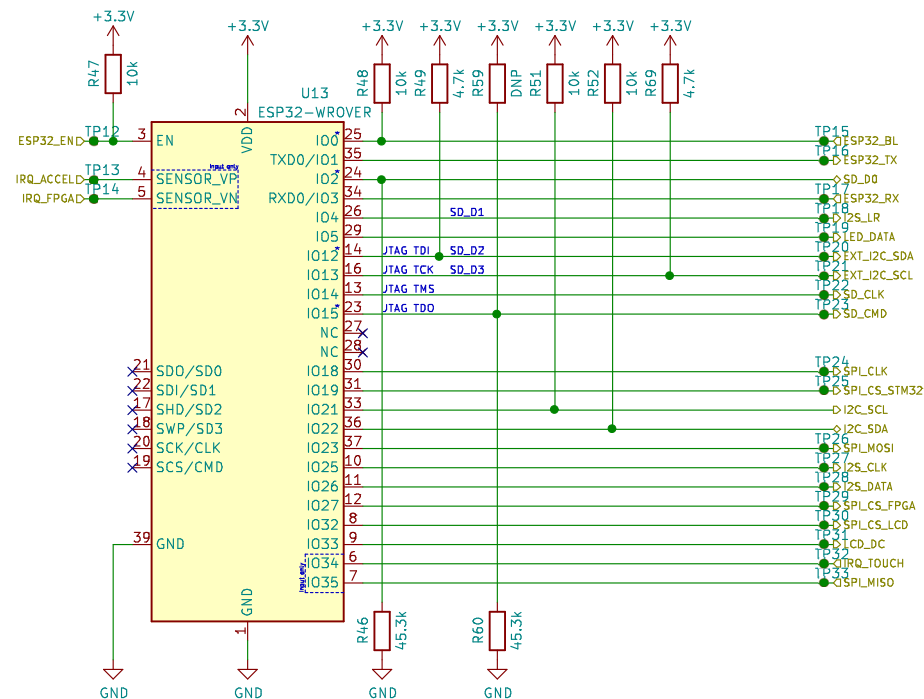
A



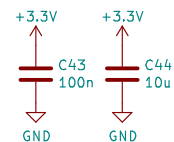
D

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ESP32 microcontroller



* Bootstrapping pins
 IO 0: Low for UART DL mode, pull high for normal boot
 IO 2: Pull down to select UART DL mode when GPIO 0 is LOW
 IO 12: Selects internal flash/ram voltage. Pull-up for 3.3v, pull-down for 1.8v
 IO 15: Pull down for silent bootloader



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Sheet: /ESP32/
 File: esp32.sch

Title: MCH2021 badge – ESP32 microcontroller

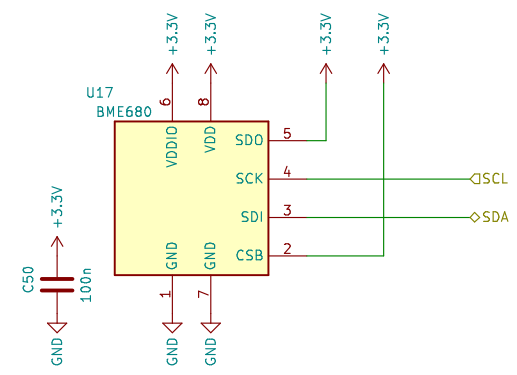
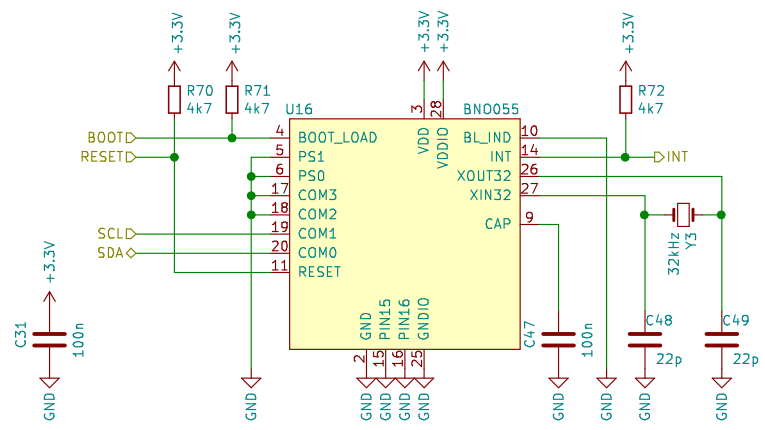
Size: A4 Date: 2020-11-29

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BOSCH BN0055 & BME680 SENSORS



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Id: 9/9	