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Microcontroller

The schematic diagram illustrates the electrical connections for an STM32F405RGT6 microcontroller. The central component, U2, is the STM32F405RGT6, shown with its pinout. Key connections include:

- Power Supply:** A +3V3 supply is connected to VDD pins (19, 22, 48, 64, 13). A decoupling network consists of capacitors C8 (4u7), C9 (100n), C11 (100n), C14 (100n), C16 (100n), and C17 (100n) connected to GND. A feedback capacitor FB1 (600@100MHz 500mA) is connected between the +3V3 supply and GND.
- Reset:** The NRST pin (7) is connected to a reset network consisting of a pull-up resistor R1 (10k) to +3V3 and a pull-down capacitor C1 (100n) to GND. The BOOT0 pin (60) is connected to GND via a 100nF capacitor (C10).
- Crystal Oscillator:** A 16MHz crystal Y1 is connected to pins PH0 (5) and PH1 (6). It is biased by a 47 ohm resistor R3 and has two 12pF load capacitors C12 connected to GND.
- I/O and Other Pins:** Various other pins are connected to GND or specific functions: PC0-PC15, SDIO_CMDD (54), SDIO_D0D (39), SDIO_D1D (40), SDIO_D2D (51), SDIO_D3D (52), SDIO_CKD (53), BARO_CS (2), IMU_CS (3), PC15 (4), VCAP_1 (31), VCAP_2 (47), PB2/BOOT1 (28), SW0 (55), SENS_SPI1_MISO (56), SENS_SPI1_MOSI (57), and SWCLK (49).

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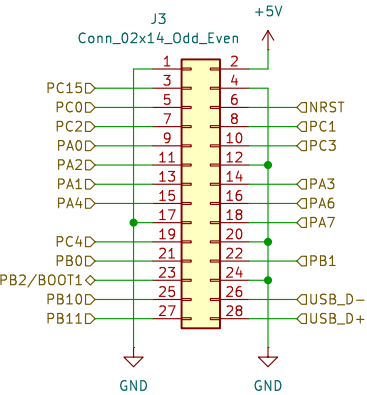
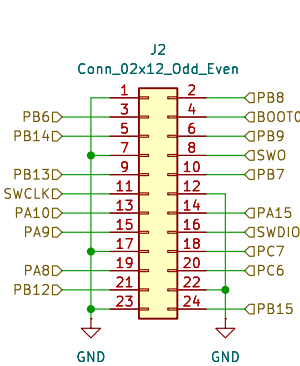
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Connectors



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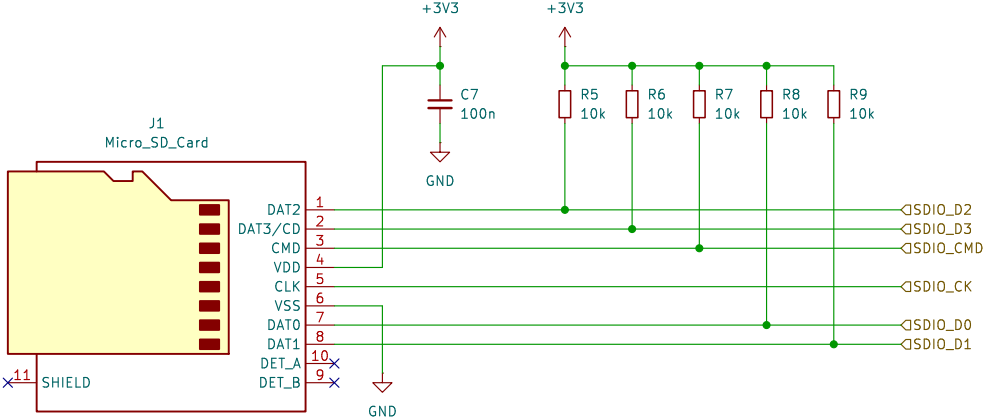
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Micro SD Card



Sheet: /uSD/
File: uSD.kicad_sch

Title:

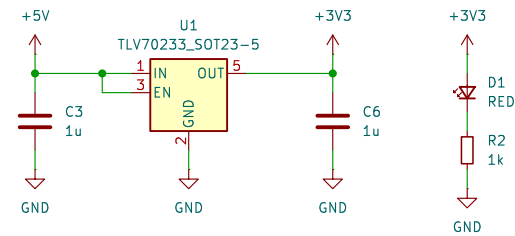
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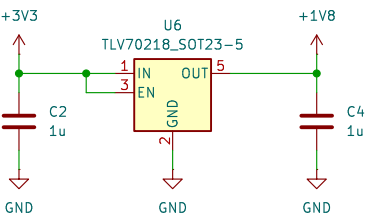
Power

5V to 3.3V for main power
300mA



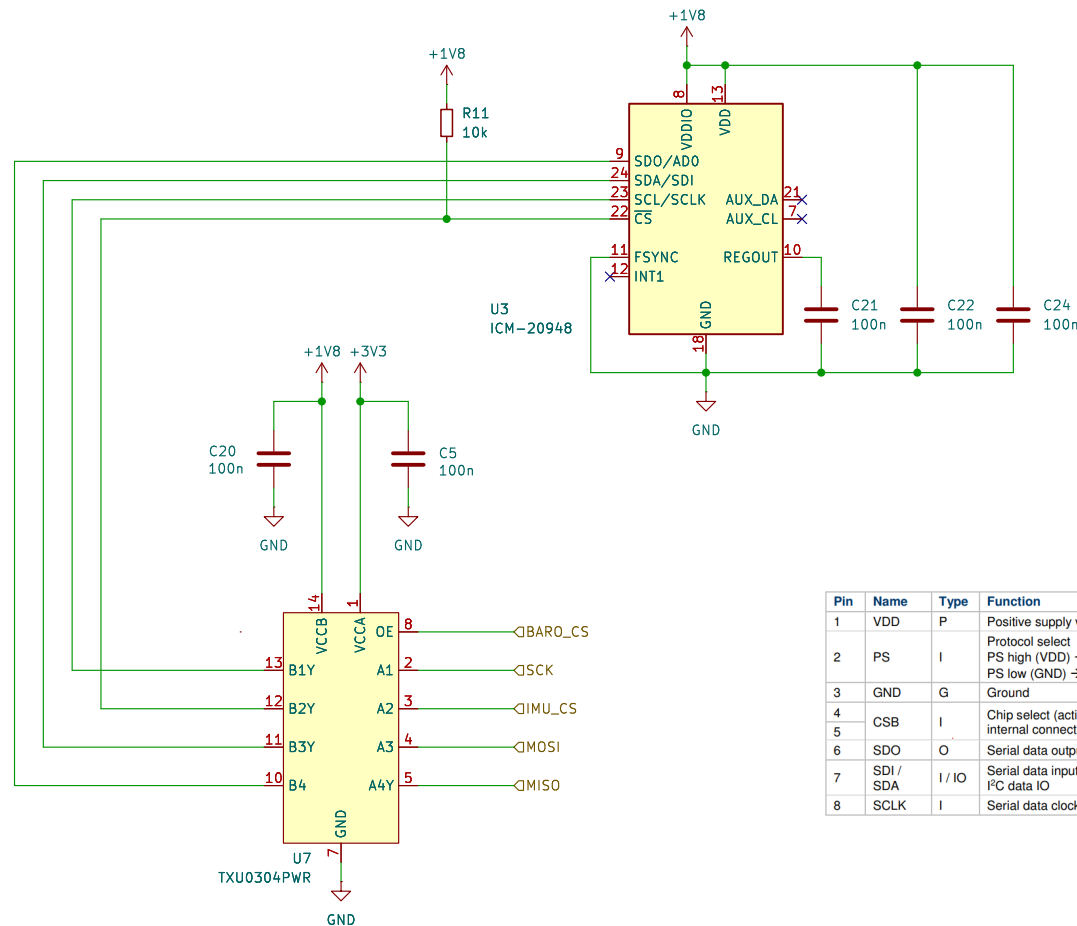
Estimated current draw:
MCU 100mA
uSD 100mA
200mA max

3.3V to 1.8V for IMU
300mA



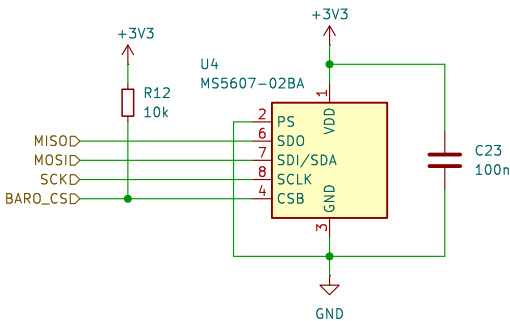
Sheet: /Power/ File: Power.kicad_sch		
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Sensors



Pin	Name	Type	Function
1	VDD	P	Positive supply voltage
2	PS	I	Protocol select PS high (VDD) → I ² C PS low (GND) → SPI
3	GND	G	Ground
4	CSB	I	Chip select (active low), internal connection
5	SDO	O	Serial data output
6	SDI / SDA	I / IO	Serial data input / I ² C data IO
7	SCLK	I	Serial data clock

PIN NUMBER	PIN NAME	PIN DESCRIPTION
7	AUX_CL	I ² C Master serial clock, for connecting to external sensors
8	VDDIO	Digital I/O supply voltage
9	AD0 / SDO	I ² C Slave Address LSB (AD0); SPI serial data output (SDO)
10	REGOUT	Regulator filter capacitor connection
11	FSYNC	Frame synchronization digital input. Connect to GND if unused
12	INT1	Interrupt 1
13	VDD	Power supply voltage
18	GND	Power supply ground
19	RESV	Reserved. Do not connect.
20	RESV	Reserved. Connect to GND.
21	AUX_DA	I ² C master serial data, for connecting to external sensors
22	nCS	Chip select (SPI mode only)
23	SCL / SCLK	I ² C serial clock (SCL); SPI serial clock (SCLK)
24	SDA / SDI	I ² C serial data (SDA); SPI serial data input (SDI)
1 - 6, 14 - 17	NC	Do not connect



When the barometer is enabled, BARO_CS is pulled low which sets the level shifter into high-Z state to prevent MISO conflict.

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