

A schematic diagram showing a 100Mil Jumper labeled J2. The jumper is a blue wire connecting two points. On the left, it connects to a red line labeled VREG. On the right, it connects to a red line labeled 5V. A third red line labeled VBUS is shown to the right of the jumper but is not connected to it.

The diagram shows a 5V regulator circuit. It features an SSM31328R,LF MOSFET (Q2) with its gate connected to VBUS and its source to GND. The drain of Q2 is connected to the anode of diode D3 (VS-30BQ015-M3-9AT). The cathode of D3 is connected to the anode of diode D4 (VS-30BQ015-M3-9AT). The cathode of D4 is connected to the output terminal, which is labeled 5V. A 10K resistor (R5) is connected between the output terminal and GND. The circuit is powered by VBUS and VREG.

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|---|--------------|---|--|
| Title <b>Wacky Hat Schematic</b>  |              | Group 17<br>ECE Department<br>University of Canterbury<br>Christchurch 8041 | Cannot open file<br>V:\Altium\Design<br>er\Templates\uc-<br>logo.png |
| Drawn by A. Finlayson, H. Pollard   | Revision: 1  |   |  |
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Pinout diagram for the ATSAM4S8BA-ANR microcontroller. The diagram shows the physical pins on the left, their internal functions in the middle, and external components and signals on the right.

**Left Side (Physical Pins and Components):**

- 3V3:** Power supply pin.
- GND:** Ground pins.
- C10, C11:** Decoupling capacitors (27pF).
- Y1:** 12MHz crystal.
- SWCLK, SWDIO:** Serial Wire Clock and Data Out pins.
- Annotation:** "Avoid PB4-5 for General I/O" (yellow box).

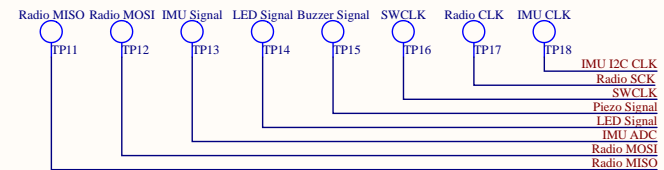
**Middle (Internal Functions):**

- USA:** JTAGSEL, TST, NRST, PB14/DAC1, PB13/DAC0, ERASE/PB12, DDP/PB11, DDM/PB10, XIN/PGMCK/PB9, XOUT/PB8, TCK/SWCLK/PB7, TMS/SWDIO/PB6, TDI/TRACESWO/PB5, TDO/PB4, PB3/AD7, PB2/AD6, PB1/AD5, PB0/AD4.
- ATSAM4S8BA-ANR:** ATSAM4S8BA-ANR.

**Right Side (External Components and Signals):**

- Radio CSN, Radio IRQ, LED Signal, STATUS1, STATUS0:** Radio and status signals.
- Joystick X axis, Joystick Y axis, VBATT Detection, IMU ADC:** Sensor signals.
- Piezo Signal, Radio SCK, Radio MOSI, Radio MISO, Power On/Off:** Radio and power management signals.
- IMU I2C CLK, IMU I2C DATA:** IMU I2C signals.
- USB Detect:** USB detection signal.
- Sleep:** Sleep signal.
- Need better calcs for Rs:** Note for the Sleep signal.

The diagram shows three input lines: **nRST**, **Sleep**, and **Power On/Off**. Each line is connected to a switch (S1, S2, S3) controlled by EVQPNF05M components. The switches are connected to a common output line that leads to GND.



- If you have high voltages or high currents use separate grounds for these as well. The grounds should all be tied back to the main ground point where power is supplied to the board. It is common practice to connect the grounds via 0 ohm resistors.
- Ensure that external interfaces are protected with a current limiting resistor or replaceable buffers.

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