



Arduino 101 User Manual



Programming:

The 101 can be programmed with the Arduino Software (IDE). Select "Arduino/Genuino 101" from the Tools > Board menu. For details, see the reference and tutorials.

The board comes preprogrammed with an RTOS that handles USB connection and allows you to upload new code without the use of an external hardware programmer. It communicates using the DFU protocol (reference).

Differences with other boards:

The 101 has some features in common with both UNO (connectors, available peripherals) and Zero (32bit microcontroller, 3.3V IO) but the low power Intel microcontroller, on-board BLE and motion sensors make it unique.

Firmware:

Your 101 board might receive an update of the firmware from time to time. The Arduino Software (IDE) will incorporate the latest Firmware and an automated update procedure from the "Burn Bootloader" menu item.

For people interested in compiling their own firmware, the source code and full details on how to use it are made available on the dedicated Intel's Download Page.

Power:

The 101 board can be powered via the USB connection or with an external power supply. The power source is selected automatically.

External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm center-positive plug into the board's power jack. Leads from a battery can be inserted in the GND and Vin pin headers of the POWER connector.

The power pins are as follows:

- VIN. The input voltage to the Arduino board when it's using an external power source (as opposed to 5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or if supplying voltage via the power jack, access it through this pin.
- 5V. This pin outputs a regulated 5V from the regulator on the board. The board can be supplied with power either from the DC power jack (7 - 12V), the USB connector (5V), or the VIN pin of the board (7-12V). Supplying voltage via the 5V or 3.3V pins bypasses the regulator, and can damage your board if it is not sufficiently regulated. We don't advise it.
- 3.3V. A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 1500 mA. This regulator also provides power to the Curie microcontroller.
- GND. Ground pins.
- IOREF. This pin on the Arduino board provides the voltage reference with which the microcontroller operates. A properly configured shield can read the IOREF pin voltage and select the appropriate power source or enable voltage translators on the outputs for working with the 5V or 3.3V.

Memory:

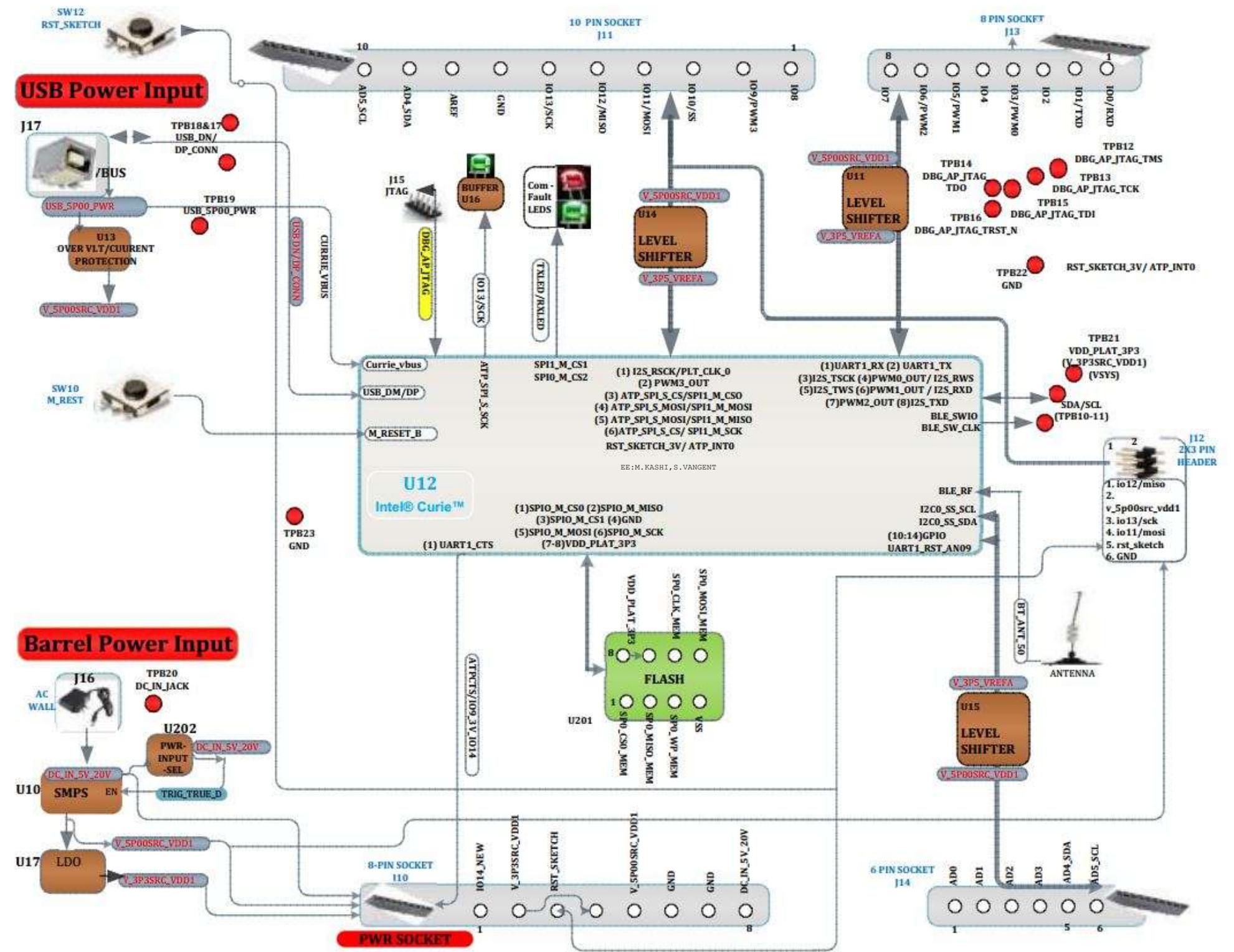
The Intel Curie module memory is shared between the two microcontrollers, so your sketch can use 196 kB out of 384 kB (flash memory) and 24 kB out of 80 kB (SRAM)

Input and Output:

Each of the 20 general purpose I/O pins on the 101 can be used for digital input or digital output using pinMode(), digitalWrite(), and digitalRead() functions. Pins that can be used for PWM output are: 3, 5, 6, 9 using analogWrite() function. All pins operate at 3.3 volts and can be used as interrupt source. See the attachInterrupt() function for details. Each pin can source or sink a maximum of 20 mA.

In addition, some pins have specialized functions:

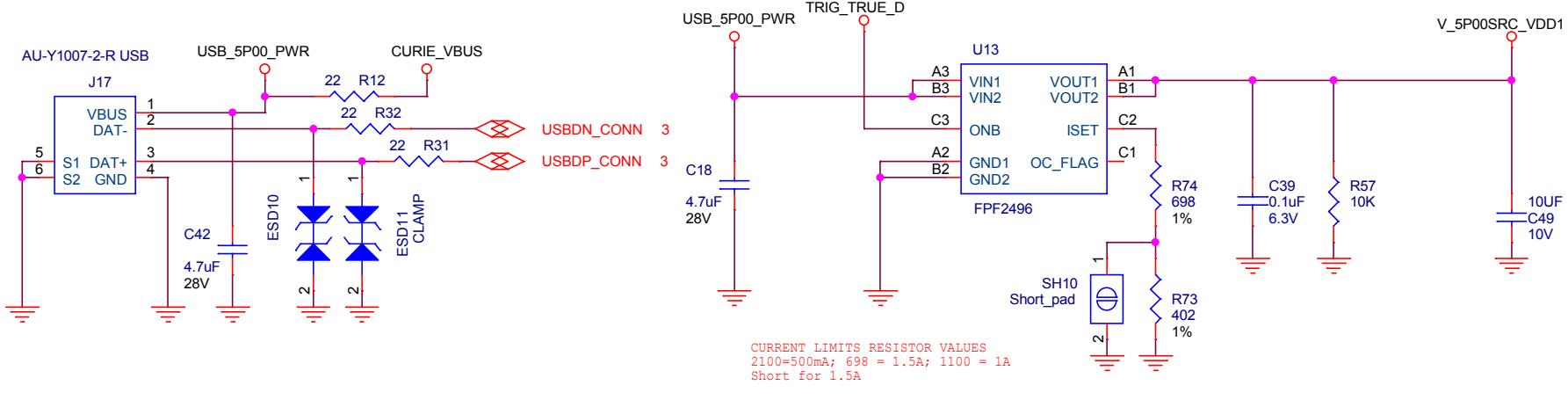
- Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the Serial1 class.
- External Interrupts on all pins. Can trigger an interrupt on a low value, high value, a rising or falling edge, or a change in value (change is only supported by pins 2, 5, 7, 8, 10, 11, 12, 13). See the attachInterrupt() function for details.
- SPI: SS, MOSI, MISO, SCK. Located on the SPI header support SPI communication using the SPI library.
- LED: 13. There is a built-in LED driven by digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off.
- Analog Inputs. Six of the 20 general purpose I/O pins on the 101 provide analog input. These are labeled A0 through A5, and each provide 10 bits of resolution (i.e. 1024 different values). They measure from ground to 3.3 volts
- TWI: SDA pin and SCL pin. Support TWI communication using the Wire library.



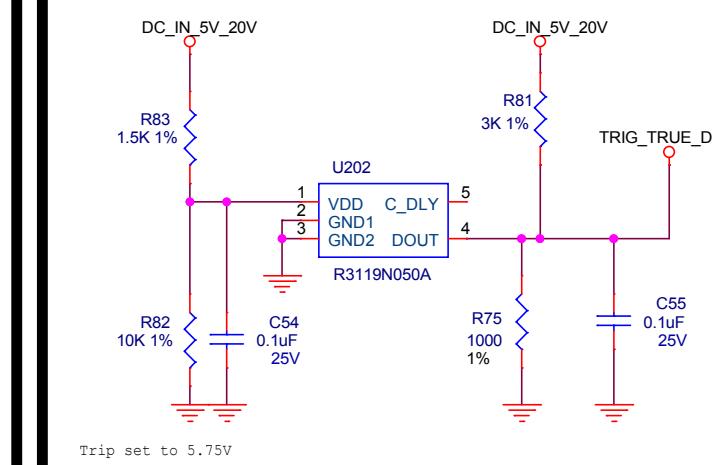
Intel® Curie™ Module Design Docu

This Intel® Curie™ module design document is licensed by Intel under the terms of the Creative Commons Attribution Share-Alike License (ver. 3), subject to the following terms conditions. The Intel Curie module design document IS PROVIDED "AS IS" AND "WITH ALL FAULTS." Intel DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED REGARDING THE INTEL CURIE MODULE DESIGN OR THIS INTEL CURIE MODULE DESIGN DOCUMENT INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Intel may make changes to the specifications, schematics, and product descriptions at any time, without notice. The customer must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to ENJOY!

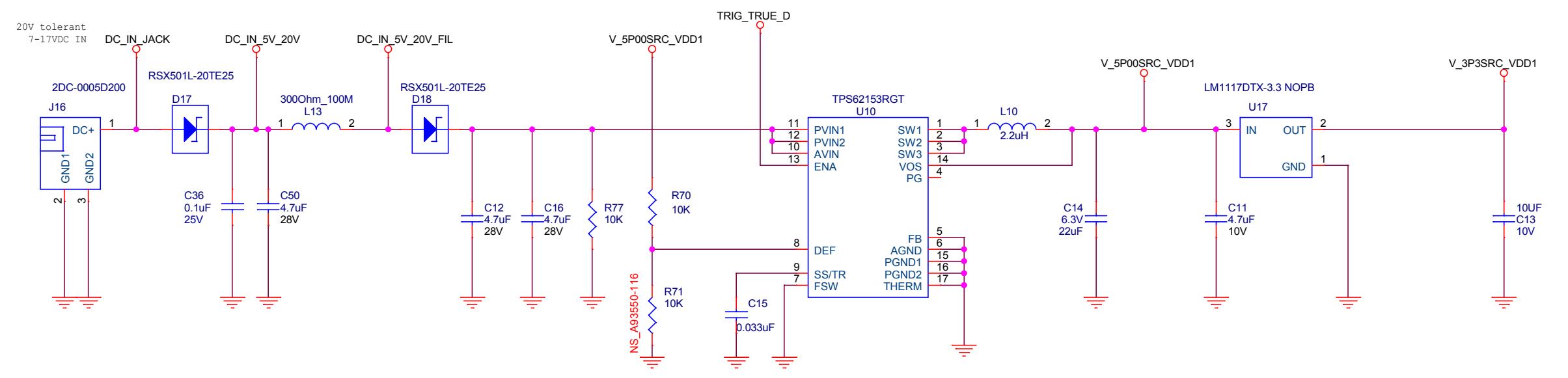
USB Power Input



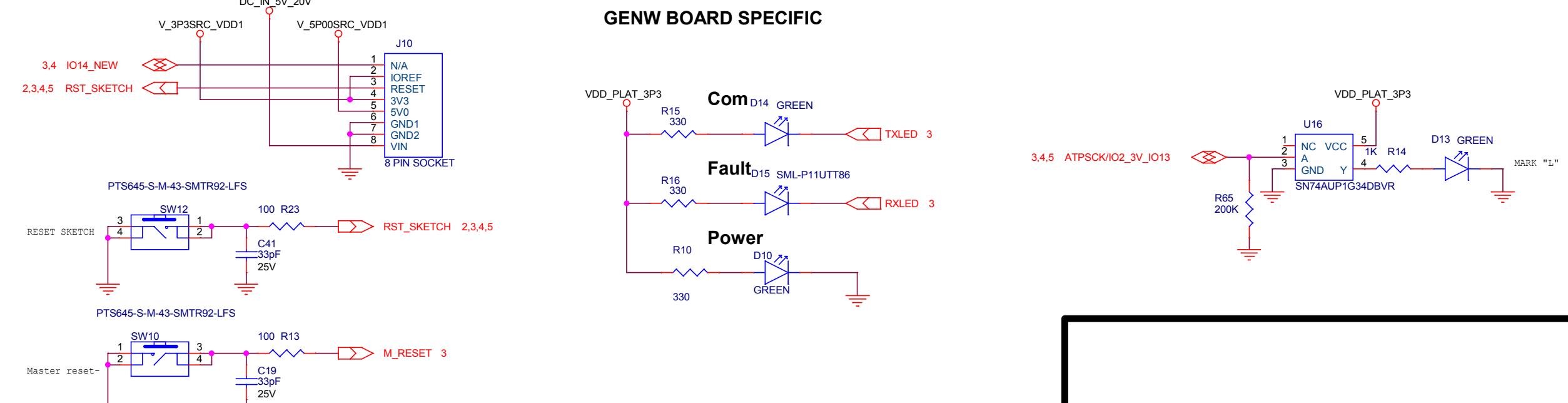
Power Input SEL



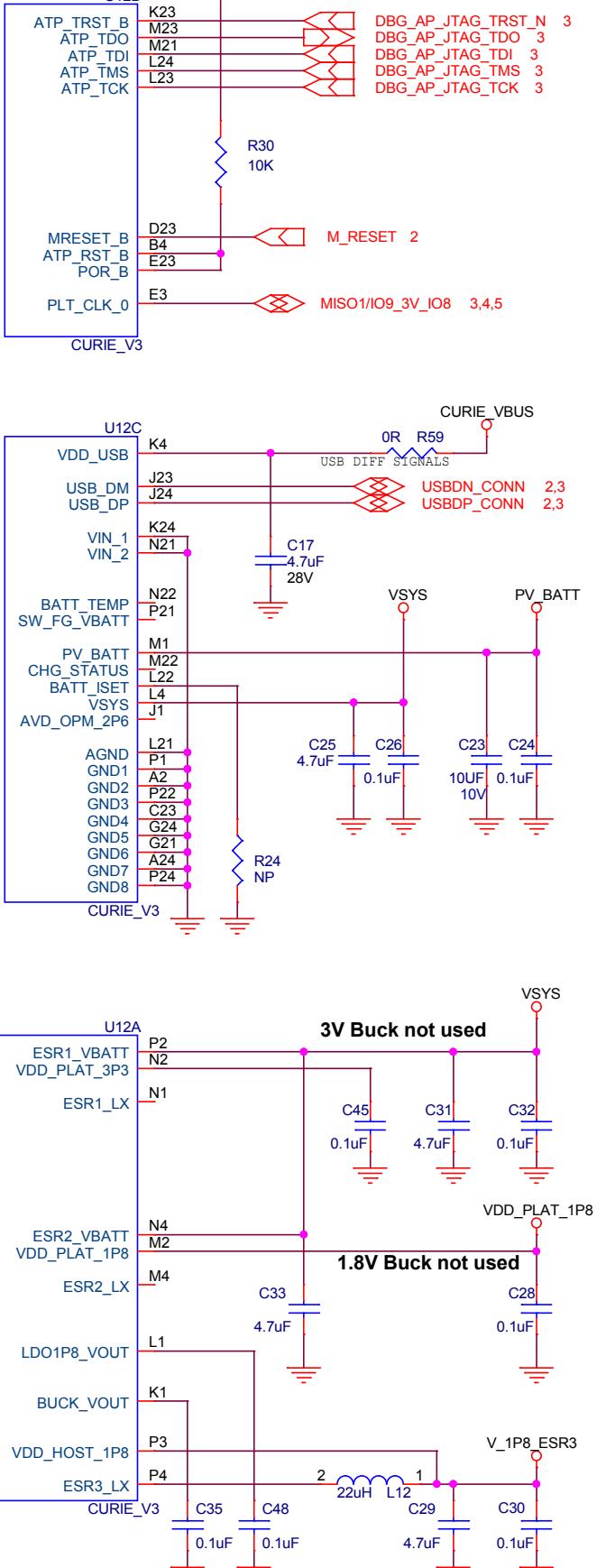
Barrel Power Input



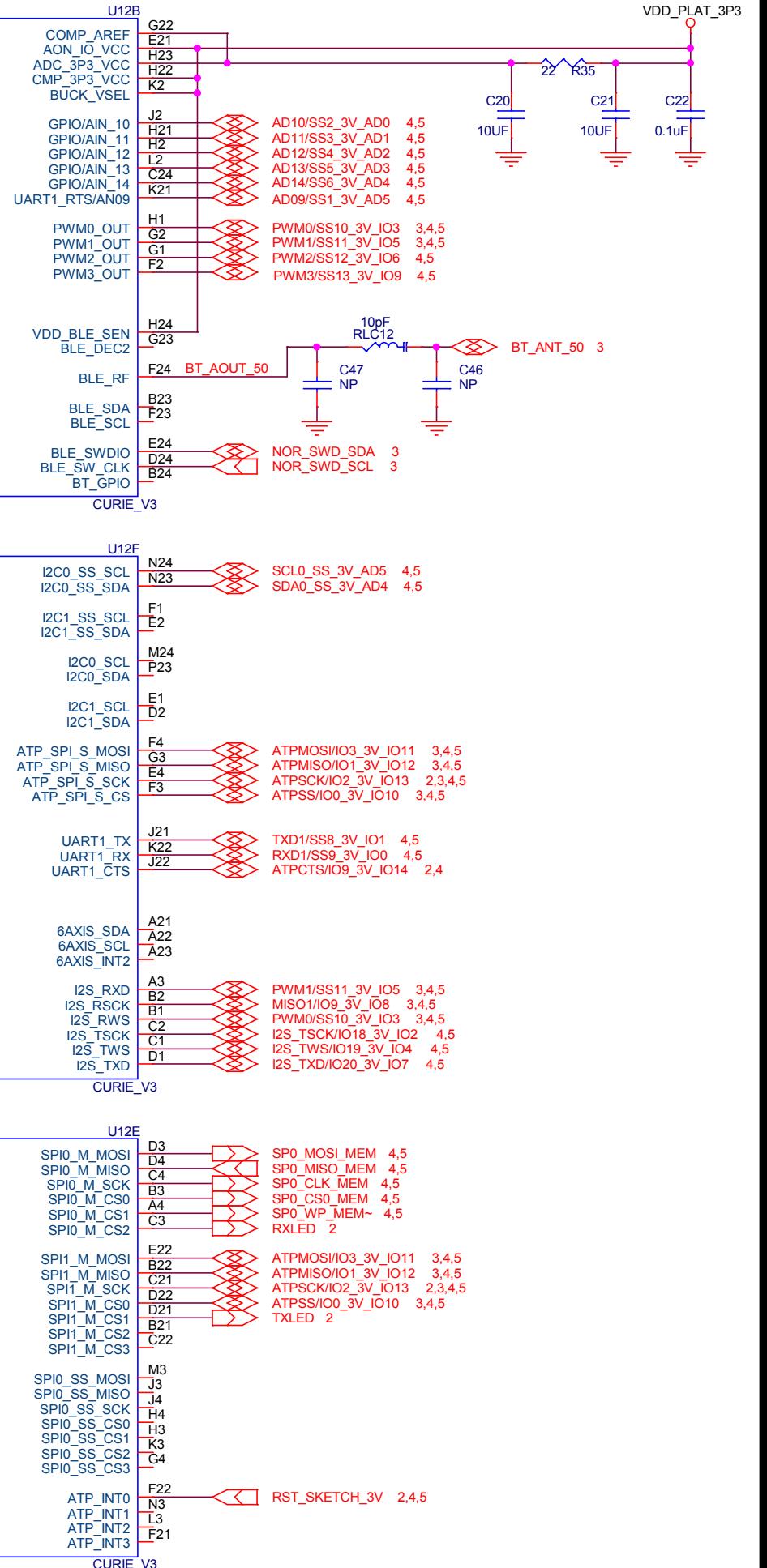
GENW BOARD SPECIFIC



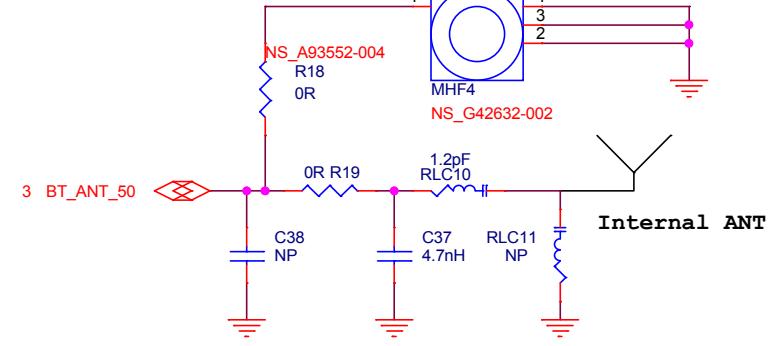
Power and reset



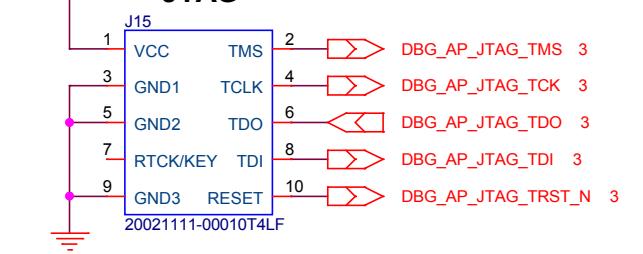
I/O



Antenna



JTAG

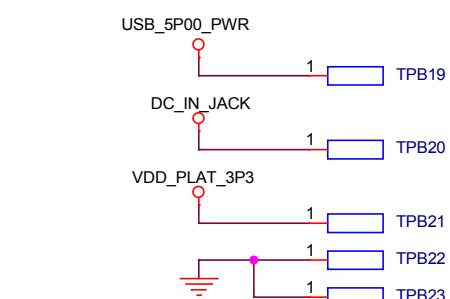


Test Points

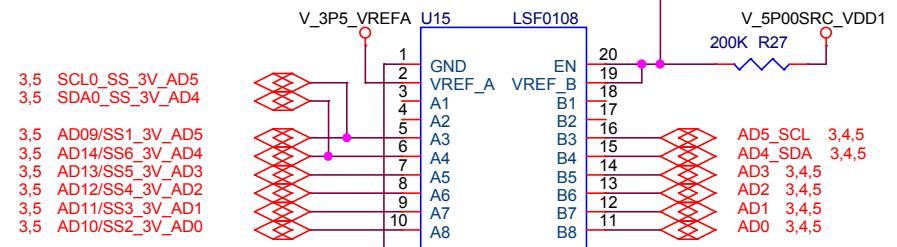
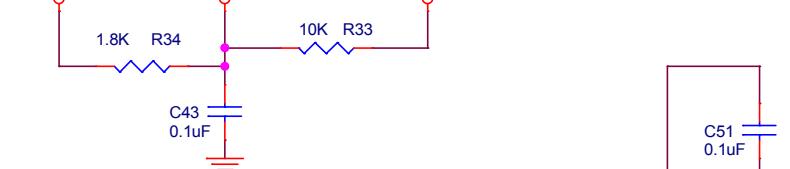
3 NOR_SWD_SDA → TPB10
3 NOR_SWD_SCL → TPB11

Test JTAG

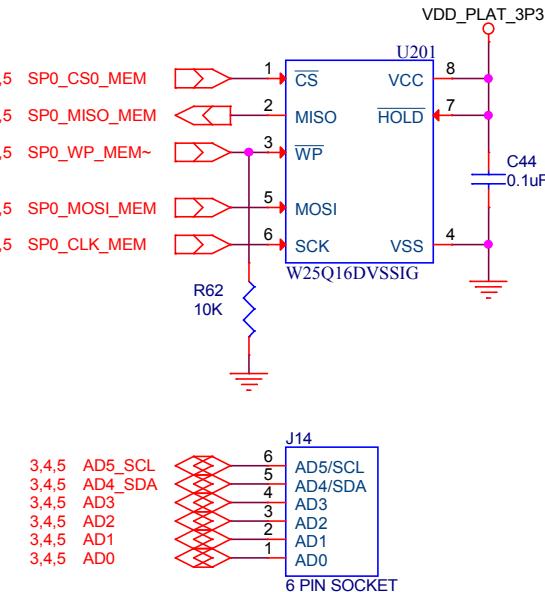
3 DBG_AP_JTAG_TMS → TPB12
3 DBG_AP_JTAG_TCK → TPB13
3 DBG_AP_JTAG_TDO → TPB14
3 DBG_AP_JTAG_TDI → TPB15
3 DBG_AP_JTAG_TRST_N → TPB16
2,3 USBNDN_CONN → TPB17
2,3 USBDP_CONN → TPB18



VDD_PLAT_3P3 V_3P5_VREFA V_5P00SRC_VDD1

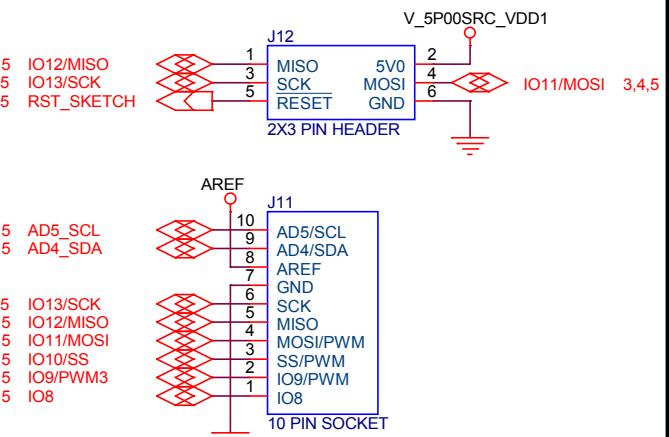


3,5 SCL0_SS_3V_AD5
3,5 SDA0_SS_3V_AD4
3,5 AD09/SS1_3V_AD5
3,5 AD14/SS6_3V_AD4
3,5 AD13/SS5_3V_AD3
3,5 AD12/SS4_3V_AD2
3,5 AD11/SS3_3V_AD1
3,5 AD10/SS2_3V_AD0



3,5 SP0_CS0_MEM
3,5 SP0_MISO_MEM
3,5 SP0_WP_MEM
3,5 SP0_MOSI_MEM
3,5 SP0_CLK_MEM
J14 6 PIN SOCKET
AD5_SCL 3,4,5
AD4_SDA 3,4,5
AD3 3,4,5
AD2 3,4,5
AD1 3,4,5
AD0 3,4,5

2,3,5 RST_SKETCH_3V
2,3 ATPCTS/IO9_3V_IO14
2,3,5 ATPSCK/IO2_3V_IO13
3,5 ATPMISO/IO1_3V_IO12
3,5 ATPMOSI/IO3_3V_IO11
3,5 ATPSS/IO0_3V_IO10
3,5 PWM3/SS13_3V_IO9
3,5 MISO1/IO9_3V_IO8



3,4,5 IO12/MISO
2,3,4,5 IO13/SCK
2,3,4,5 RST_SKETCH
3,4,5 AD5_SCL
3,4,5 AD4_SDA
2,3,4,5 IO13/SCK
3,4,5 IO12/MISO
3,4,5 IO11/MOSI
3,4,5 IO10/SS
3,4,5 IO9/PWM3
3,4,5 IO8

3,5 I2S_TXD/IO20_3V_IO7
3,5 PWM2/SS12_3V_IO6
3,5 PWM1/SS11_3V_IO5
3,5 I2S_TWS/IO19_3V_IO4
3,5 PWM0/SS10_3V_IO3
3,5 I2S_TSCK/IO18_3V_IO2
3,5 TXD1/SS8_3V_IO1
3,5 RXD1/SS9_3V_IO0

U11 LSF0108
GND VREF_A VREF_B EN 20
A1 B1 18
A2 B2 17
A3 B3 16
A4 B4 15
A5 B5 14
A6 B6 13
A7 B7 12
A8 B8 11
V_3P5_VREFA
V_5P00SRC_VDD1
200K R29
C53 0.1uF
J13 6 PIN SOCKET
IO7 3,4,5
IO6/PWM2 3,4,5
IO5/PWM1 3,4,5
IO4 3,4,5
IO3/PWM0 3,4,5
IO2 3,4,5
IO1/TXD 3,4,5
IO0/RXD 3,4,5
IO7 3,4,5
IO6/PWM 3,4,5
IO5/PWM 3,4,5
IO4 3,4,5
IO3/PWM 3,4,5
IO2 3,4,5
IO1/TXD 3,4,5
IO0/RXD 3,4,5

Intel® Curie™ Design Document

This Intel® Curie™ design document is licensed by Intel under the terms of the Creative Commons Attribution Share-Alike License (ver. 3), subject to the following terms and conditions. The Intel® Curie™ design document IS PROVIDED "AS IS" AND "WITH ALL FAULTS." Intel DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED REGARDING THE CURIE DESIGN OR THIS CURIE DESIGN DOCUMENT INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Intel® may make changes to the specifications, schematics and product descriptions at any time, without notice. The Customer must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel® reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.
ENJOY!