32 kHz Crystal

Calculation of crystal load capacitors:

\[ C_{\text{ext}} = 2 \times (C_{\text{crystal}} - C_{\text{para}} - C_{\text{pcb}}) = 6.7 \text{pF} \]

\[ C_{\text{pcb}} = 0.5 \text{pF} \text{ (estimate)} \]

\[ C_{\text{para}} = 3.15 \text{pF} \text{ (from MCU datasheet)} \]

\[ C_{\text{crystal}} = 7.0 \text{pF} \text{ (from crystal datasheet)} \]

By default these straps are closed and nothing is mounted on the XOUT signal in order to measure the oscillator allowance. The ADC can measure a maximum of 2.7V when using an external reference.
Arduino Zero can be powered from three sources:
- External voltage, SAM D21 USB and EDBG USB.
- The table above shows the states of Q200 and Q201 according to Vin and the #USB_HOST_ENABLE signal. When #USB_HOST_DISABLE is low Q201 is open and power will be supplied to the USB connector.
- Note that current can still flow from USB ports through the internal diode in the FETs to power the Arduino Zero.

Note that when Q200 and Q201 are closed, current can still flow from USB ports through the internal diode in the FETs to power the Arduino Zero.
Connect the test points during startup of the SHIELD to force it into bootloader mode. The test points should be covered with solder so that it is easier to get a good contact.

The EDBG is a full programmer and debugger designed to be integrated into toolkits. This sheet contains the Atmel Embedded Debugger (EDBG).

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