

# Atmega32U4, Micro USB

The diagram illustrates the circuit for an Atmega32U4 microcontroller connected to a Micro USB module. The microcontroller (U1) is an ATMEGA32U4-MU. The circuit includes a 16MHz crystal (Y1) with 18pF capacitors (C8, C7) for clocking. A 0.1µF capacitor (C9) is connected to the AREF pin. A 10kΩ resistor (R3) is connected to the RESET pin. A 1µF capacitor (C10) is connected to the GND pin. A 1µF capacitor (C1) is connected to the VCC pin. A 10kΩ resistor (R4) is connected to the D+ pin. A 500mA fuse (F1) is connected to the VCC pin. The USB module (J1) is connected to VCC, GND, D+, and D-. The diagram also shows a 10118193-0001LF USB module and a 67997-206HLF USB module.

# Hall Effect Sensors

The image displays six individual circuit diagrams for Hall effect sensors, labeled Hall1 through Hall6, and three sensor headers labeled J3, J4, and J5.

**Individual Sensor Circuits (Hall1 to Hall6):**

- Hall1:** VCC is connected to a 10 kOhms resistor (R5) and the base of transistor T1. The other end of R5 is connected to the Hall1 input. The emitter of T1 is connected to GND. The collector of T1 is connected to the VCC pin of a yellow box labeled "VCC GND OUT" and "Header 3". A 0.1  $\mu$ F capacitor (C1) is connected between the base and emitter of T1.
- Hall2:** Similar to Hall1, but with components R6, T2, C12, and output T2.
- Hall3:** Similar to Hall1, but with components R7, T3, C13, and output T3.
- Hall4:** Similar to Hall1, but with components R8, T4, C14, and output T4.
- Hall5:** Similar to Hall1, but with components R9, T5, C15, and output T5.
- Hall6:** Similar to Hall1, but with components R10, T6, C16, and output T6.

**Sensor Headers (J3, J4, J5):**

- J3:** A 3-pin header with pins 1, 2, and 3. Pin 1 is connected to the VCC output of Hall1. Pin 2 is connected to the GND output of Hall1. Pin 3 is connected to the OUT output of Hall1.
- J4:** A 3-pin header with pins 1, 2, and 3. Pin 1 is connected to the VCC output of Hall2. Pin 2 is connected to the GND output of Hall2. Pin 3 is connected to the OUT output of Hall2.
- J5:** A 3-pin header with pins 1, 2, and 3. Pin 1 is connected to the VCC output of Hall3. Pin 2 is connected to the GND output of Hall3. Pin 3 is connected to the OUT output of Hall3.

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