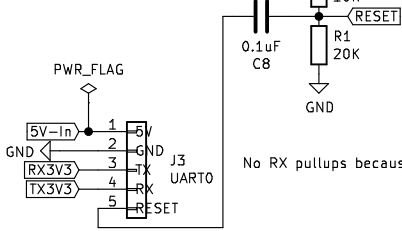


22pF based on CL of 16pF from AB308 and 5pF parasitic

This modem must use >= 4.0V and 16MHz. Must use 500,000 bps for fast transmit. 115,200 bps is not accurate at this frequency.

Implement Arduino reset protocol  
Convert DTR down into a short pulse

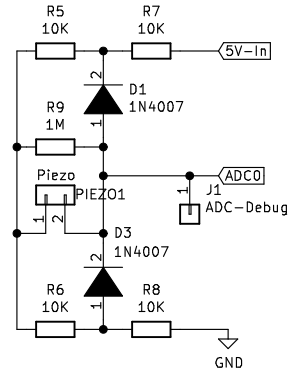
Use resistor ladder to generate 3V3



No RX pullups because we don't have 3V3 for the other side.

5-pin female plug to use as a peripheral. Must flip here to connect to the UART host. Cannot be programmed from here without an inverter adapter.

<https://electronics.stackexchange.com/questions/707747/is-this-a-good-circuit-for-connecting-a-piezo-disc-sensor-to-a-microcontroller>  
ADC protection circuit from piezo spikes. use 1N4007 and not Schottky



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<https://www.waynepiekarski.net/projects/hydro-modem.htm>

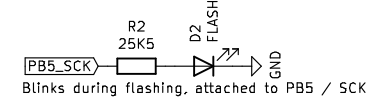
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File: design.sch

**Title: HydroModem - Piezo Audio Modem ATmega328p 5V 16MHz**

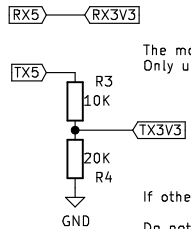
Size: USLetter Date: 2025-03-15  
KiCad E.D.A. eeschema 5.1.12

Rev: v1  
Id: 1/1



Blinks during flashing, attached to PB5 / SCK

Incoming 3V3 UART works without conversion



The modem runs with 5V assuming a regulated supply. Only use 3V3 output UART voltages to protect the other side which runs with 3V3.

If other side has 10K pullup, then need low-enough resistance to maintain 3V3.

Do not use UART pullups on either side, no noise when connected together. Allows lower power wasted.

5V over 3\*1K = 1.67 mA  
5V over 3\*10K = 0.167 mA

Estimate is 7mA for atmega328p modem, so 1.67 mA is too high!