

It is desirable for CLK_IN to be on an odd-numbered GPIO so that it can be PWM 'B' input and used for 'no clock' detect

Console serial port
Pinout to suit FTDI cable TTL-232R-3V3 with 6th pin (RTS) hanging over the end

This terminator circuit attempts to provide the usual 100R AC termination to both clock and data pairs, while biasing the data pair to logic '1' when undriven. It has lower power consumption compared to the classic Acorn powered terminator.

This low current means it can be powered directly from a GPIO and so draws no current at all when termination is not required.

Using an active-high TERM_EN and the SEL line on the analogue switch (rather than using the nOE pin which would require an active-low enable) ensures the circuit is inactive at power-up.

The small capacitor C9 ensures that the line sees 100R AC impedance for fast edges. The schottky diode in parallel with C9 avoids the capacitor becoming significantly reverse-charged when the line is driven to a '0' state by a station (as it would otherwise take a relatively long time to recharge back to the bias condition if the line goes directly idle from a zero - which is the common case at the end of a packet). Similar reverse charging was in fact a defect of the original Acorn design (where the much larger capacitors used could be reverse-charged during a long packet of all zero-bits and take many bit-times to recover), and is not in fact a serious problem as it simply wastes time between packets waiting for the idle line.

The other diode of the pair prevents back-driving of the GPIO in fault conditions such as D+ driven to +5V but D- open-circuit. Should be forward-biased under all normal conditions.

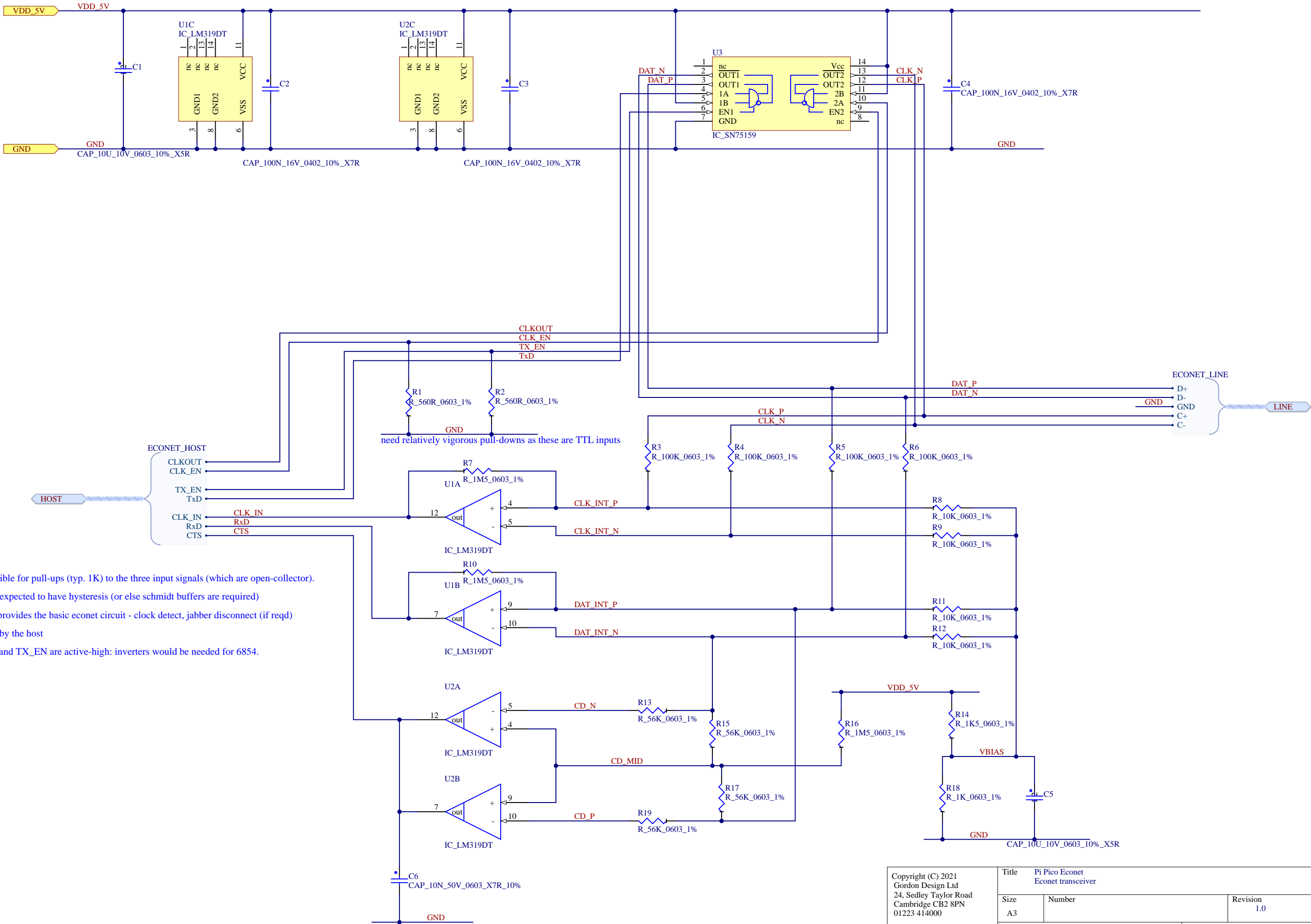
Since the circuit is now powered at 3V3 (GPIO '1' voltage) rather than 5V, R24/R30 are symmetric rather than the 220R/100R of the original Acorn terminator.

Pulldown on Tx_EN/CLK_EN on other sheet.
Pullups needed on CLK_IN/RxD/CTS as they are driven open-collector

Relying on RP2040 pin pull-ups for SD pins

NB. C suffix part number on this chip gives high impedance when powered down.

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Host is responsible for pull-ups (typ. 1K) to the three input signals (which are open-collector).
Inputs are also expected to have hysteresis (or else schmidt buffers are required)
This page just provides the basic econet circuit - clock detect, jabber disconnect (if reqd)
to be provided by the host
Note that CTS and TX_EN are active-high: inverters would be needed for 6854.

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