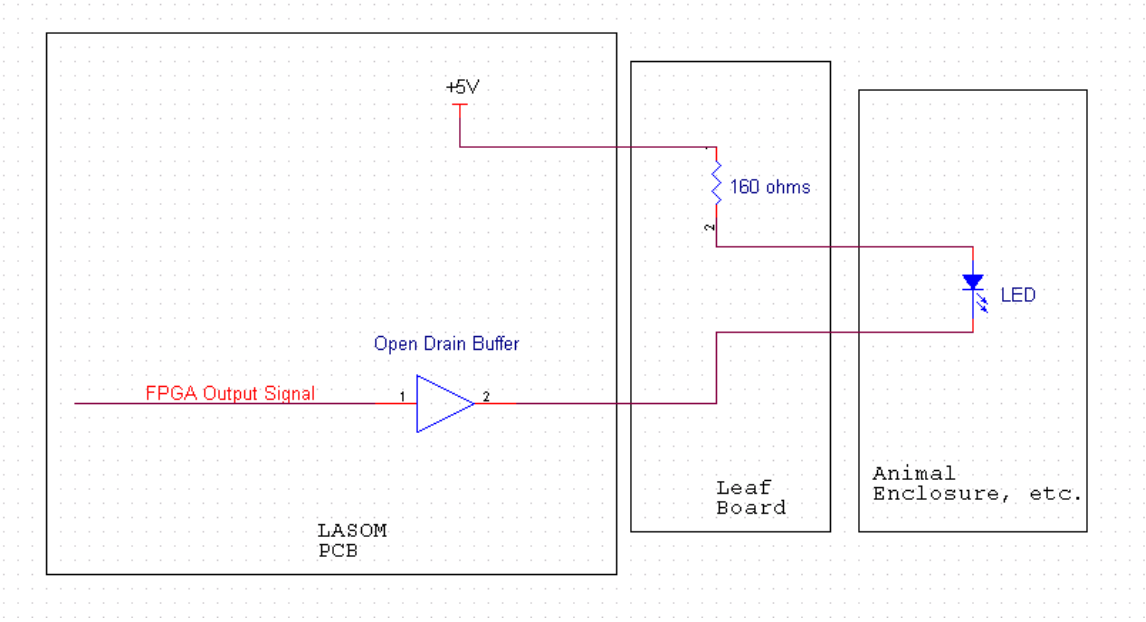
LeafOutput.doc

The LASOM Leaf boards provide output circuits intended to drive an LED.
The overall circuit is distributed over three locations as shown here:



The open drain buffer (SN74LVC3G06) switches between two states:

Low – the buffer output sinks current through the LED to ground. The bottom of the LED is a ‘low’.
High – the buffer output is high impedance, no current flows, both pins of the LED are near +5V, a ‘high’.

If the LED is removed from the circuit, the open drain buffer has no output pull up. The output state when the input is high will be indeterminate.

The buffer can sink or drive 50 mA. If the LED voltage drop is 2V, then the resistor voltage drop is about 3V, so the current through LED, resistor, and buffer output stage is about 20 mA.

If the LED is replaced with a short circuit, the resistor and buffer output stage current is about 31 mA, which is within the capacity of the buffer.