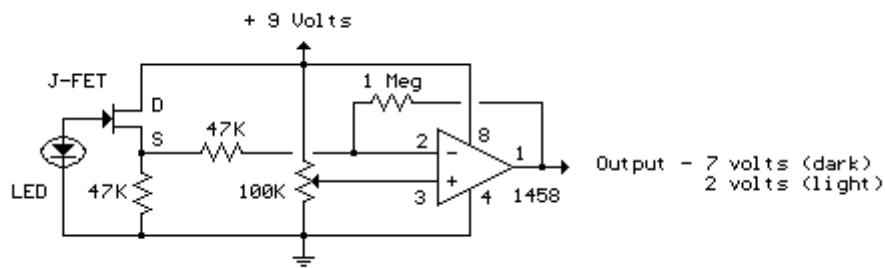


1: LED Photo Sensor Switch.

Bill Bowden

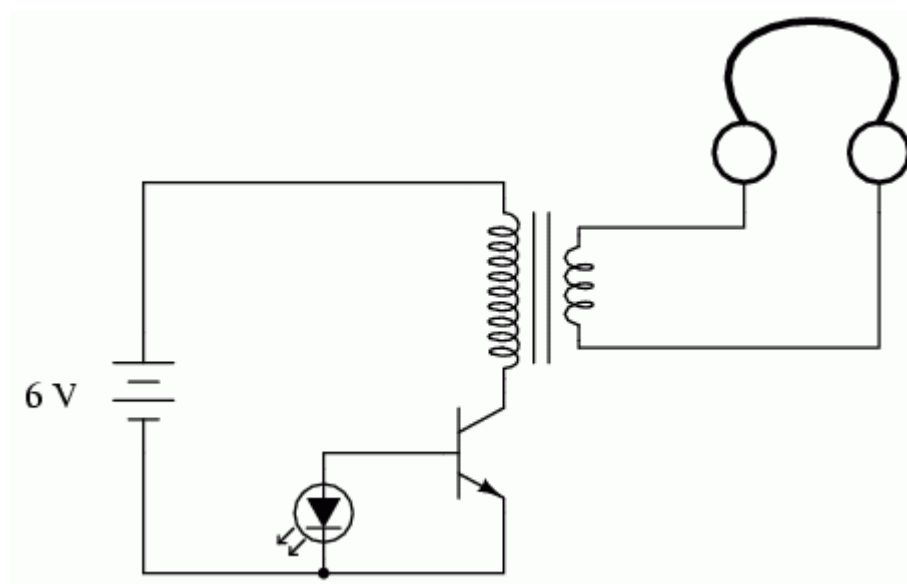
Here's a circuit that takes advantage of the photo-voltaic voltage of an ordinary **Red LED**. The LED voltage is buffered by a junction FET transistor and then applied to the inverting input of an op-amp with a gain of about 20. This produces a change of about 5 volts at the output from darkness to bright light. The 100K potentiometer can be set so that the output is around 7 volts in darkness and falls to about 2 volts in bright light.



2: LED Photo Sensor Audio Output.

Here's a circuit that takes advantage of the photo-voltaic voltage of an ordinary **Red LED**. The LED voltage varies in accordance with the ambient light conditions.

This light dependent Voltage is buffered by a small signal Transistor and forms a Light dependent Audio oscillator in conjunction with a standard Audio transformer.



3: LED Photo Sensor Tiny13.

Here's a circuit that takes advantage of the photo-voltaic voltage of an ordinary **Red LED**. The LED voltage varies in accordance with the ambient light conditions. This Voltage is measured by the Tiny13 using the Adc2 Mux line.

The internal 1.2 Volt Analog Voltage Reference is used and the nominal Red Led Max Voltage drop of Approx 1.2 Volt sits nicely within the A2D Voltage range.

The Red Led output Voltage is directly proportional to the amount of incident light which falls upon it and the 10 Bit A2D value corresponds to the Input Voltage according to the following formula:

$$\text{Digital Value} = \text{Input Voltage} * 1.2 \text{ Volt} / 1024$$

The A2D is read and averaged over 256 samples and the resultant 16 bit Word is transmitted to the Host over a Simlex link (**1 Start: 8 Data:1 Stop: No Parity Bits**) @ 9600 Bps. A **Max232** Transceiver chip can be used as a level translator if so desired.

The 9.6 Mhz internal Clock is selected by burning the appropriate fuse and with fine adjustment of the software Delay Constant **BitDelay** should be stable enough for the Data transmission

Any problems and suggestions with this Circuit ? Let me know !

ullasmann@vype.de

