



ENGS152 Circuits Lab

OpAmp Circuits - Part 2

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Step 1: Current to voltage converter

The current ranges from $0 - 1\text{mA}$, hence a $10\text{k}\Omega$ resistor was chosen ($V_{\text{out}} = -I_{\text{in}}R$).

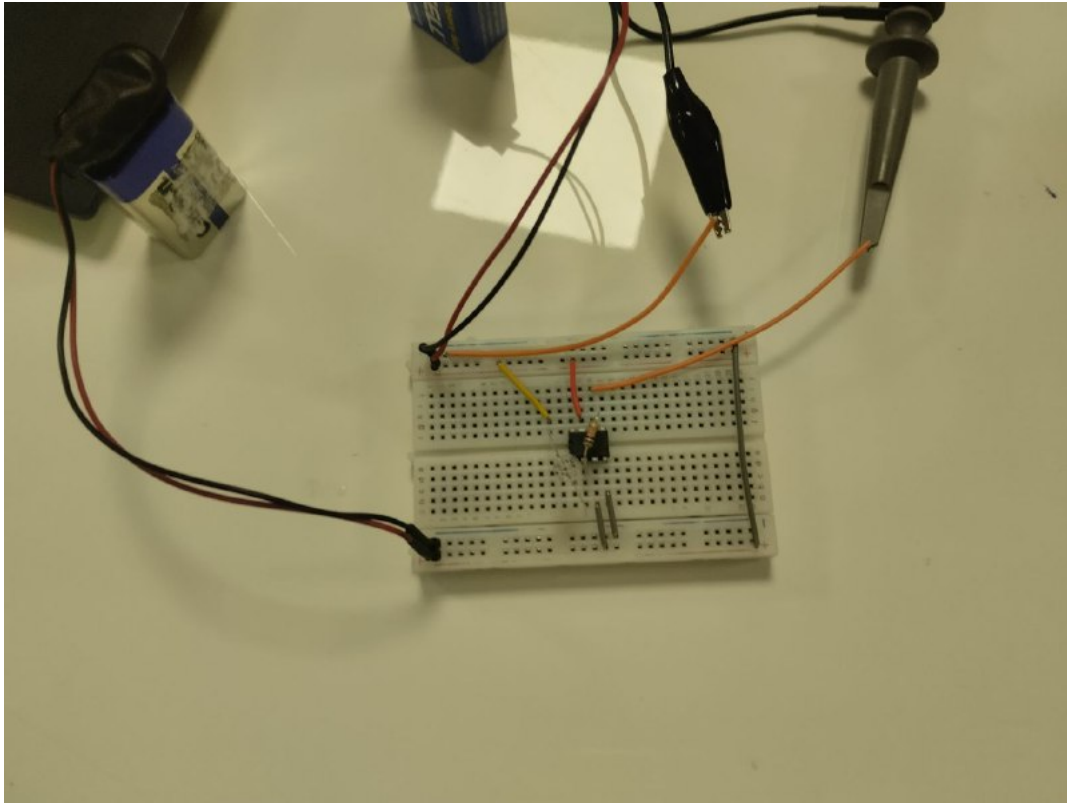


Figure 1: Phototransistor connections

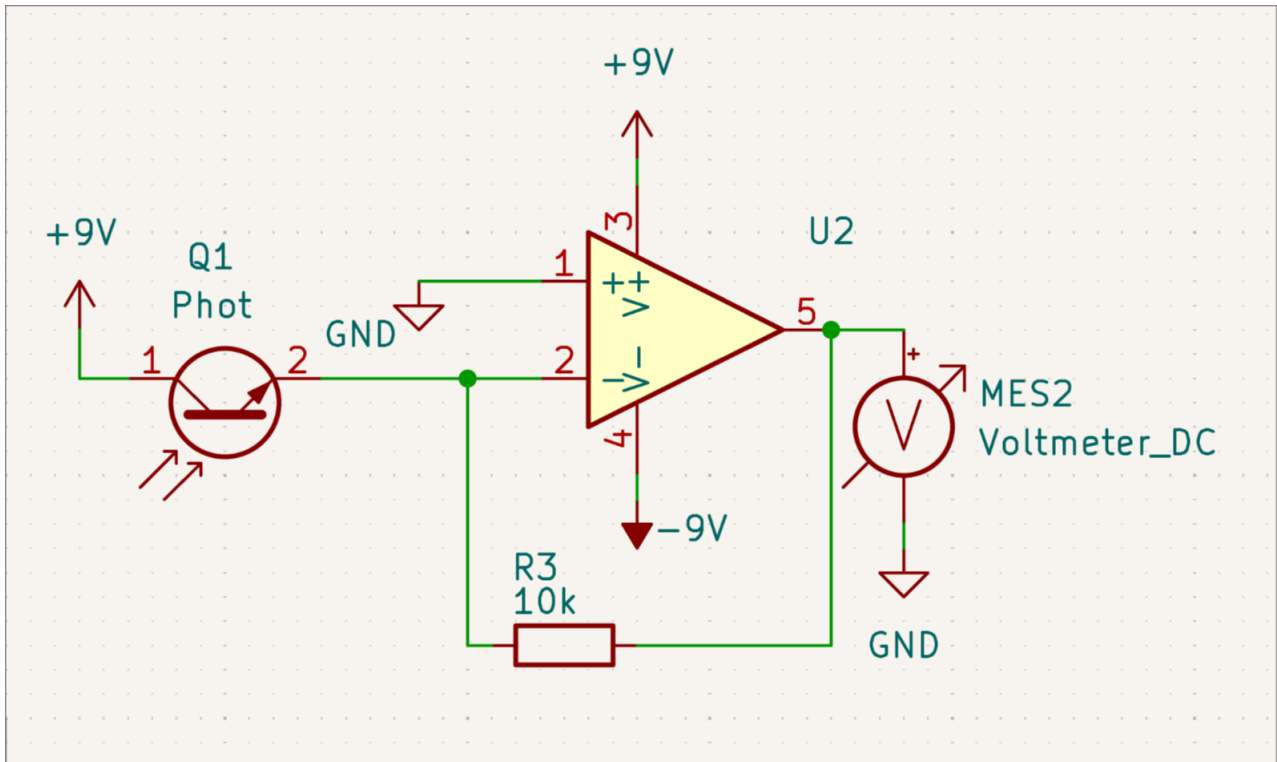


Figure 2: Phototransistor schematic

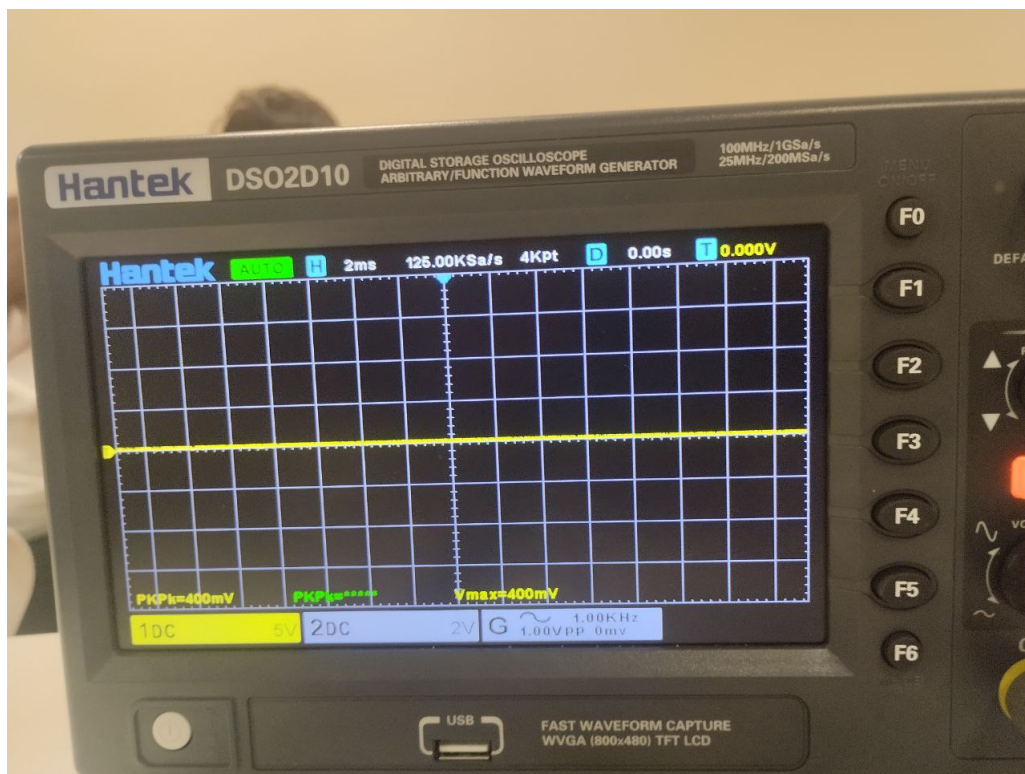


Figure 3: Opamp output with no light

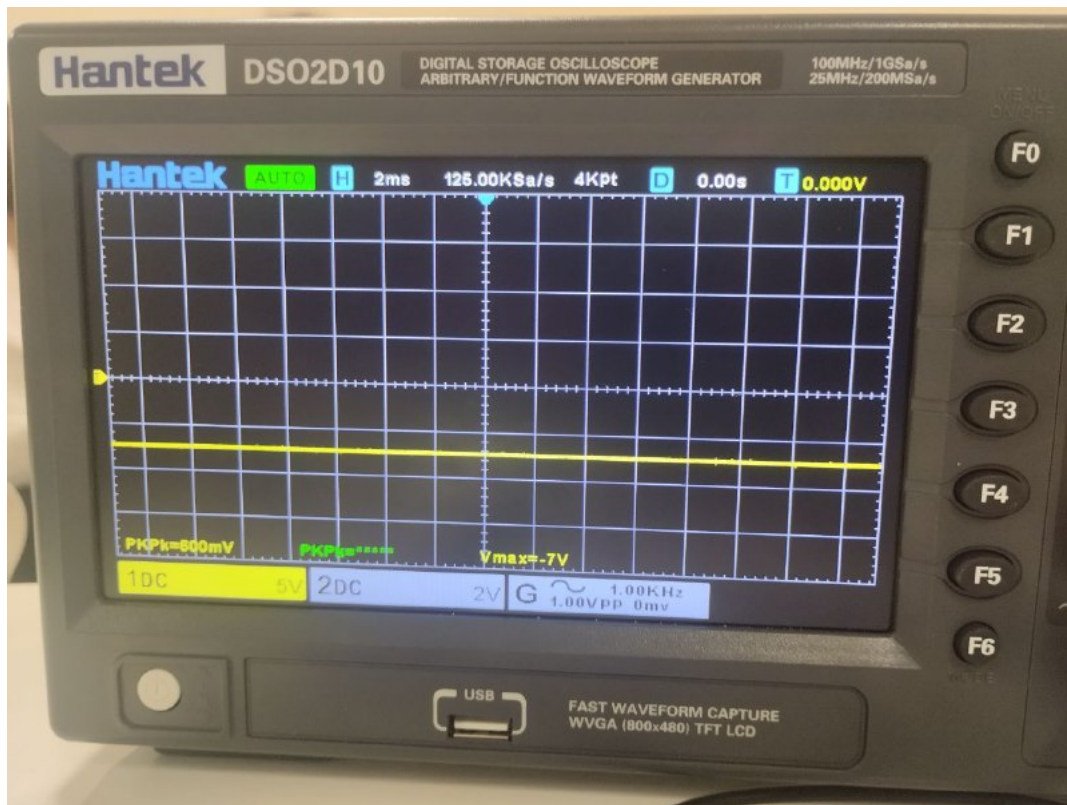


Figure 4: Opamp output with light

Step 2: Comparator

Two $10k\Omega$ resistors were used to half the voltage, connected to the non-inverting input. A potentiometer was used to vary the voltage on the inverting input.

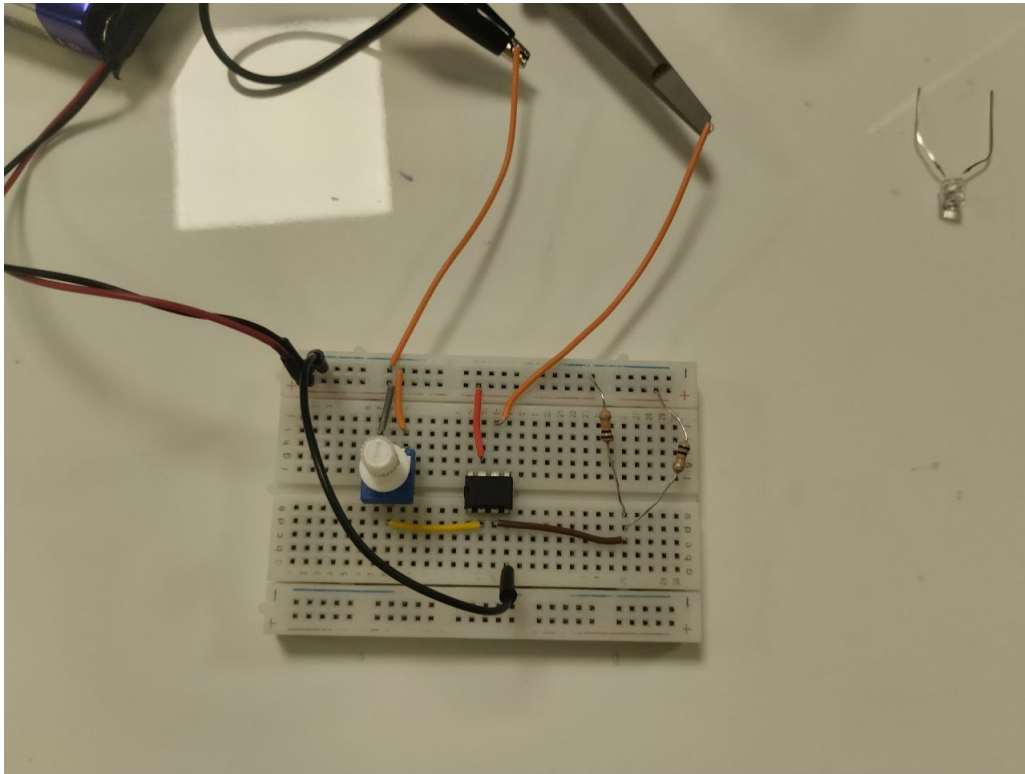


Figure 5: Comparator connections

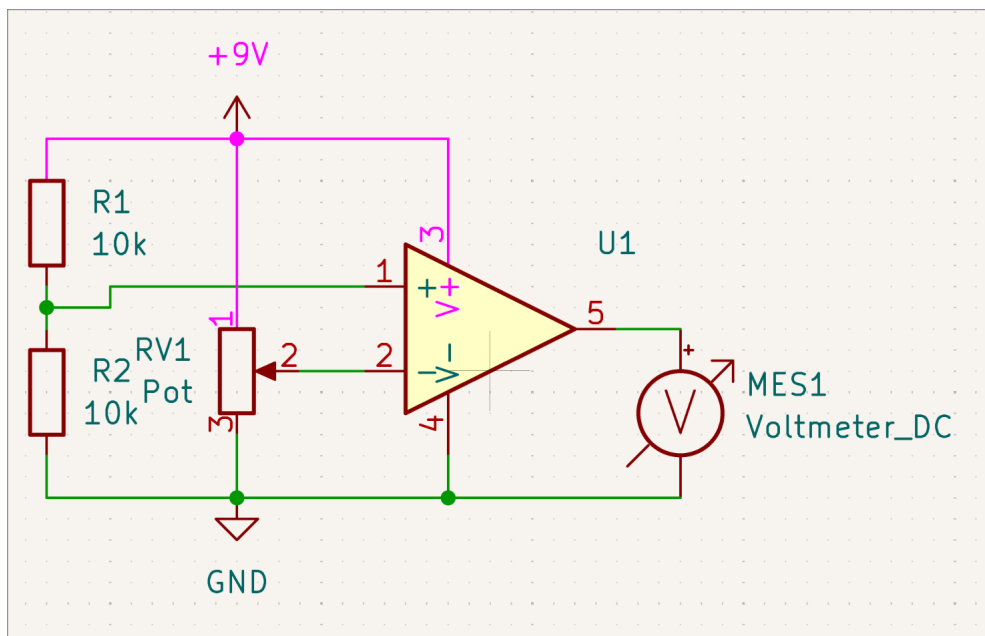


Figure 6: Comparator schematic

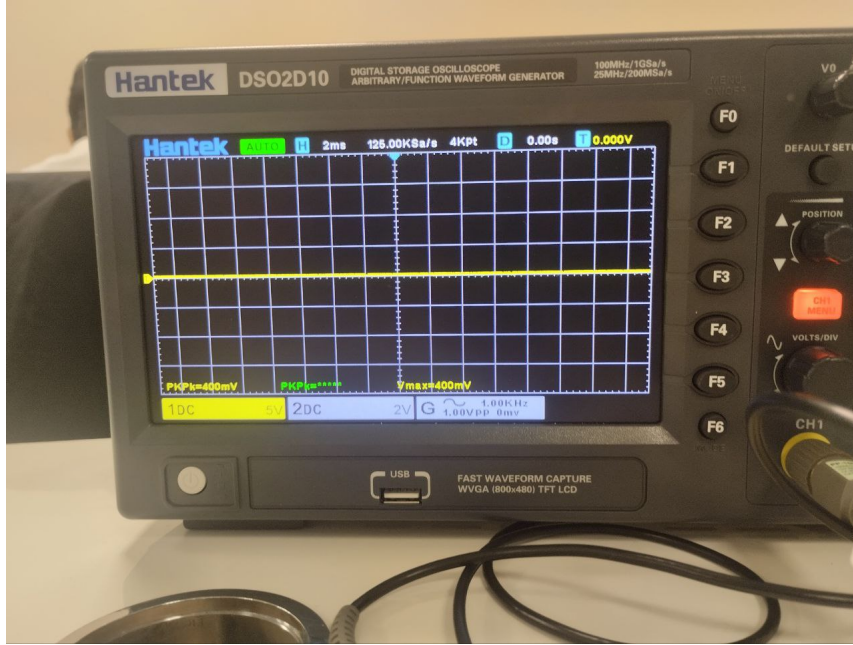


Figure 7: $V_{ninv} < V_{inv}$

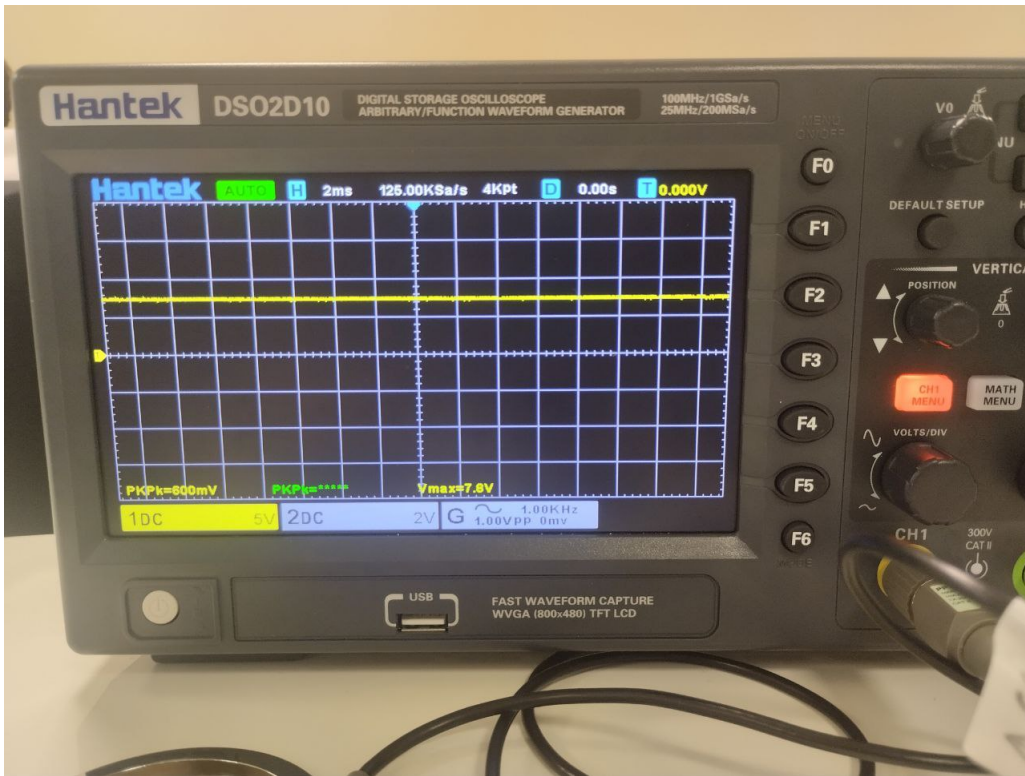


Figure 8: $V_{ninv} > V_{inv}$