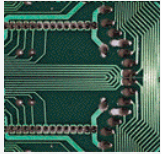
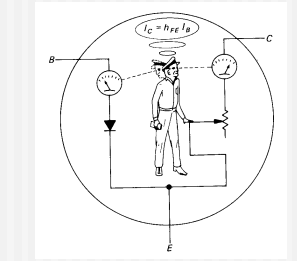
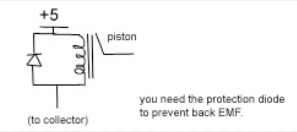
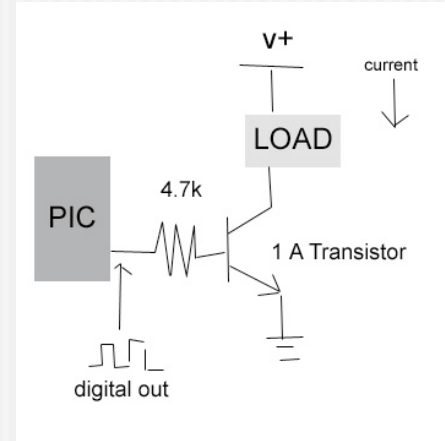


Media Interface Technology

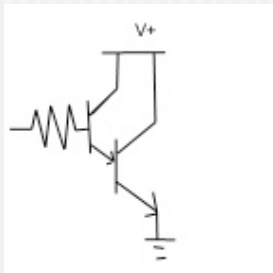


<http://www.mat.ucsb.edu/5940/>

Transistors



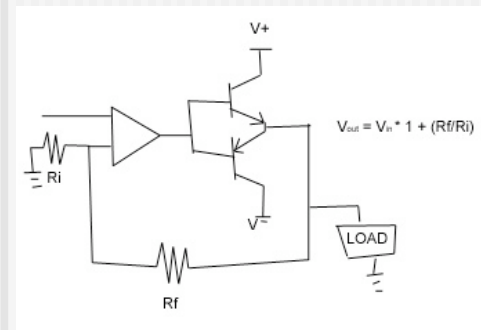
Transistors (cont)



Darlington pair can be used if you need lots of current

Huge current gain (Beta squared)

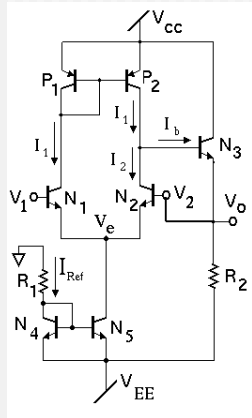
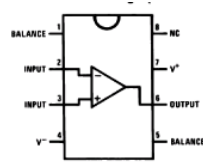
Transistors (cont)



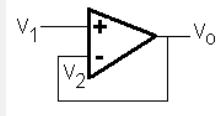
Push-Pull transistor pairs can source and sink current

This circuit allows a higher voltage to be controlled by a lower one.

Op-Amps

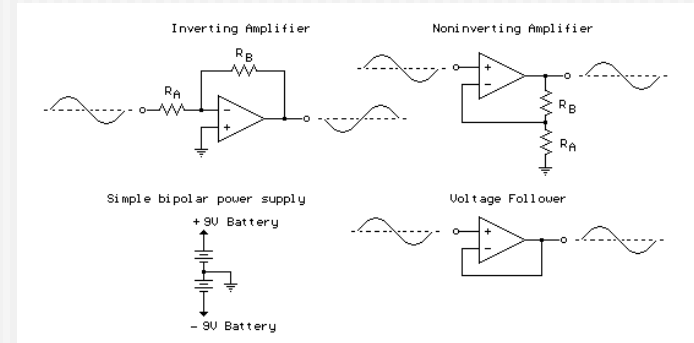


They've done all the hard work for you - making things simpler:

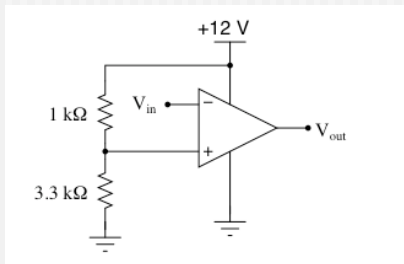


Here is an Op-Amp wired as a Unity gain buffer

Op-Amps (cont)



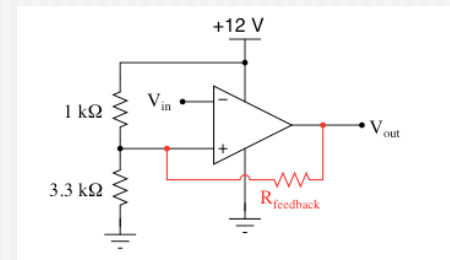
The Comparator



Makes an analog signal into a 1-bit digital signal

When V_{in} is above the threshold voltage formed by the voltage divider, The output is high - Otherwise it is low

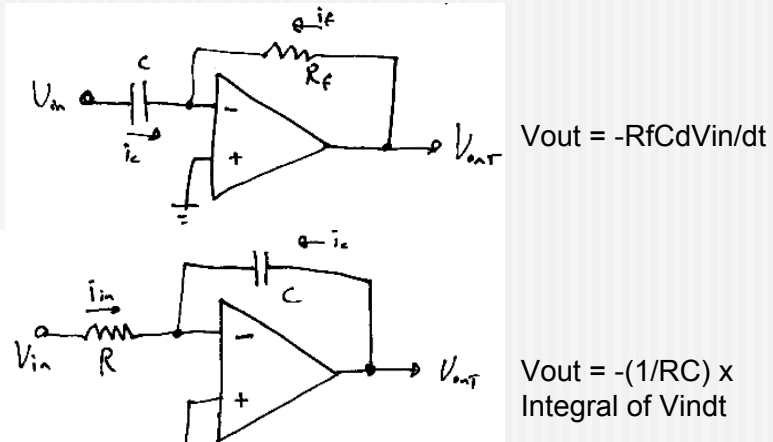
The Schmitt Trigger



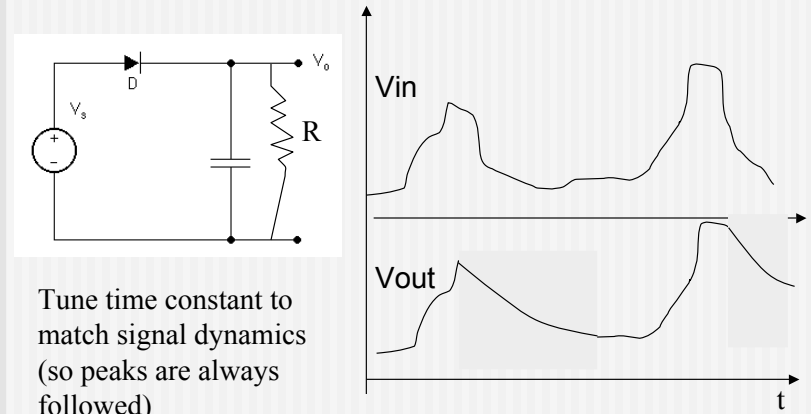
Suppresses jitter and spurious triggering from noisy signals (some sensors need this conditioning)

$R_{feedback}$ creates a "deadband" around the threshold voltage

The Differentiator / Integrator



Simple Diode Pulse stretcher



Questions?

Do we need to go over sampling theory?
(Nyquist theorem, etc...)

Assignment: build your CUI lab kit!

Guest lecture from Rama next Tuesday...