Tutorial 7

Lab Midterm Review

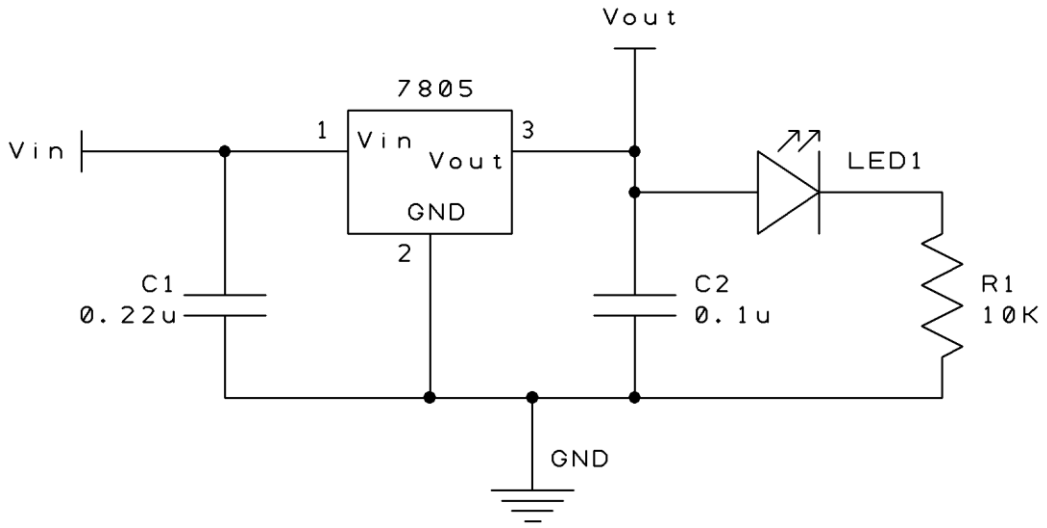
Lab Midterm Exam

- 13 Jul (Fri), 15:00-15:50 (50 min), at Rm2134
- **Single-person** exam
- **No assistances** from **anyone** (TO & TA)
- Circuits connection will be provided, breadboard connection will NOT be provided.

Type of Questions

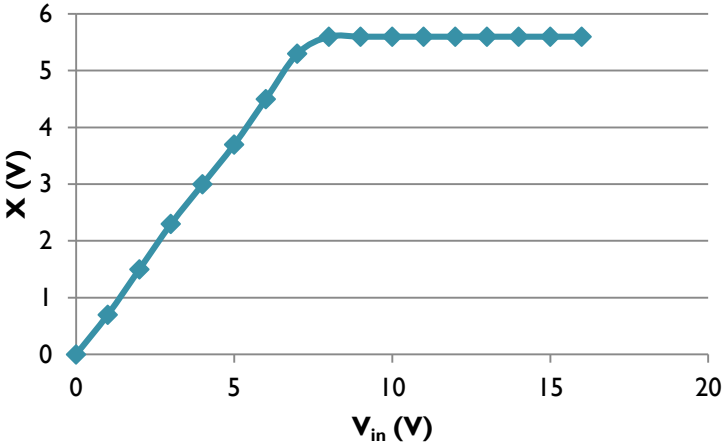
- Do simple math
  - e.g. $\frac{1}{2k} \times 0.27 = 0.7 \times R_B \times C_1$

- Build your own circuits

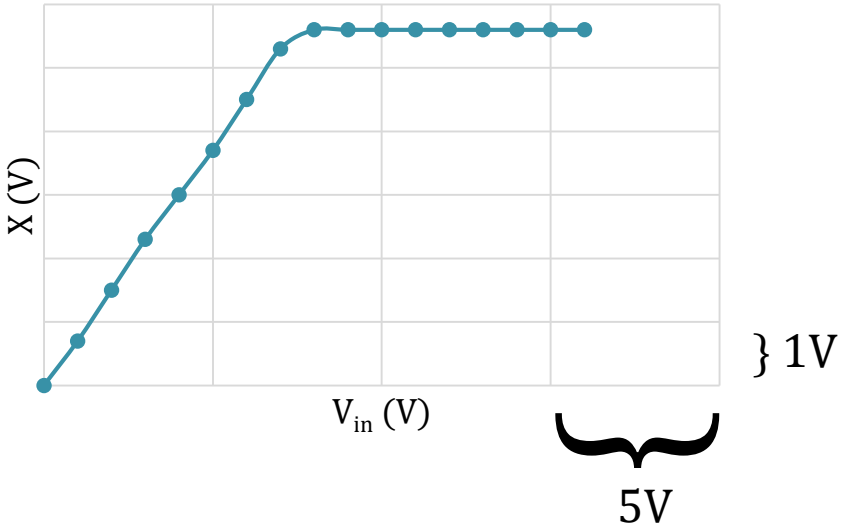


Type of Questions

- Mark down the experimental results
  - Shape of graph and scaling



OR



Review Questions

- Generate power supply → lab01

  DC power supply, Function Generator

- Measuring the output results → lab01

  Multimeter (V/Ω), Oscilloscope (waveform)

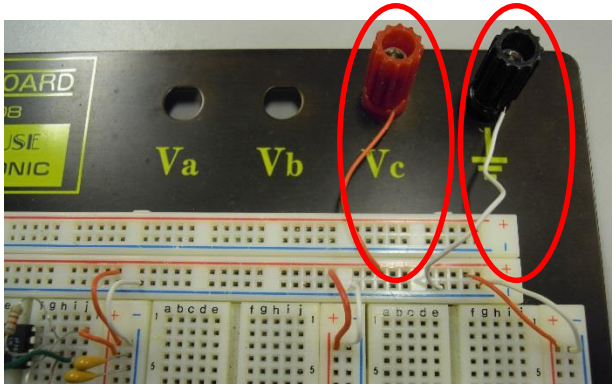
- Zener Diode → lab02
- NE555 Timer → lab02
- Transistor → lab04

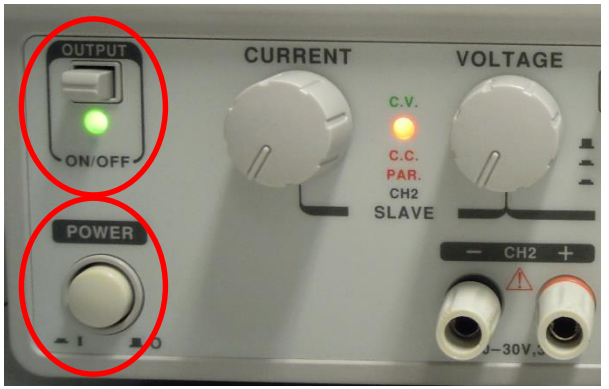
Debugging Strategies

- Follow the schematic diagram to build the circuit
- Verify your connections
- Record the results

Common mistakes in LM

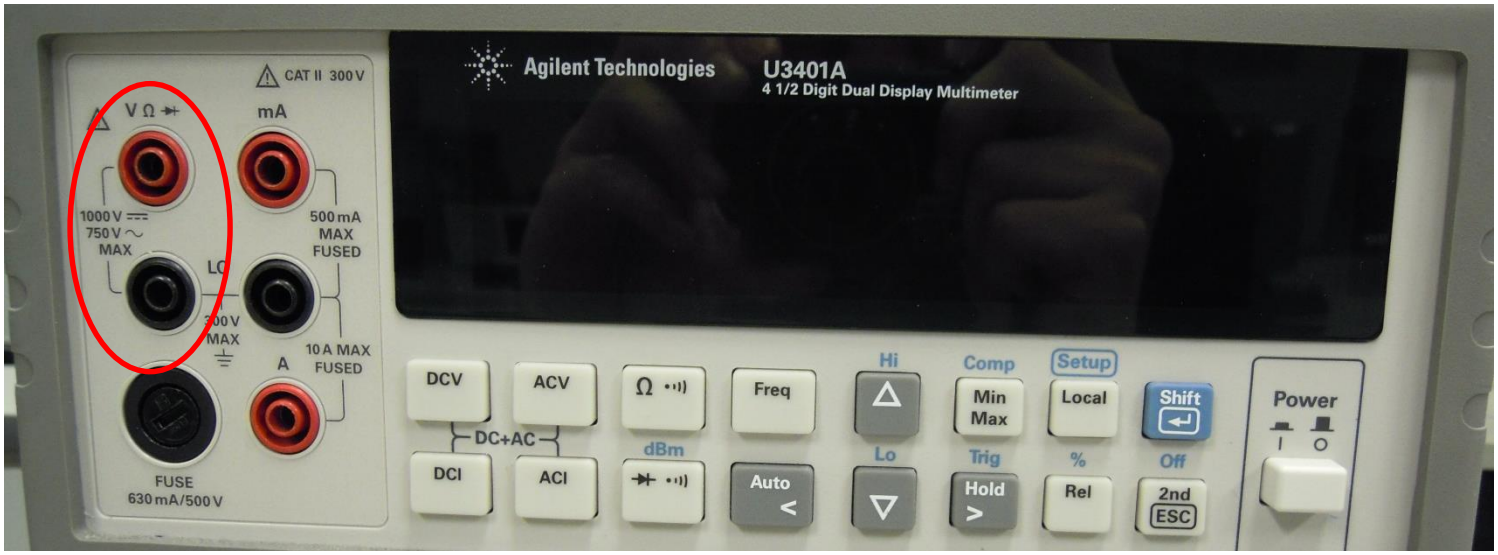
- POWER
  - Forgot to turn on Power Supply
  - Connected Power Supply to power terminals on breadboard but forgot to connect to circuit
  - Forgot to connect Ground
  - Mixed up Power Supply & Signal Generator





Common mistakes in LM

- DMM
  - Mixed up VΩ & mA connection

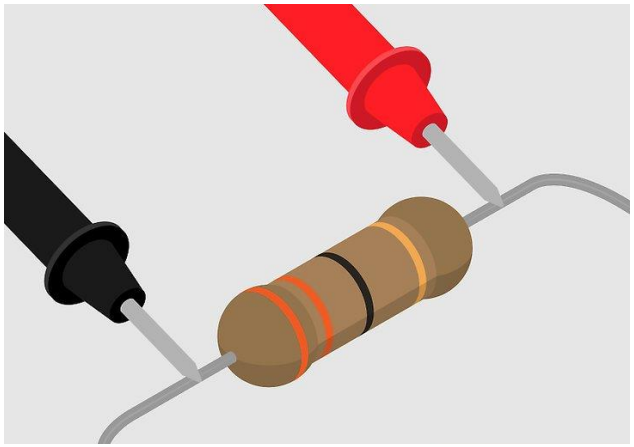


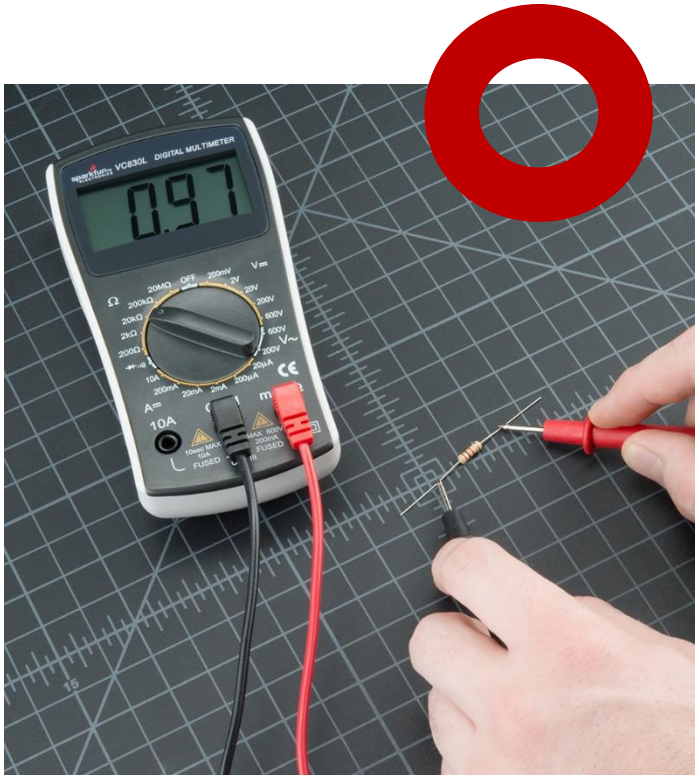
Hints:

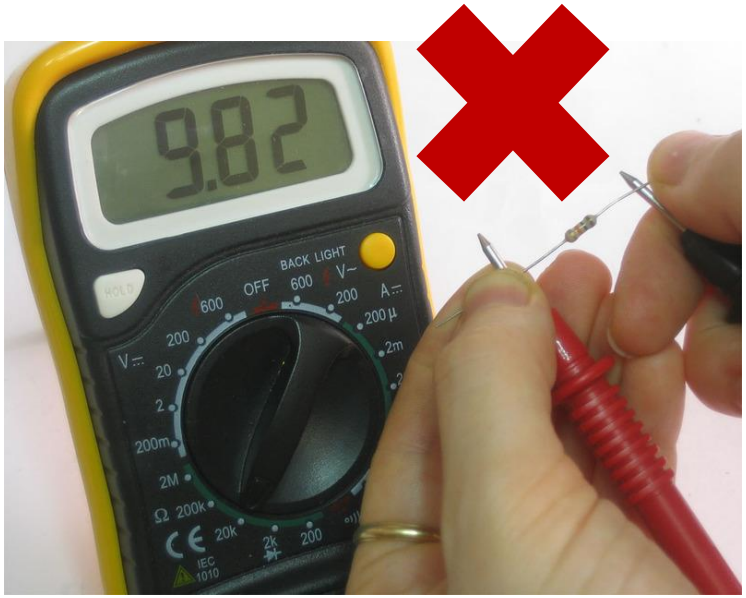
- Use DMM to measure resistance (remember to power off !!!)
- Use DMM probe to test connection points

Common mistakes in LM

- DMM
  - Hands on the resistor when measuring its resistance

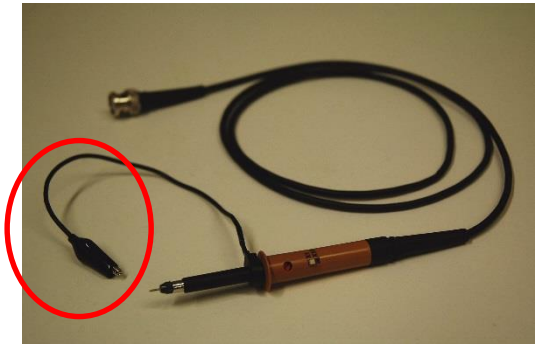




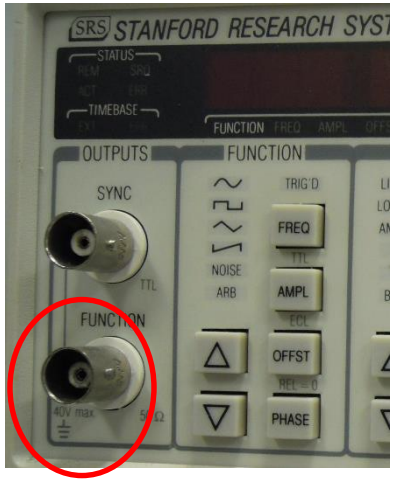


Common mistakes in LM

- DSO
  - Didn't set the probe to 1x
  - Forgot to ground the probe

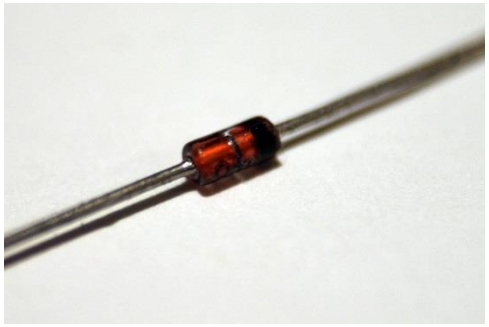


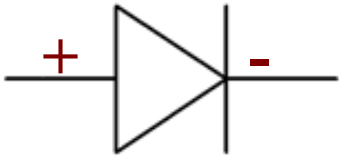
- Signal Generator
  - Mixed up Sync and Function outputs
  - Mixed up sine wave & square wave
  - Didn't know how to generate $10V_{PP}$

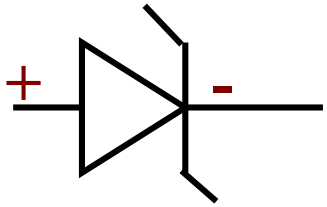


Common mistakes in LM

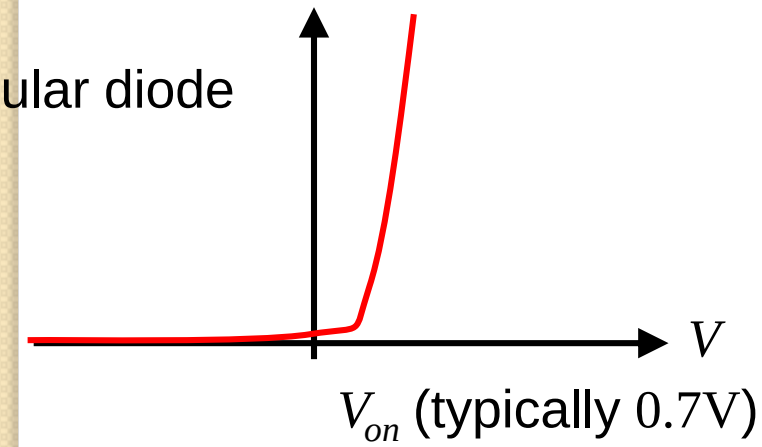
- Diode
  - Mixed up regular & Zener diode
  - Reversed polarity of diode



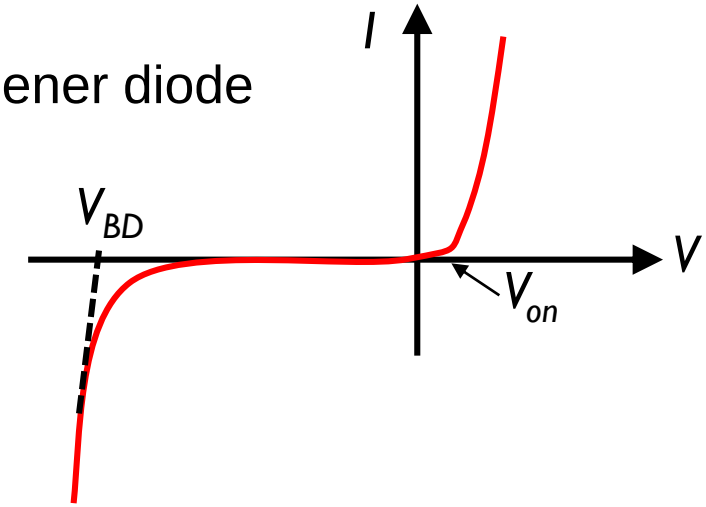




Regular diode



Zener diode



Policies

- Ask when you don't understand the questions or
- you think the ICs / equipment are malfunctioning
- No appeals & complaints after the exam

Hints

- Connect circuit carefully
- Trust the oscilloscope
- Don't trust your feeling