

Physics 334, Winter Quarter 2013

Electric Circuits Laboratory I

Homework Assignment 5

This will not be graded

1. (a) This is an exercise in looking up a data-sheet and figuring out what it means. Consider the 2N2222 transistor. Is this NPN or PNP device? What's the maximum collector current you'd apply to this device? Make a careful sketch of the top view of this device in a "TO-92" package; label on the sketch "E" "B" and "C" at the appropriate pins. (b) Now consider the 2N3055 transistor. Is this NPN or PNP? What's the maximum collector current you'd apply this device? Make a careful sketch of the top view is this device in a "TO-3" package; label on the sketch "E" "B" and "C" on the appropriate pins/connections. The 2N3055 is very commonly found in audio power amplifiers.
2. (a) In ten words or less, explain why the "AC-coupled follower" "bad circuit" (p 108 in textbook) at the upper left is bad. (b) And in ten words or less, explain why the circuit at the upper right (p 108) is bad.
3. An emitter-follower is built using a transistor with $\beta = 100$ and $R_E = 1000 \Omega$. (a) What's the input impedance with unloaded output? Now suppose the input is connected to a source having output impedance 500Ω . What's the output impedance of the source plus follower circuit? (c) Now, suppose a 1100Ω load's is at the follower's output: what's the input impedance "looking into" the follower?

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