Transistor Biasing Lab – Formula Sheet (Transistor Pinout on back.)

This week's lab will be Experiment #5 handouts on Transistor Bias Circuits. A copy will be provided for you in class.

Part 1: Build & verify all 4 circuits. You may substitute a 2N2222 for the 2N3904. Suggestion: Use your multi-meter to check each transistor BEFORE putting it in the circuit. A pdf of the proper procedure is posted on the forums and will be provided to you in class/lab. **Do NOT do Part 2.**

You will make the measurements for each of 3 transistors for each circuit. This will help demonstrate the stability of the Q-point with respect to transistor variations.

Here are the formulas required for each circuit (note Fig. #):

Fig. 5-1:

VRB=VCC-0.7V
IB=(VCC-0.7V)/RB
IC=(beta)*IB (assume beta around 150-200)
VRC=IC * RC
VC=12V-VRC
VCE=VC-VE=VC-0=VC

Fig. 5-2:

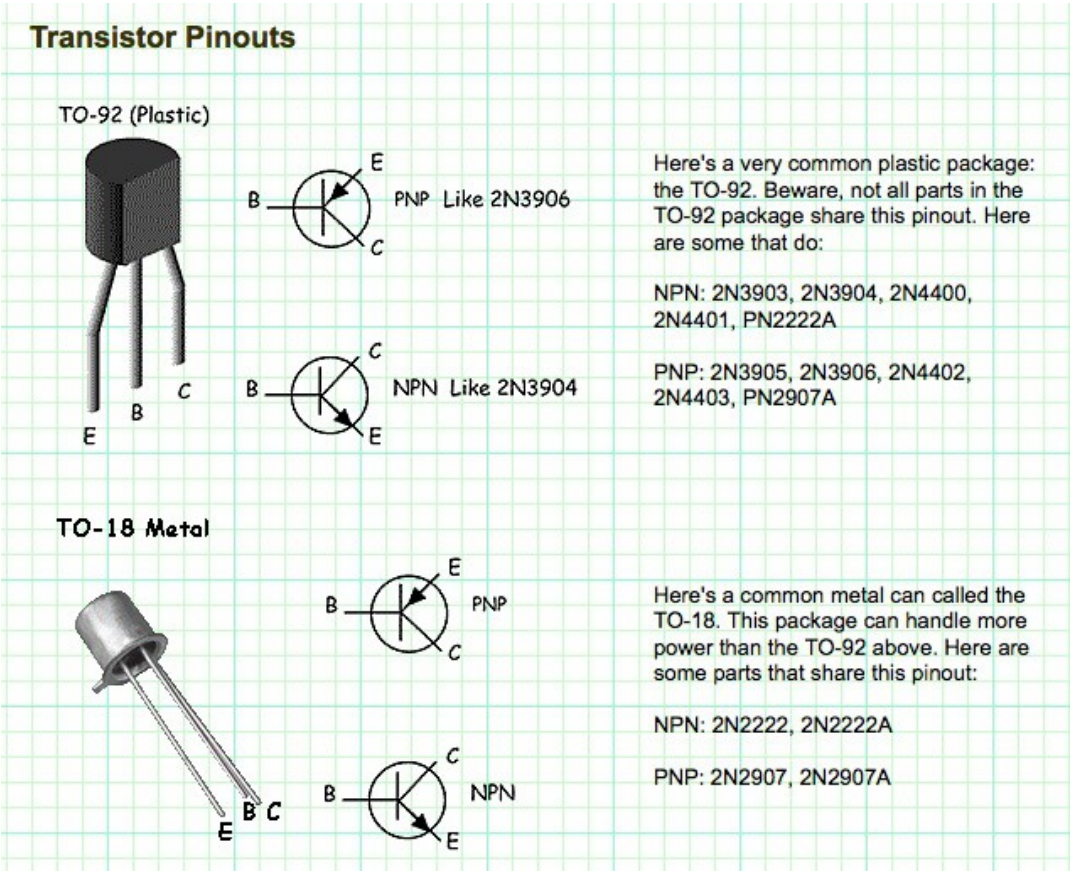
IB=(VCC-0.7)/(RB+beta*RE)
VRB=IB*RB
IC=beta*IB
VRC=IC*RC
VC=VCC-VRC
VCE=VC-VE=VC-VRE where VRE=IC*RE

Fig. 5-3:

VB=VCC(R2/(R1+R2))
VE=VB-0.7
IE=IC=(VE-0)/RE
VRC=IC*RC
VC=VCC-VRC
VCE=VC-VE

Fig. 5-4:

VB=0.7
IE=IC= (VCC-VBE)/(RB/beta+RC)=(VCC-0.7)/(RB/beta+RC)
VRC=IC*RC
VC=VCC-VRC



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