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LABORATORY REPORT TESTING FUNCTIONS OF TRANSISTOR AMPLIFYING CIRCUIT

INTRODUCTORY SUMMARY

As we learned about transistor amplifying circuit, as requested, this report will give a summary of the testing procedures and the conclusions of the experiment, and the problems we meet.

In the experiment, we will focus on measure the static state working point and analyze the influence of the static state working point to the amplifier performance. Meanwhile, we will measure the amplifying circuit voltage amplification gain and the most greatly not distorted voltage.

LAB MATERIALS

1. Digital multitester
2. DC stabilized voltage power supply
3. Function signal generationg device
4. AC millivolt
5. Double-trace oscilloscope

LAB PROCEDURE

Step 1

The measurement of the amplifying circuit static state working point

(1) Judge triode’s polarity and the quality with the multitester.

(2) Design a static working point measuring circuit, connect direct-current power supply, measure voltages and resistances that we need, and calculate the voltages and currents that we need. Keep a record.

Step 2

Dynamic research

(1) Design a common emitter amplifying circuit, adjusts it to the state we need.

(2) Adjust the signal generator’s output for the sinusoidal signal, and connect to the

designed circuit's input spot, through the input resistances attenuation 100 times, and observe the input and output signal, pay attention to the phase relation, and record the wave form.

(3) Maintain the signal generating device output signal frequency invariable, increase the signal scope gradually, observe the most greatly not distorted voltage and keep a record.

(4) Maintain the input signal to be invariable, when idling tune the voltage, and the load is connected to the amplifying circuit, according to parameter condition designed, and computed result will be recorded.

(5) Adjust the input signal, adjust the resistances in the circuit to respectively reach saturated and cut off distortion. Keep a record.

Step 3

(1) Input resistance measurement
Design a circuit and connect, keep records and calculate. Compare the measure result and the calculating result.

(2) Output impedance measurement
At output-port an adjustable resistance as a load, choose the appropriate resistances to cause the amplifying circuit to output not distorted, measure output voltages (loading and idling). Keep a record.

PROBLEMS ENCOUNTERED

The experiment went as planned, but sometimes the components may break down because of the control failure of the voltage, which may cause data false. And it is difficult to locate where the break down happened.

CONCLUSION

1. For static working point, if the current of it increases, the voltage amplification gain increases, the input resistance decrease, and the output impedance is not influenced. But once the static working point is too big or too small, there would be cut off distortion or saturated distortion.
2. If there is a cut off distortion, the low part of the output will disappear.
   If there is a saturated distortion, the upper part of the output will disappear.

I will discuss with you this week about the study and any possible follow-up you may wish us to do.

Sincerely

Song Chang

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College Student