Design of IC 741 tester circuit

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Abstract

Most commonly used amplifier is operational amplifier. Each amplifier is used depending on application.This operational amplifier is having a capability to amplify both ac and dc signals. The main building block in operational amplifier is differential amplifier followed by some transistors.Integrated circuit (IC) is assembly of electronic components such as active, passive devices. This IC's are also known as Microchip. When we use ICs in a circuit and don't obtain the required output, we have to examine each component in the circuit in order to check the operational amplifier IC we need to use this tester circuit.

1 Circuit Details

1) Differential input stage: The importance of differential amplifier is to amplify the difference between two input signals. A slight difference in input signals leads to high gain at output. 2) Gain stage: Darlington transistor pair used to provide required gain 3) Output stage: Class AB complementary push-pull We can replace those two diodes with a transistor In this circuit Pin 3 (non-inverting) is kept constant and Pin 2(inverting) is getting changed due to the capacitor(C1).When the capacitor C1 starts charging Voltage at pin 3 is more than pin 2,so led starts blinking. Capacitor C1 is getting charged through R4 resistor. When the Capacitor gets full charged led becomes low. Again when Capacitor is getting charged and voltage at pin 2 is less than that ,then led starts blinking again. This on off will generates the square waveform at the output side. If Led doesn't blink at fixed intervals then we can't get the square waveform so that the IC which we are testing is decided as faulty. 1) Connect voltage supply of 9V to pin 7 and 0V to pin 4 2) Take Vcc=9 (volts) and Vee=0V 3) Connect both the pin4 and pin 7 to ground. Now the output voltage should be 0V 3) Now, connect the pin7 alone to Vcc(9V). The output should now be 9V 4) Now repeat the same with pin4 .the output should be 9V.

2 Implemented Circuit

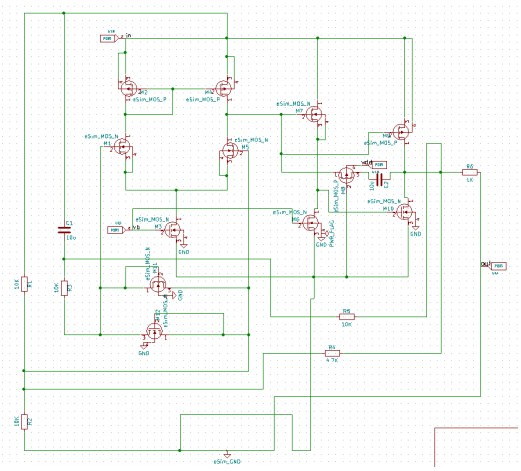

Figure 1: Implemented circuit diagram.

3 Implemented Waveforms

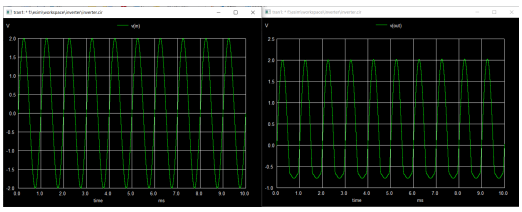

Figure 2: Implemented waveform.

References

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