

EXPERIMENT NO: 4

Aim of the Experiment:

To Draw and Design PCB layout of Non-Inverting Amplifier Circuit using IC 741.

Theory:

In non-inverting operational amplifier configuration, the input voltage signal, (V_{IN}) is applied directly to the non-inverting (+) input terminal which means that the output gain of the amplifier becomes “Positive” in value in contrast to the “Inverting Amplifier” circuit we saw in the last tutorial whose output gain is negative in value. The result of this is that the output signal is “in-phase” with the input signal.

Feedback control of the non-inverting operational amplifier is achieved by applying a small part of the output voltage signal back to the inverting (–) input terminal via a $R_f - R_2$ voltage divider network, again producing negative feedback.

This closed-loop configuration produces a non-inverting amplifier circuit with very good stability, a very high input impedance, R_{in} approaching infinity, as no current flows into the positive input terminal, (ideal conditions) and a low output impedance, R_{out} as shown below.

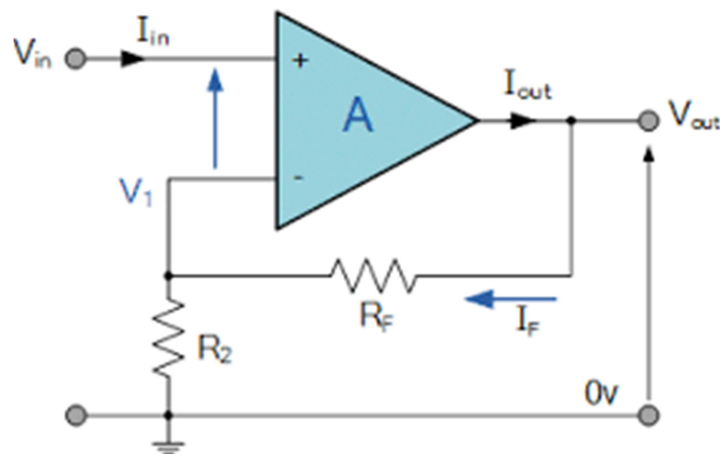


Fig.1 Circuit Diagram

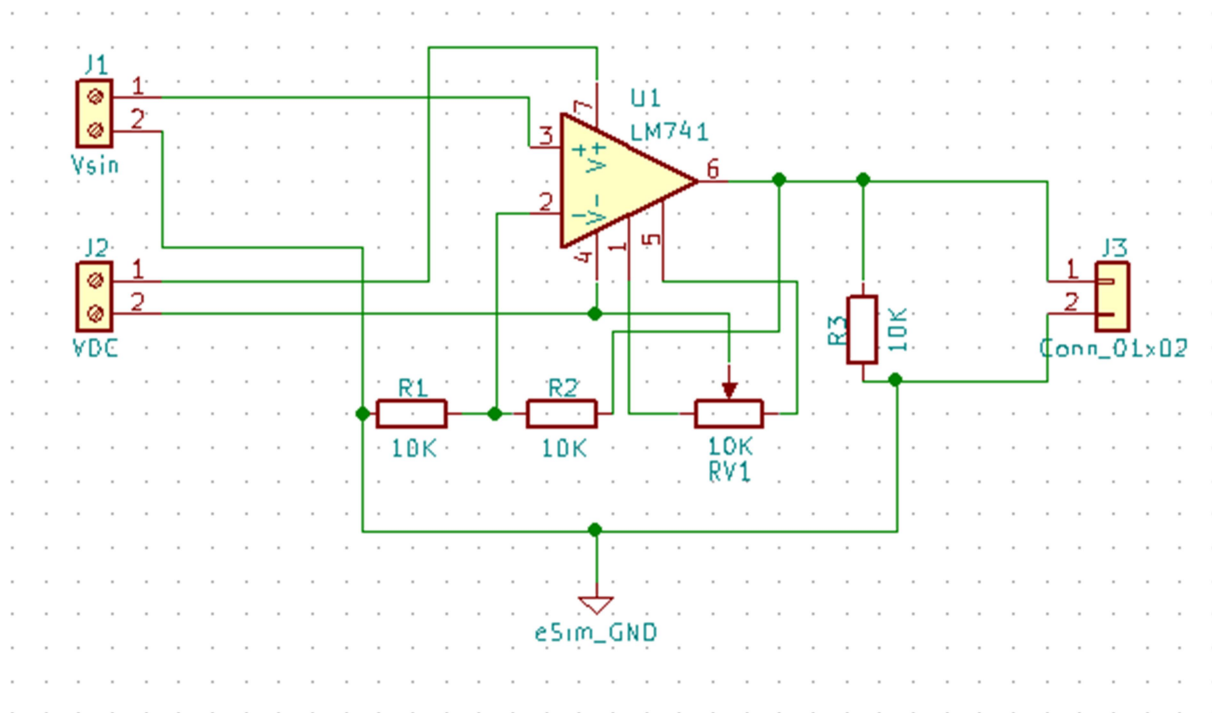


Fig.2 Schematic for PCB

1	J1 -	Vsin : Connectors_Terminal_Blocks:TerminalBlock_Altech_AK300-2_P5.00mm
2	J2 -	VDC : Connectors_Terminal_Blocks:TerminalBlock_Altech_AK300-2_P5.00mm
3	J3 -	Conn_01x02 : Pin_Headers:Pin_Header_Straight_1x02_Pitch2.54mm
4	R1 -	10K : Resistors_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P15.24mm_Horizontal
5	R2 -	10K : Resistors_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P15.24mm_Horizontal
6	R3 -	10K : Resistors_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P15.24mm_Horizontal
7	RV1 -	10K : Potentiometers:Potentiometer_Alps_RK09Y_Vertical
8	U1 -	LM741 : Housings_DIP:DIP-8_W7.62mm

Fig.3 Component Footprints for PCB

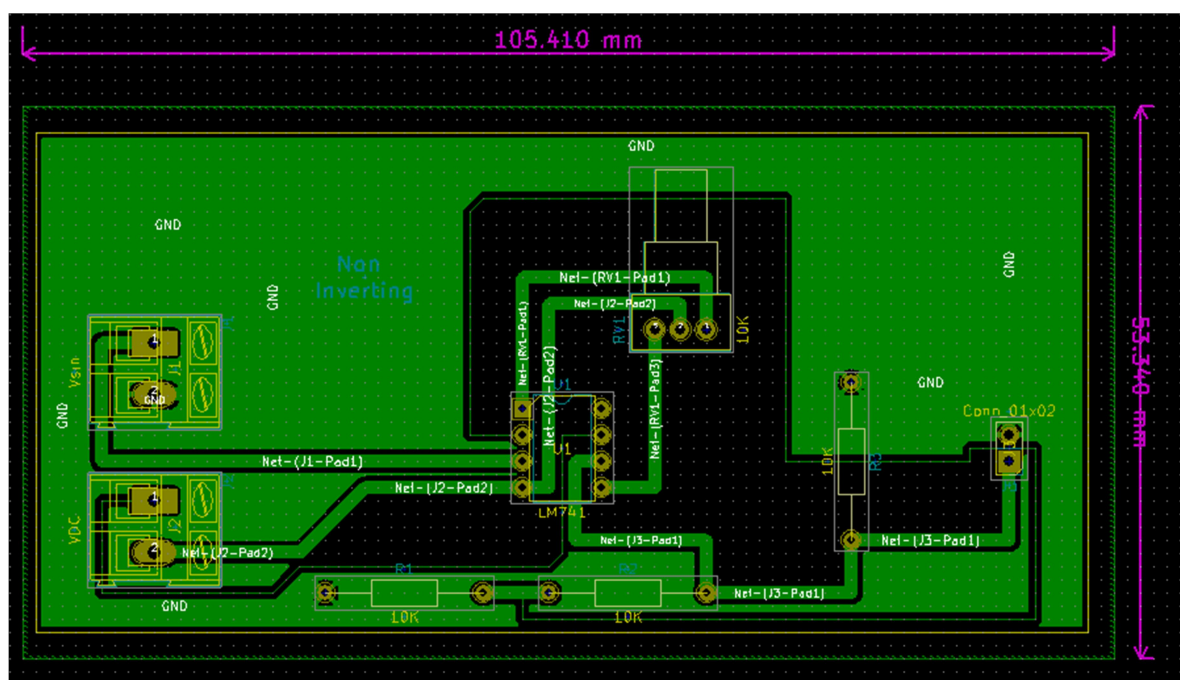


Fig.4 PCB Layout with GND Plane B.Cu

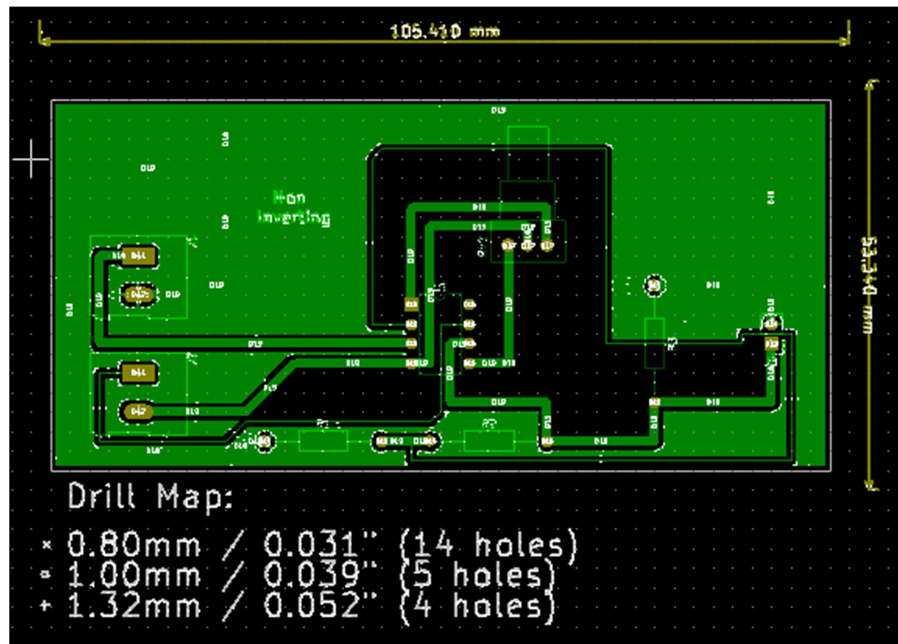


Fig.5 GerbView B.Cu

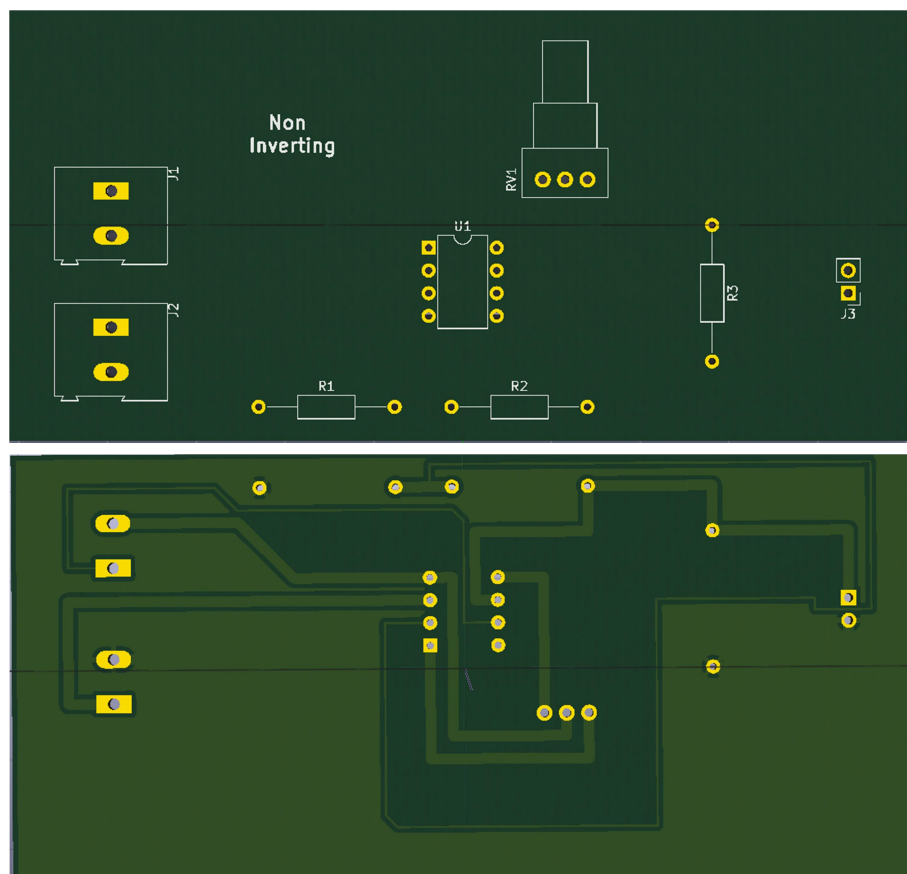


Fig.6 3D View

Reference: https://www.electronics-tutorials.ws/opamp/opamp_3.html

Conclusion: We have design PCB layout of Non Inverting Amplifier using IC741

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