

EXPERIMENT NO: 5

Aim of the Experiment:

To Draw and Design PCB layout of Integrator Circuit using IC 741.

Theory:

The ideal op-amp integrator is an inverting amplifier whose output voltage is proportional to the negative integral of the input voltage thereby simulating mathematical integration.

Operational amplifiers can be used as part of a positive or negative feedback amplifier or as an adder or subtractor type circuit using just pure resistances in both the input and the feedback loop.

But what if we were to change the purely resistive (R_f) feedback element of an inverting amplifier with a frequency dependant complex element that has a reactance, (X), such as a Capacitor, C . What would be the effect on the op-amps voltage gain transfer function over its frequency range as a result of this complex impedance.

By replacing this feedback resistance with a capacitor we now have an RC Network connected across the operational amplifiers feedback path producing another type of operational amplifier circuit commonly called an **Op-amp Integrator** circuit as shown below.

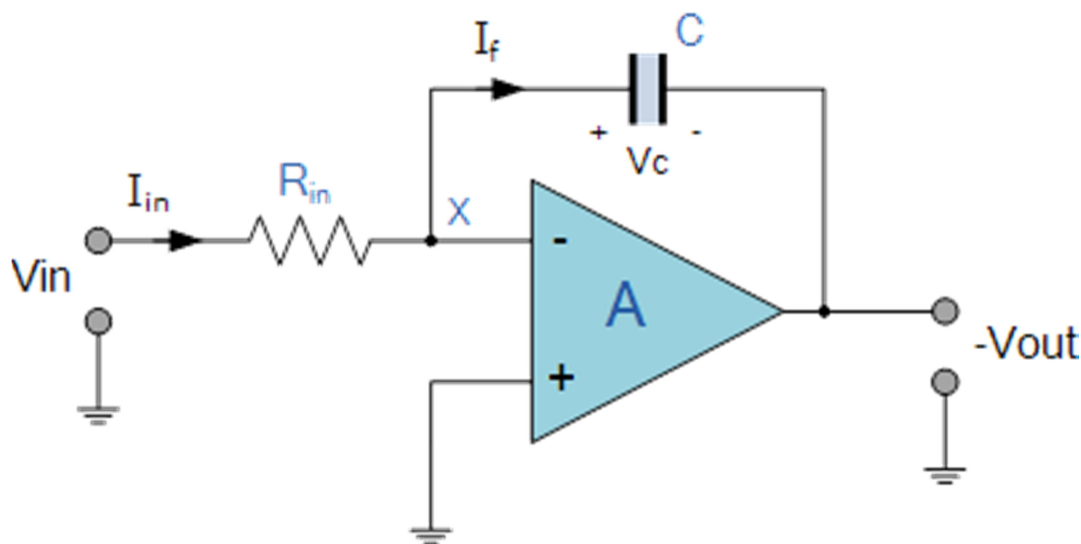


Fig.1 Circuit Diagram

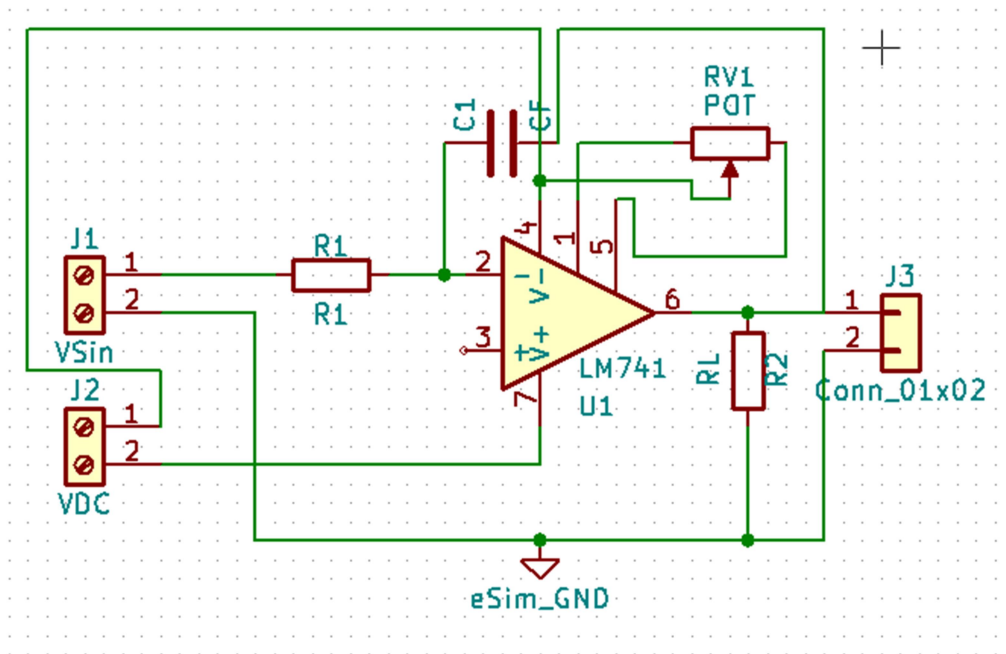


Fig.2 Schematic for PCB

1	C1 -	CF : Capacitors_THT:C_Axial_L3.8mm_D2.6mm_P7.50mm_Horizontal
2	J1 -	VSin : Connectors_Terminal_Blocks:TerminalBlock_Altech_AK300-2_P5.00mm
3	J2 -	VDC : Connectors_Terminal_Blocks:TerminalBlock_Altech_AK300-2_P5.00mm
4	J3 -	Conn_01x02 : Pin_Headers:Pin_Header_Straight_1x02_Pitch2.54mm
5	R1 -	R1 : Resistors_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P15.24mm_Horizontal
6	R2 -	RL : Resistors_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P15.24mm_Horizontal
7	RV1 -	POT : Potentiometers:Potentiometer_Alps_RK09K_Vertical
8	U1 -	LM741 : Housings_DIP:DIP-8_W7.62mm

Fig.3 Components Footprint for PCB

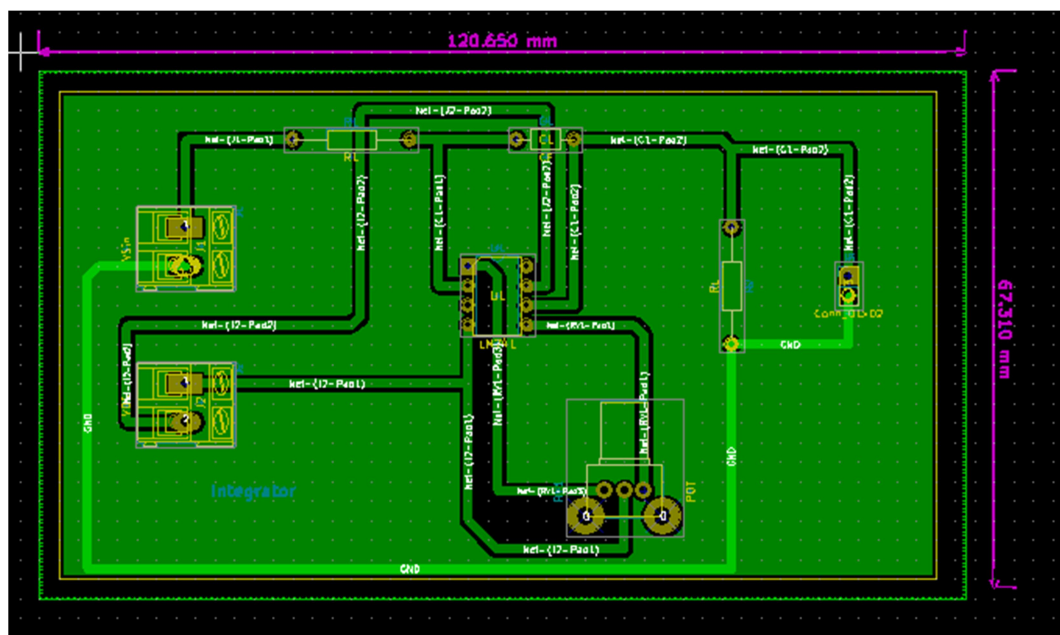


Fig.4 PCB layout with GND Plane B.Cu

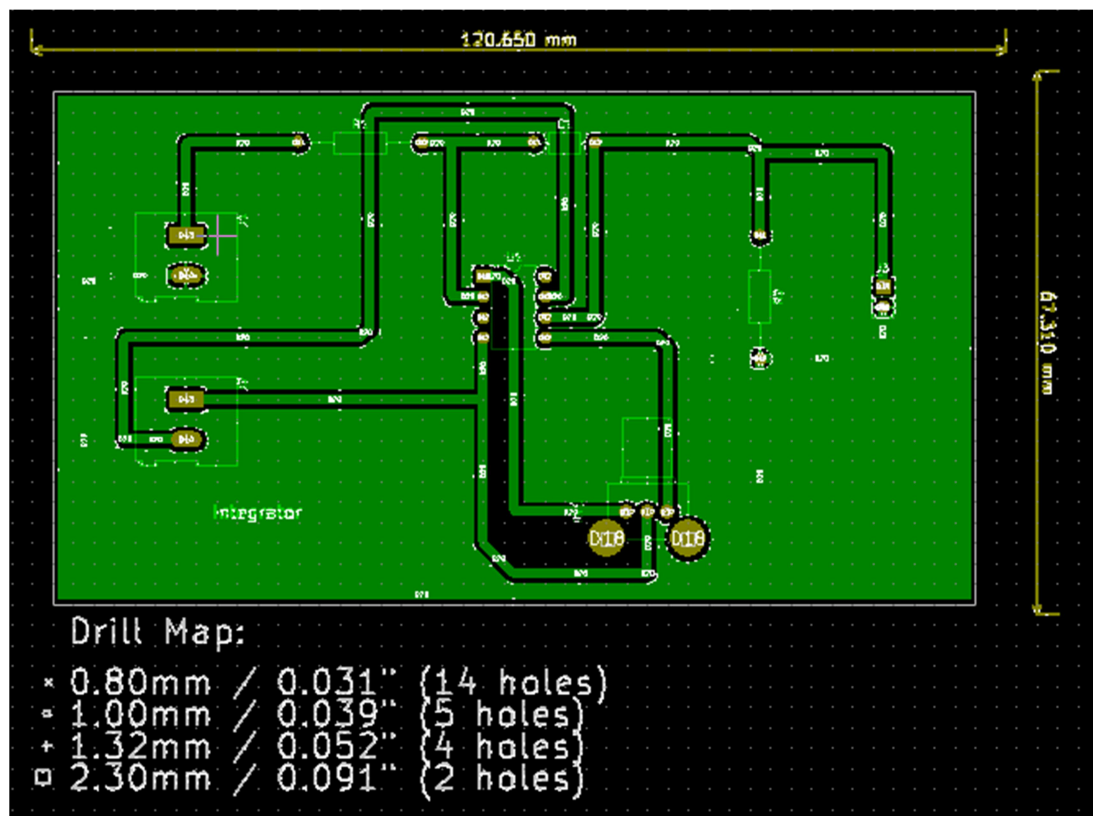


Fig.5 GerbView B.Cu

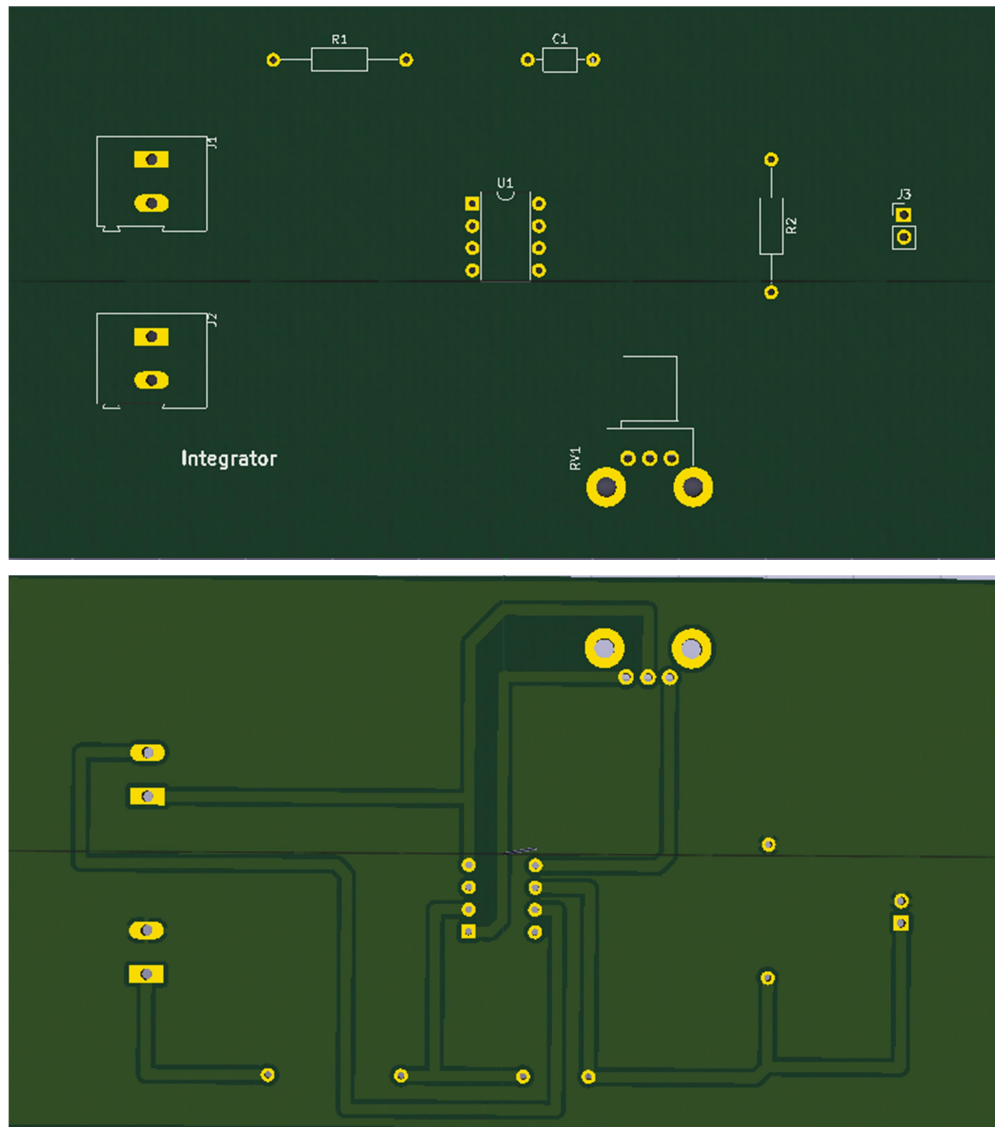


Fig.6 3D View

Reference: https://www.electronics-tutorials.ws/opamp/opamp_6.html

Conclusion: We have design PCB layout of Integrator using IC741

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