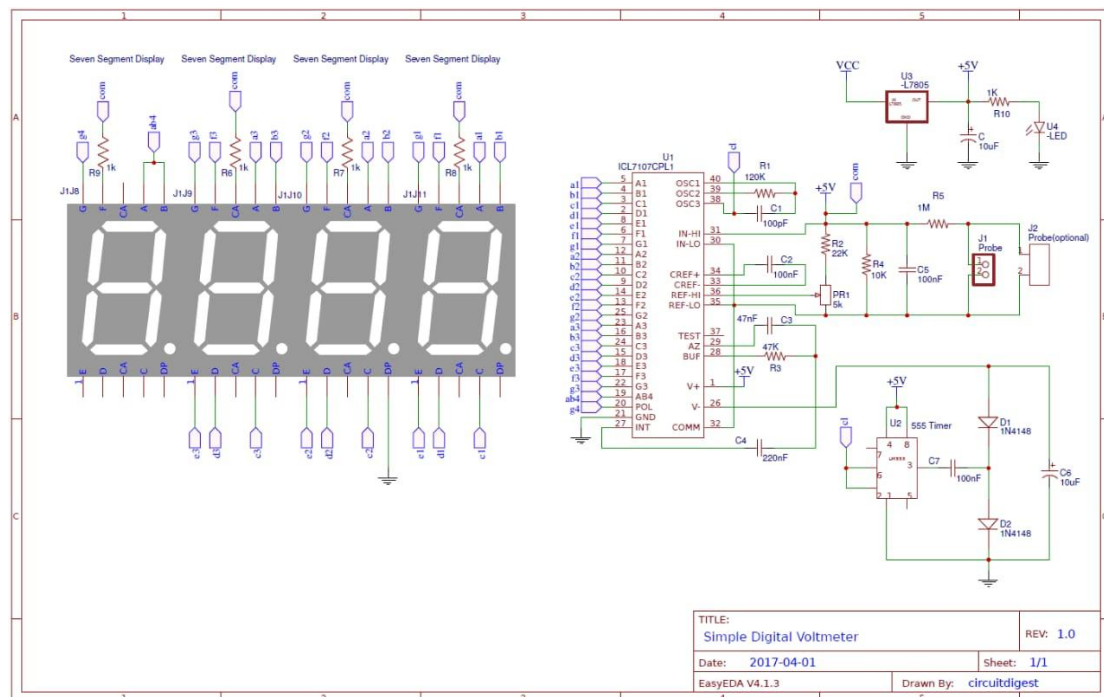


# SIMPLE DIGITAL VOLTMETER

Circuit Diagram:



Working:

Working of this Digital Voltmeter Circuit is very simple. ADC inside the IC is integrating converter or Dual type Analog to digital converter. Internal ADC of this IC reads the voltage that to be measured and compare it with an internal reference voltage and converts that into the digital equivalent. Then this digital equivalent is decoded for Seven Segment Displays by driver circuit inside ICL7107 and then displayed over Four seven segments LED display. Learn here how a ADC can be used to measure Voltage and check the Demonstration Video the end of this article, where we have measured the Arduino output power for testing purpose.

Here resistor R1 and capacitor C1 are used to set the frequency of internal clock of ICL7107. Capacitor C2 filters the fluctuations in internal reference voltage and provides stable reading on seven segment displays. R5 is responsible for controlling the range of the voltmeter. (R5=1K for 0-20V range and 10K for 0-200V range). RV1 is a potentiometer which may be used for calibrating the voltage of voltmeter or can be set the reference voltage for internal ADC.

This circuit includes 4 Common Anode Seven Segment LED Displays with a negative voltage indicator. This circuit should be operated at 5V voltage supply, that's why we have used a 7805-voltage regulator IC to supply 5v to the circuit as well as for preventing the damage of ICL7107.

Negative Voltage Supply: Here we have also need to give negative power to pin number 26 of the ICL7107, for which we have used 555 IC. The 555IC timer IC is configured here as ASTABLE multivibrator. The capacitor here can be changed however the selection should pursued for maximum negative voltage. If selected capacitance does not suit well, then we cannot get maximum negative voltage at the output. Here we have used 100nF and 10uF. Check here how we can use 555 Timer IC to generate Negative Voltage.