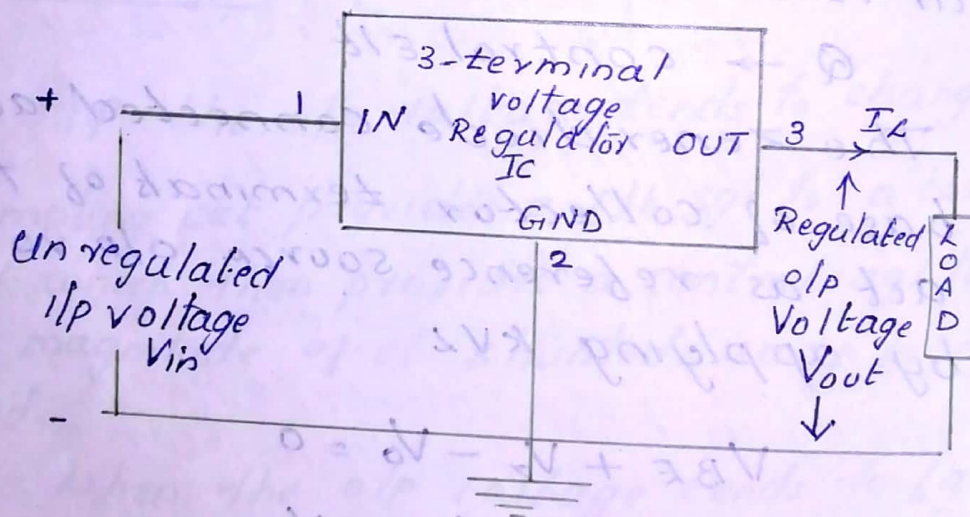


Voltage Regulator ICs.

IC voltage regulators are versatile & inexpensive. IC regulators are of following types:

- 1) Fixed o/p voltage regulators
positive & negative o/p voltage
- 2) Adjustable o/p voltage regulators
positive or negative o/p voltage
- 3) Switching regulators
- 4) Special regulators.

Block diagram



The fixed voltage regulator has an unregulated dc i/p voltage V_{in} applied to one i/p terminal, a regulated o/p dc voltage, V_{out} from a second terminal, with the terminal connected to gnd.

78XX Series

These are fixed +ve voltage regulators. There are 8 ICs in 78XX series where XX denotes the o/p voltage.

7805 \rightarrow o/p 5V

7806 \rightarrow 6V

7808 \rightarrow 8V

7810 \rightarrow 10V

7812 \rightarrow 12V

7815 \rightarrow 15V

7818 \rightarrow 18V

7824 \rightarrow 24V

79XX Series

There are fixed -ve voltage regulator ICs which are complements to 78XX series.

7902 \rightarrow -2V

7905 \rightarrow -5V

7905.2 \rightarrow -5.2V

7906 \rightarrow -6V

7908 \rightarrow -8V

7909 \rightarrow -9V

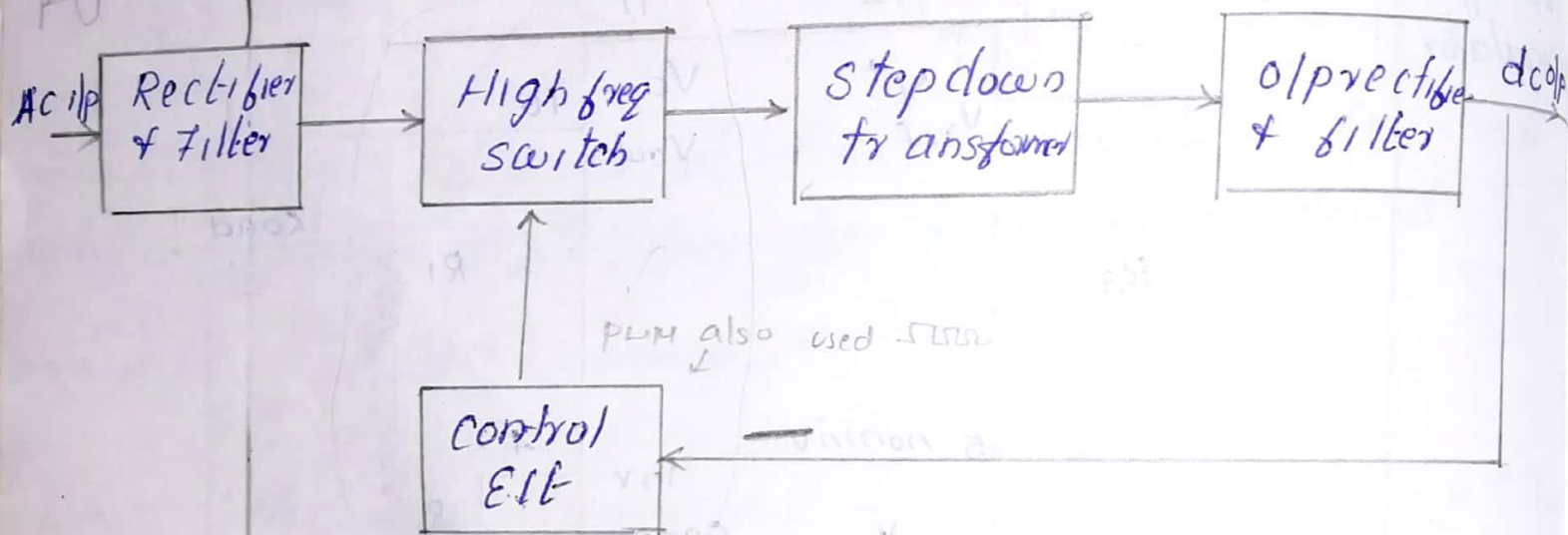
7912 \rightarrow -12V

7915 \rightarrow -15V

7918 \rightarrow -18V

7924 \rightarrow -24V

Switched Mode Power Supply (SMPS)

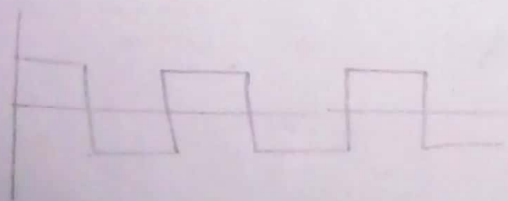


It is a circuit to generate regulated o/p from an unregulated i/p. In this slm, the 50 Hz i/p AC main voltage is rectified & filtered. Then this filtered dc voltage is chopped at a very high freq by a switch. Fast slowing sc devices such as

BJT or MOSFET are used as high freq sws. The chopped voltage is applied to the primary of a transformer & then stepped down to the required level. The o/p of the transformer is again rectified & filtered to get the required dc voltage. The o/p voltage is sensed by a control ckt that supplies a correction signal to vary the ON-OFF time of the sw & compensate for any change at the o/p. o/p voltage is proportional to the duty cycle of pulse sq used to control the switch. If the o/p voltage decreases, feedback ckt raises the duty cycle. Then the switching device remains ON for more amt of time & hence o/p voltage \uparrow es.

If the o/p voltage \uparrow es, f/b ckt reduces the duty cycle. This makes the switching device OFF for more time & hence the o/p voltage \downarrow es.

AC or DC \rightarrow Regulated DC o/p



\uparrow ON & \downarrow OFF so dc voltage \uparrow es

