Q-2(H)
Paper IV

Dr. Supriya Kumari
Deptt. of Physics
J.N.C, Madhubani.

Junction Field Effect Transistor [JFET]
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Fig shows a junction field effect transistor. It consists of a uniformally doped semiconductor bar with ohmic contacts at both ends and with semiconductor junctions on both sides of the bar.

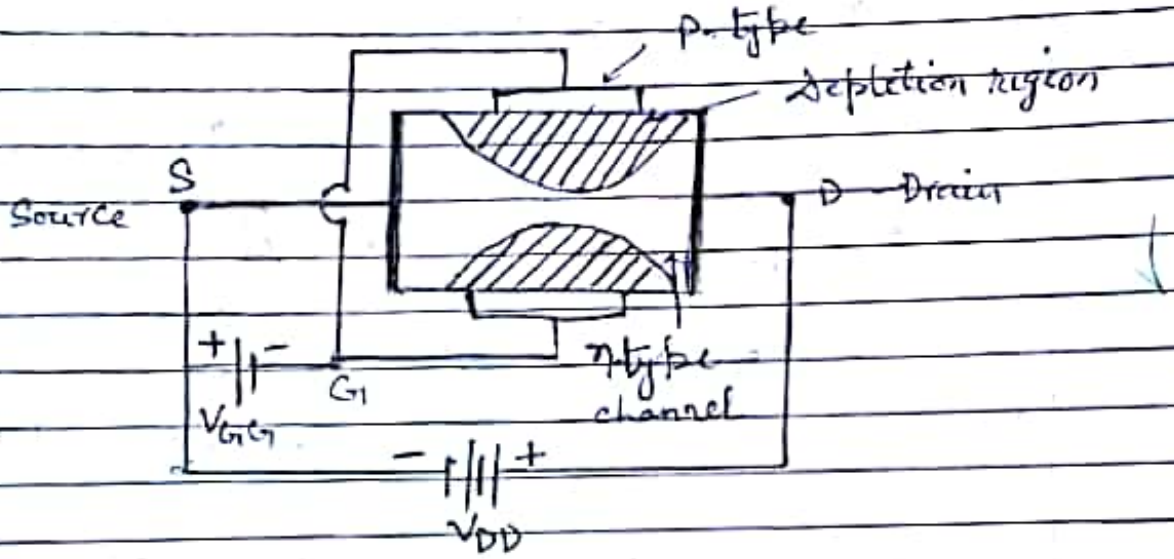


Fig. 1 A JFET

For n-type bar the FET is n-channel FET and for p-type, it is called p-channel FET. Current is allowed to flow by applying a voltage between the end terminals of the bar. The current is carried by majority carriers. The different notations in the fig are :-

S (Source) :- The terminal through which the majority carriers ~~enters~~ (enter) the channel is called the source.

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D (Drain) :- The terminal through which the majority carriers leave the channel is called the drain.

G (Gate) :- On both sides of the doped semiconductor bar heavily doped regions are formed by alloying, diffusions or by other techniques using impurities opposite to that of the channel. These regions are called the gate.

The circuit symbol of n-type & p-type FET are shown in fig.

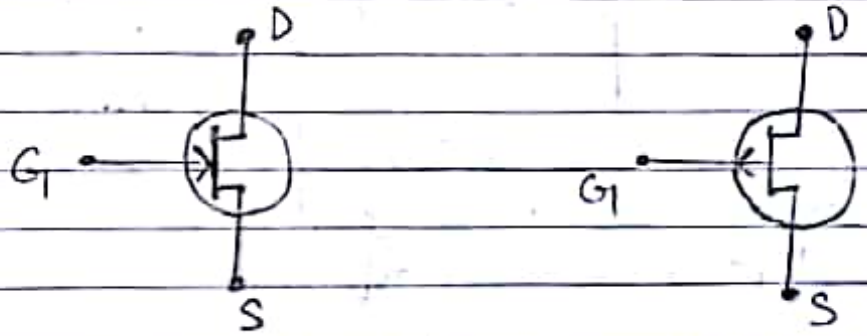
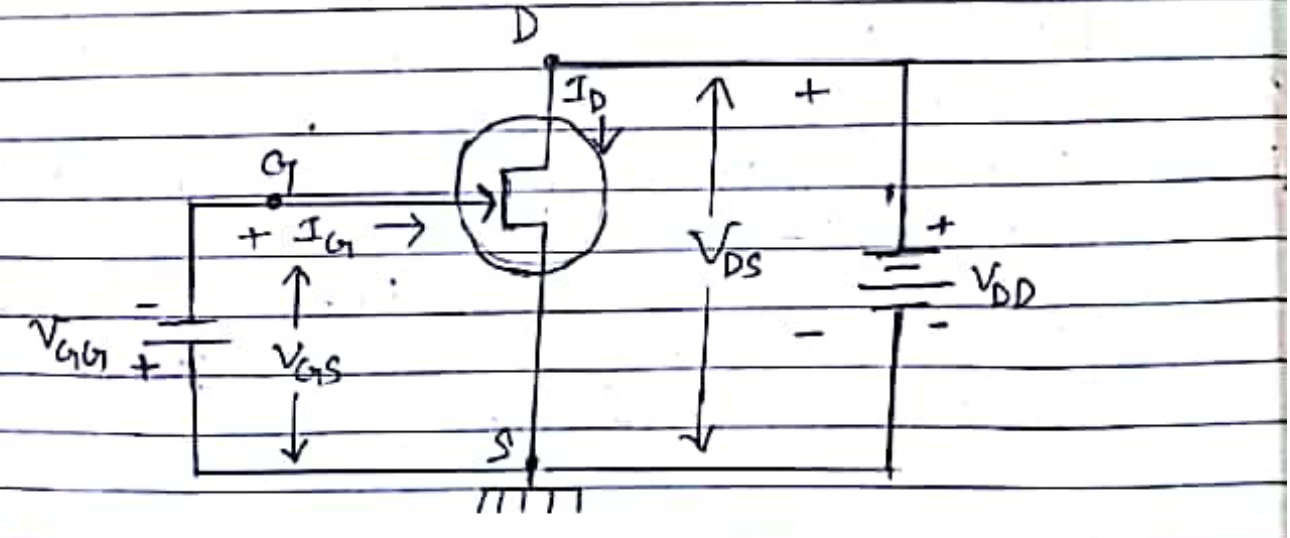


fig. 2 (a) n-channel FET (b) p-channel FET

An n-channel FET with its terminal connected to voltage sources is shown in fig. 1 and also schematically in fig. 3. The voltage V_{GG} & V_{DD} respectively supply the gate voltage & the drain voltage.



n-channel - FET

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