ALL ABOUT TRANSISTORS

Read the text and answer the questions.

A transistor is a device that determines the flow and quantity of current. Transistors can switch and amplify electronic signals.

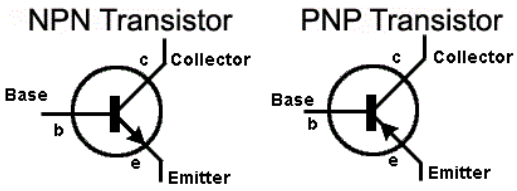
What does a transistor do? It takes in a small electrical current at its base pin and amplifies it such that a much larger current can pass between its collector and emitter pins. The amount of current that passes between these two pins is proportional to the voltage being applied at the base pin.

There are several different types of transistor: the bipolar transistor, the junction field effect transistor (JFET) and the metal-oxide semiconductor field-effect transistor (MOSFET). Both FET and bipolar transistors need a bias voltage in order to turn on.

A bipolar transistor has three terminals. An electrical current flows into the first terminal, known as the base. The base changes the current flow between the emitter and collector.

Field effect transistors also have three terminals. However, the terminals have different names: the gate, source, and drain. The other difference is that voltage applied to the gate changes the current flow between the source and drain. MOSFETs have two main operating modes: enhancement mode and depletion mode. Depletion mode transistors are “normally on” whereas enhancement mode transistors are “normally off.”

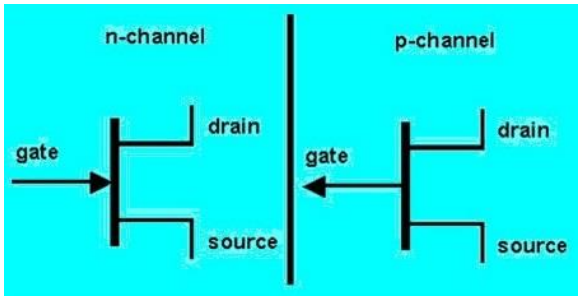
BIPOLAR



N Never
P Points
N iN

P Points
N iN
P Permanently

JUNCTION FIELD EFFECT TRANSISTOR



METAL-OXIDE SEMICONDUCTOR FIELD-EFFECT TRANSISTOR

1. Complete the following table after reading the text:

Transistor	Information
Bipolar	It needs a bias voltage in order to turn on. It has 3 terminals: base, emitter and collector.
JFET	It needs a bias voltage in order to turn on. It has 3 terminals: gate, source and drain.
MOSFET	It needs a bias voltage in order to turn on. It has 3 terminals: gate, source and drain. It has 2 main operating modes: enhancement mode and depletion mode.

2. Match the words or phrases (I-VII) with the definitions (A-G):

I. **F** amplify
II. **D** bias
III. **G** drain
IV. **A** enhancement mode
V. **E** gate
VI. **C** JFET
VII. **B** source

A. An operating mode where the channel is free of charge carriers when the gate source voltage is zero.
B. The part of a transistor where charge-carrying holes originate.
C. A type of transistor that has a gate, source, and drain.
D. A fixed voltage, applied to a device, in order to control its operation.
E. The controlling terminal that alters the current flow between the source and drain.
F. To increase the power of a signal.
G. The part of a FET that does the same job as the collector.

3. Read the sentences and choose which word or phrase best fits each blank.

base / depletion mode

A ***Depletion mode*** transistors are devices that are “normally on”.

B The ***base*** changes the flow of current between two terminals.

MOSFET / emitter

A ***MOSFET*** is a kind of transistor that requires the least amount of signal current in order to turn on.

B The ***emitter*** is the section of a transistor where charge-carrying holes originate.

bipolar transistor / collector

A Once charge carriers have left the base, they flow into the ***collector***.

B A ***bipolar transistor*** is a piece of equipment used to amplify and switch electronic signals