Section F9: Summary

Well, you did it!

Adding the FET to our arsenal of semiconductor devices has given us a pretty comprehensive representation of available devices. I hope you recognize that the characteristics and behavior of the FET, along with the BJT and diodes, is based on the physical concepts we started with – however painful and alien that stuff may seem sometimes, we gotta obey it!

Although the approach introducing the FET paralleled the BJT and analogies were developed in an attempt to make the new material more comfortable, there are fundamental differences between the BJT and FET. Primarily, the operation of the FET is considered as voltage-controlled, in contrast with a BJT, which is a current-controlled device.

To check yourself, make sure you are comfortable with our goals for this section of our studies. Specifically, you should understand

- Ø the basic physics of the FET, the relationship to semiconductor diode behaviors, and the fundamental characteristics and modes of operation for this type of device;
- Ø recognize the FETs we studied in detail and understand the fundamental differences between these devices and BJTs;
- Ø biasing concepts and constraints for FET amplifiers, and the biasing schemes introduced to ensure operational stabiity;
- Ø the characteristic expressions for each of the four basic configurations, and the approximations and assumptions that must be met or the modifications that must be made (Don’t just plug-and-chug blindly!);
- Ø the mathematical, graphical, and computer-based analytical techniques introduced for device operation under a variety of input conditions; and
- Ø strategies for the design of FET amplifiers to satisfy given specifications.