Testing JFETs

Figure 5 shows a simple circuit with which you can select JFETs and also match them if necessary. The tester feeds current into the source or connects the source to ground to measure the essential parameters of the device. In position 1 (switch in counterclockwise position), the source is connected to □10V through a 1M resistor. This feeds the source with approximately a 10∝A current, which you can consider the cutoff point V_P for the JFET. (Data sheets specify lower values, but this gives you a more practical value for measurements.) The voltmeter now indicates the pinch-off voltage V_P for the device.

The next two positions measure the V_{GS} for the device at given drain currents. These positions give practical readings for design purposes, and you can choose the constant-current sources for the values you need. The push-button switch shorts the source to ground, and the mA meter measures I_{DSS}. If you wish to measure only V_P and I_{DSS}, you can permanently wire the source to □10V through the 1M resistor, which gives you V_P, and then short the source to ground with the push-button to read I_{DSS}.

If you test P-channel devices, you must reverse the supply voltages and the constant-current diodes. Normally, I test a large batch of devices (say 100 of each type) and sort them by I_{DSS}. The different devices are then used in different applications.

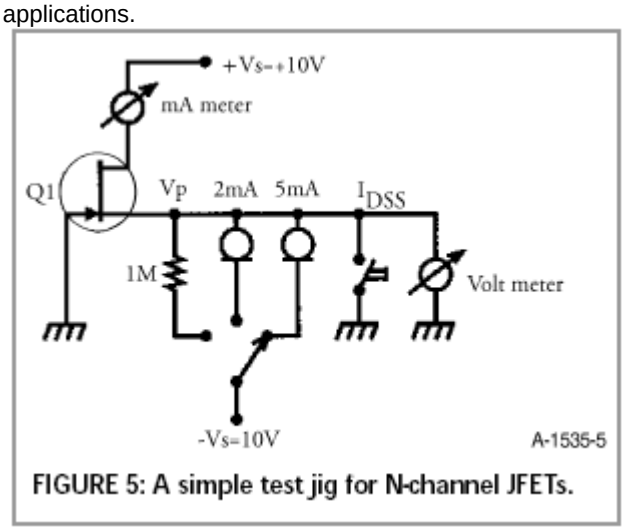

FIGURE 5: A simple test jig for N-channel JFETs.