

## POCKET SOLID STATE OSCILLOSCOPE

Along with the end of the vacuum-tube era of electronics came the end of high voltages, low efficiency of space and poor performance in many electronic devices. Transistors changed the way we viewed electronics and its capabilities. Then the integrated circuit proved that there may be no end to the continual advancement and miniturization in electronic components.

These advancements in electronic hardware resulted not only in changes of thought but also in overall procedure as well. IC's can do things transistors or tubes could not, plus do other things better (and often differently). So, it was only natural that the inevitable assortment of test equipment would also see changes. Previously, there were frequency meters, grid dippers, high-voltage voltmeters and probes, tunable oscillators and oscilloscopes. Today, with digital electronics advancing on every front, our test equipment centers on advanced digital frequency counters, DMM's, state monitors, digital function generators and various phase - frequency comparators and recorders; each of these having an ancestor, but never-the-less a definite advance in most cases. Again, each of the devices are related to the device they replace, but each has its own specific advantage.

The oscilloscope has still maintained much of its usefulness, more than perhaps most of the test equipment from its generation. Even in digital circuits, when operated at VHF frequencies, the oscilloscope is invaluable for troubleshooting glitches and the like. However, on a day-to-day basis, in many (but not all) service situations, the oscilloscope is used simply to get a "picture" of what's going on, rather than precise measurements. Many technicians say it helps to get the "feel" of a circuit problem. Digital multimeters and counters are used when it comes down to the real measurements.

So, today the oscilloscope is still needed, but not always to the same degree or with the same role as in the past. After all, with its cathode ray tube display, it is clearly something left over from another era. These facts are brought to light when one sees the overall tendency to make scopes smaller, with one company even offering a "miniscope" with a  $1\frac{1}{2}$ " screen. The basic idea is, again, that the scope is used mainly to get a feel for the problem, where precise measurement is not needed. Even this mini-scope, though, with its internal battery pack, is much too large and heavy for the field service technician it was designed for to carry it conveniently. It also will not last long on battery power and is relatively costly, all these limitations due to the use of the traditional cathode ray tube.

A small, pocket oscilloscope, something along the lines of a pocket calculator, would prove to be just the thing for many situations. The solid state display would allow for a very small size and weight, low power consumption and eventually, if not immediately, lower cost. Also, due consideration should be given to making it a multi-function device, using the display for other built-in test equipment such as a DMM, frequency counter, maybe even a calculator!