

Letters

BUILDING THE COSMAC "ELF"

Congratulations on "Build the Cosmac 'Elf'" (August, p 33). It is refreshing to read about a project that involves an MPU other than the 8080 or 6800.—*W. J. Haberhern, Cocoa Beach, FL.*

I very much enjoyed "Build the Cosmac 'Elf'" in the August issue. The price and complexity were just at my level.—*D. Morris, Midland, MI.*

I really appreciated the Cosmac "Elf" article. I intend to build it as soon as I have found suppliers for the parts. In my search for the parts, I have encountered some problems:

(1) The article says that the CDP 1802 microprocessor sells for less than \$30. The only supplier that I could find for the chip sells it for \$40.

(2) The memories called for are 2101 (256 × 4). Every 2101 I can find is 256 × 1.

(3) I have been unable to find the 5082-7340 hex displays anywhere. I realize that others could be substituted but I would like to use the one suggested.—*David Borgelt, Kingdom City, MO.*

In answer to Dave's questions, we have the following information: (1) The MPU you want is CDP1802CD. (The last CD means 4-6-volt operation in a ceramic package.) It sells for \$29.50. RCA tells us that the MPU has been in short supply due to the heavy demand, but it should be available again soon. A list of RCA-appointed distributors around the country and CDP1802CD data sheets are available free of charge from: RCA Solid State Division, Box 3200, Somerville, NJ 08876.

(2) Despite what some advertisements may say, the 2101 is 256 × 4.

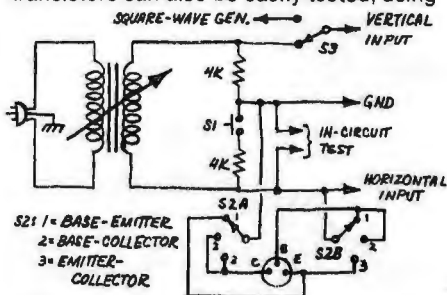
(3) The 5082-7340 displays are available from most distributors who carry Hewlett-Packard products.

A BETTER CURVE TRACER

I would like to make a few comments about the circuit in "Curve Tracer Checks Semiconductor Quality" (March 1976). First, this circuit will not check zener diodes rated at voltages greater than the transformer's 12.6-volt secondary potential. Any zener diode rated at greater than this voltage will produce a trace like an ordinary pn junction. Secondly, the largest capacitance that can be tested is 1 μF . Values greater than this will produce a

"shorted" trace, while values less than 0.033 μF will produce an "open" trace. The limitation here is the 60-Hz line frequency; a possible answer to this would be to use a signal generator in lieu of the filament transformer. Finally, with the base open, a true picture of the device under test cannot be represented, since the base-emitter junction is very important to the operation of the device. The Beta test circuit can be enhanced by use of a signal generator to permit the frequency to be changed and thus give a better picture of gain.

Below is a circuit I have used quite often for testing semiconductors, rheostats, capacitors, and coils. The variable transformer allows for a wider range of test voltages to solve the zener test problem. Power transistors can also be easily tested, using



a calibrated dial to list selected test voltages. Switch S3 can be used to switch in an external square wave (scope calibrator or signal generator) for ringing coils. Switch S2 provides fumble-free out-of-circuit testing.—*D.D. Dempsey, Fort Gordon, GA.*

VIDEO GAME READER NOTES

I've seen two table tennis (April 1976) games that have the same flaw: The vertical interval from the vertical sync generator (Fig. 2) is too long. I've seen it as long as 28 lines when it's supposed to be only three horizontal lines. Also, with the components specified, a 60-Hz vertical rate can't be obtained. I've discovered that by increasing the value of C3 to 0.15 or 0.12 μF and decreasing the value of R10 to 1500 ohms, the problem will clear up, and tearing at the top of the displayed picture will cease.—*Cary Sagady, Lindenwold, NJ*

I couldn't resist building the "Space War" game (April 1976), but when I got it up and running, the space ships remained at the top of the screen and I had little control over their positioning. I discovered that the trailing edge of the 555's output occurred about 1 ms after the vertical sync pulse. By changing the values of C14 and C15 to 4.7 μF and inserting a 470-ohm resistor in series with each position-control potentiometer's wiper, I solved the problem.—*Charles F. Brillowsky, Southgate, MI*

ULTRA-UNIQUE DEVICES

It appears that POPULAR ELECTRONICS is continuing with construction projects that contain ultra-unique components. After