

## 6. THE BASIC READ ONLY MEMORY

IC5 is a 16K byte read only memory (ROM) chip. Housed in its 28 pin package, this chip is provided with 14 address lines, 8 data lines, two chip select pins, one output enable pin to enable data to be read by the CPU and of course the power supply connections. Its pin connection diagram is illustrated in fig. 5.

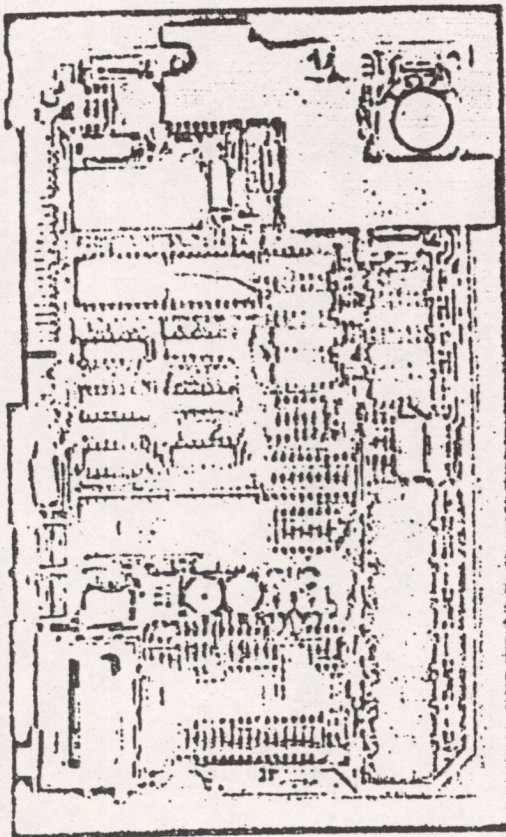
The ROM contains the program which tells the CPU how to run Sinclair BASIC. This program is embedded into the silicon structure of the chip during manufacture and cannot ever be changed. If this were not the case then BASIC would disappear whenever the power was switched off. Also, since you cannot modify the BASIC program nothing that you can do with software from the Spectrum keyboard can possibly destroy BASIC.

The ROM is positioned from address zero upwards. It has to be positioned here, because when the CPU is reset (when it is switched on), the CPU always runs the machine code program starting from address zero.

The ROMCS connection on the rear edge connector can be connected directly to +5 volts to disable the BASIC ROM. The ROMCS output from the ULA is connected via R33, and is therefore unable to pull the ROMCS signal low when the +5 volt connection is made. This might be useful for future add ons which would have their own ROM or RAM switched in instead. Different languages could then be run from the Spectrum in place of BASIC. Replacing the BASIC ROM in this way with a new chip requires a thorough understanding of the Spectrum hardware and software requirements. A totally new operating system for inclusion in the new chip would have to be written.

Chips called EPROMs (erasable programmable read only memories) are available with the same connections as the Sinclair ROM. The 27128 EPROM is such a device. It too contains 16K bytes of memory. The difference is that it can be programmed by the user. Once programmed, it retains all of the data just like a ROM, even when the power is switched off. EPROMS can be erased so that they can be reprogrammed, using ultraviolet light. This shines directly onto the silicon chip through a glass window in the top of the package. This facility is useful because it allows the same chip to be used again and again with different programs in it.

ISSUE 2 BOARD



ISSUE 1 BOARD

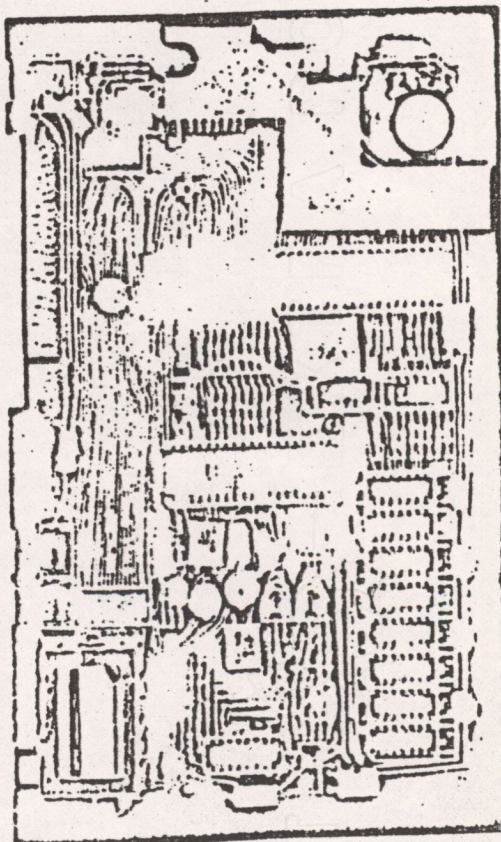


PLATE 5 - PHOTO OF MAIN SPECTRUM BOARD  
WITH ROM OUTLINED