

For a discussion of the way the 80-column firmware overrides the peripheral card, see the section "Other Uses of I/O Memory Space" in Chapter 6. The pinouts of the 2364 ROMs are given in Figure 7-5.

Extended keyboard IIe

NC	1	28	VCC
A12	2	27	CS1
A7	3	26	A13
A6	4	25	A8
A5	5	24	A9
A4	6	23	A11
A3	7	22	\overline{OE}
A2	8	21	A10
A1	9	20	\overline{CE}
A0	10	19	MD7
MD0	11	18	MD6
MD1	12	17	MD5
MD2	13	16	MD4
GND	14	15	MD3

Figure 7-6
23128 ROM pinouts

The extended keyboard IIe has the same programs stored in ROM as the original and enhanced IIe's do. However, the extended keyboard IIe uses a single 23128 IC (128K ROM) instead of the two 2364 ICs used in the original and the enhanced IIe. This new ROM IC is enabled by the ROMEN signal, which is a logical AND of the ROMEN1 and ROMEN2 signals. The pinout diagram for the 23128 ROM is given in Figure 7-6.

Two other portions of the Diagnostics ROM, addressed from \$C100 to \$C2FF and from \$C400 to \$C7FF, contain the built-in self-test routines. These address spaces are normally assigned to the peripheral cards; when the self-test programs are running, the peripheral cards are disabled.

The remainder of the Diagnostics ROM, addressed from \$D000 to \$DFFF, contains part of the Applesoft BASIC interpreter.

The ROM enabled by ROMEN2, sometimes called the Monitor ROM, occupies the memory address space from \$E000 to \$FFFF. This ROM contains the rest of the Applesoft interpreter, in the address space from \$E000 to \$EFFF, and the Monitor subroutines, from \$F000 to \$FFFF.

The other ROMs in the Apple IIe are a type 2316 ROM used for the keyboard character decoder and a type 2333 ROM used for character sets for the video display. This 2333 ROM is rather large because it includes a section of straight-through bit-mapping for the graphics modes. This way, graphics display video can pass through the same circuits as text without additional switching circuitry. The 2316's pinout is given in Figure 7-7, and the 2333's pinout is given in Figure 7-8.

A7	1	24	+5V
A6	2	23	A8
A5	3	22	A9
A4	4	21	+5V
A3	5	20	KBD'
A2	6	19	GND
A1	7	18	ENKBD'
A0	8	17	(n.c.)
MD0	9	16	MD6
MD1	10	15	MD5
MD2	11	14	MD4
GND	12	13	MD3

Figure 7-7
2316 ROM pinouts

RAM addressing

The RAM (programmable memory) in the Apple IIe is used to store both programs (along with their associated data) and the video display. The RAM in both the original and the enhanced IIe consists of eight 64Kx1 RAM ICs (Figure 7-9). The RAM in the extended keyboard IIe consists of two 64Kx4 RAM ICs (Figure 7-10).