HP 13255

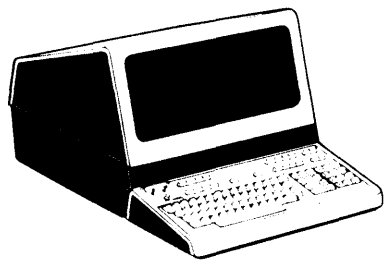
PROM CHARACTER MODULE

Manual Part No. 13255-91053

PRINTED

AUG-01-76

DATA TERMINAL
TECHNICAL INFORMATION



HEWLETT hp PACKARD

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1.0 INTRODUCTION.

The PROM Character Module provides the means of adding up to two user-generated PROM character sets as described in "HP Character Set Generation Kit Application Note", HP Part Number 13245-90001. When installed, the PROM Character Module can replace either the terminal's base set or any two of the three alternate character sets.

2.0 OPERATING PARAMETERS.

A summary of operating parameters for the PROM Character Module is contained in tables 1.0 through 5.1.

Table 1.0 Physical Parameters

Part Number	Nomenclature	Size (L x W x D) +/-0.100 Inches	Weight (Pounds)
02640-60053	PROM Character PCA	12.9 x 4.0 x 0.5	0.38
02640-60070	Rear Connector Assembly	N/A	N/A

Number of Backplane Slots Required: 1

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NOTE: This document is part of the 264XX DATA TERMINAL product series Technical Information Package (HP 13255).

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Number of Backplane Slots Required: 1

Table 2.0 Reliability and Environmental Information

Environmental: (X) HP Class B ( ) Other:
Restrictions: Type tested at product level
Failure Rate: 0.247 (percent per 1000 hours)

Table 3.0 Power Supply and Clock Requirements - Measured
(At +/-5% Unless Otherwise Specified)

+5 Volt Supply	+12 Volt Supply	-12 Volt Supply	-42 Volt Supply
@ 40 mA (without PROMs)	@ mA	@ mA	@ mA
	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE

115 volts ac	220 volts ac
@ A	@ A
NOT APPLICABLE	NOT APPLICABLE

Clock Frequency: MHz
NOT APPLICABLE

Table 4.0 Jumper Definitions

PCA Designation	Function (0,1)	Function (2)
W1	XU11 through XU14 - Replace Set 0 when the PROM Character PCA is connected to the Display Control PCA XU11 through XU15 - Replace Set 1 when the PROM Character PCA is connected to the Display Expansion Module	XU11 through XU15 - Replace Set 2 when the PROM Character PCA is connected to the Display Expansion Module

PCA Designation	(2)	(3)
W2	XU1 through XU5 - Replace Set 2 when the PROM Character PCA is connected to the Display Expansion Module	XU1 through XU5 - Replace Set 3 when the PROM Character PCA is connected to the Display Expansion Module

Table 5.0 Connector Information

Connector and Pin No.	Signal Name	Signal Description
P1, Pin 1	+5V	+5 Volt Supply
-2	GND	Ground Common Return (Power and Signal)
P1, Pin 3 through Pin 21		Not Used
P1, Pin 22	GND	Ground Common Return (Power and Signal)
P1, Pin A	GND	Ground Common Return (Power and Signal)
P1, Pin B through Pin S		Not Used
P1, Pin T	PRIOR IN	Bus Controller Priority In
-U	PRIOR OUT	Bus Controller Priority Out
P1, Pin V through Pin Z		Not Used

Table 5.1 Connector Information

Connector and Pin No.	Signal Name	Signal Description
P2, Pin 1	GND	Ground
- 2	LC0	Scan Line Counter Bit 0
- 3	LC2	Scan Line Counter Bit 2
- 4	BIT0	ASCII Bit 0
- 5	BIT2	ASCII Bit 2
- 6	BIT4	ASCII Bit 4
- 7	BIT6	ASCII Bit 6
- 8	$\overline{\text{BSS1}}$	Negative True, Buffered Set Select Bit 1
- 9		Not Used
-10		
-11	$\overline{\text{DBIT1}}$	Negative True, Dot 1 Output
-12	$\overline{\text{DBIT3}}$	Negative True, Dot 3 Output
-13	$\overline{\text{DBIT5}}$	Negative True, Dot 5 Output
-14	$\overline{\text{DBIT7}}$	Negative True, Dot 7 Output
-15	GND	Ground

Table 5.1 Connector Information (Cont'd.)

Connector and Pin No.	Signal Name	Signal Description
P2, Pin A	GND	Ground
-B	LC1	Scan Line Counter Bit 1
-C	LC3	Scan Line Counter Bit 3
-D	BIT1	ASCII Bit 1
-E	BIT3	ASCII Bit 3
-F	BIT5	ASCII Bit 5
-H	$\overline{\text{BSS0}}$	Negative True, Buffered Set Select Bit 0
-J	$\overline{\text{SET0}}$	Negative True, Selects Base Set Replacement When Low and W1 is in "0,1" Position
-K		Not Used
-L	$\overline{\text{DBIT0}}$	Negative True, Dot 0 Output
-M	$\overline{\text{DBIT2}}$	Negative True, Dot 2 Output
-N	$\overline{\text{DBIT4}}$	Negative True, Dot 4 Output
-P	$\overline{\text{DBIT6}}$	Negative True, Dot 6 Output
-R	$\overline{\text{DBIT8}}$	Negative True, Dot 8 Output
-S	GND	Ground

3.0 FUNCTIONAL DESCRIPTION. Refer to the block diagram (figure 1), schematic diagram (figure 2), timing diagram (figure 3), component location diagram (figure 4), and parts lists (02640-60053 and 02640-60070) located in the appendix.

The major functional groups of the PROM Character Module are the address buffer, output buffer, two PROM arrays, character set decoder, character select decoder, and a microvector data encoder.

3.1 ADDRESS BUFFER. The address buffer consists of eight gates to buffer the PROM address lines, thus preventing undue loading on the P2 connector.

3.2 OUTPUT BUFFER.

3.2.1 The output buffer consists of nine gates which drive either the Display Expansion Module or the Display Control PCA data lines, depending on which PCA is connected to the PROM Character Module.

3.2.2 The buffer output ($\overline{\text{DBIT0}}$ through $\overline{\text{DBIT7}}$), is an 8-bit dot position word that is applied back to the parallel-to-serial converter of either the Display Control PCA or the Display Expansion Module. If a microvector character set is installed, the ninth dot position is output as $\overline{\text{DBIT8}}$.

3.3 PROM ARRAYS.

3.3.1 The PROM arrays are two sets of five PROM sockets. These are each capable of storing a 128-character set of either the alphanumeric or microvector type. Each PROM holds 32 characters, the fifth PROM of each array contains the Microvector Bit 8 for all 128 characters.

3.3.2 Each PROM is organized as 512 words of eight bits each. The four LSB of the 9-bit address are LC0 through LC3 and the five MSB are the ASCII BIT0 through BIT4.

3.4 CHARACTER SET DECODER.

3.4.1 The character set decoder, in conjunction with Jumpers W1 and W2, selects which of the three possible alternate character sets are to be represented in PROMs on the PROM Character PCA.

3.4.2 When the PROM Character PCA is connected to the Display Control PCA, the Base Set Select ($\overline{SET0}$) signal is always low and the character set decoder applies the Base Set Enable (0/1 SEN) signal to the PROMs in character set 0 (Jumper W1 must be in the "0,1" position). Alternate character set select signals ($\overline{BSS0}$ and $\overline{BSS1}$) are also applied to the character set decoder and, if either or both signals go low, the character set decoder disables the PROM set by removing 0/1SEN. When this occurs, character set selection and character generation are performed by the Display Expansion Module.

When the PROM Character PCA is connected to the Display Expansion Module, $\overline{SET0}$ is always high and $\overline{BSS0}$ and $\overline{BSS1}$ are decoded by the character set decoder into set enabling signals (0/1SEN, 2SEN, or 3SEN) for the PROMs replacing character sets 1, 2, or 3. The position of Jumpers W1 and W2 determines which set select signal will enable their corresponding PROM sets and thus which alternate character set will be replaced by those PROMs.

3.5 CHARACTER SELECT DECODER.

3.5.1 The character select decoder generates a Chip Enable signal for each PROM socket, excluding the Microvector Bit 8 sockets (U5 and U15).

3.5.2 Once enabled by the character set decoder, the PROM character set (s) function the same as the replaced ROM character set (s) to generate dot patterns corresponding to received ASCII codes. The BIT5 and BIT6 signals are applied to the character select decoder which determines individual PROM selection (s) of 32 characters each, within a character set.

3.6 MICROVECTOR DATA ENCODER.

3.6.1 The microvector data encoder selects, from the Microvector Bit 8 PROM (U5 or U15), one of four data output lines corresponding to the desired microvector character.

3.6.2 The fifth PROM required for each microvector set has its output encoded by the microvector data encoder. One output bit is selected by the ASCII BIT5 and BIT6 which corresponds to the 32-character segment selected. The output of the microvector data encoder is buffered and then leaves the PROM Character PCA as $\overline{\text{DBIT8}}$.

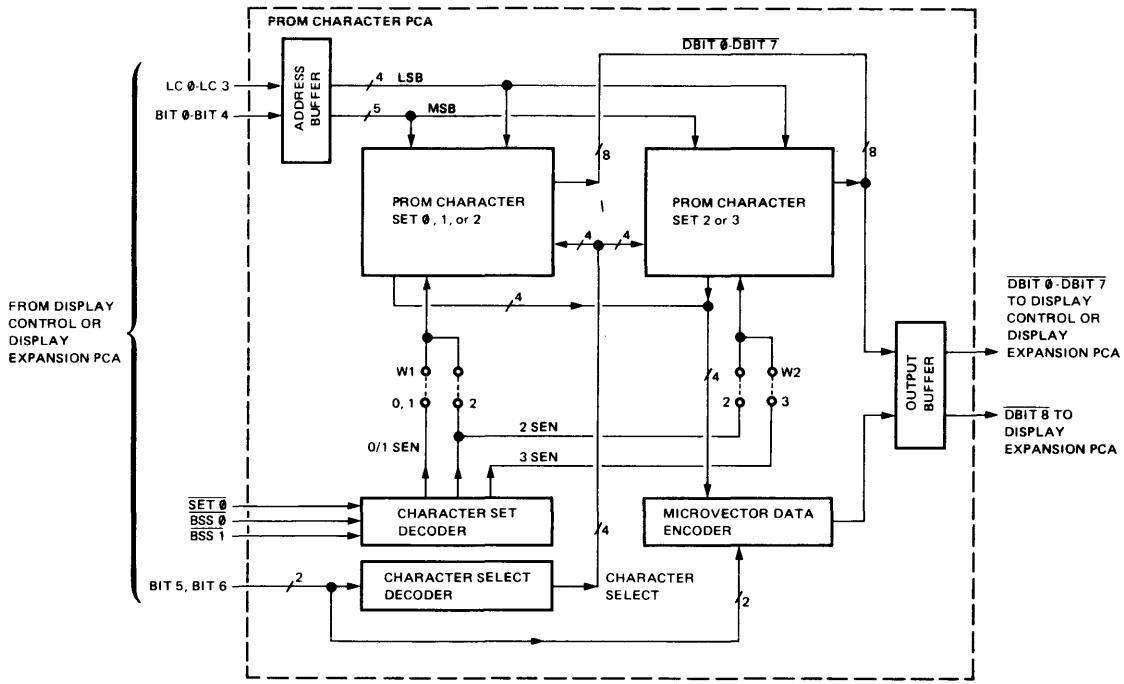
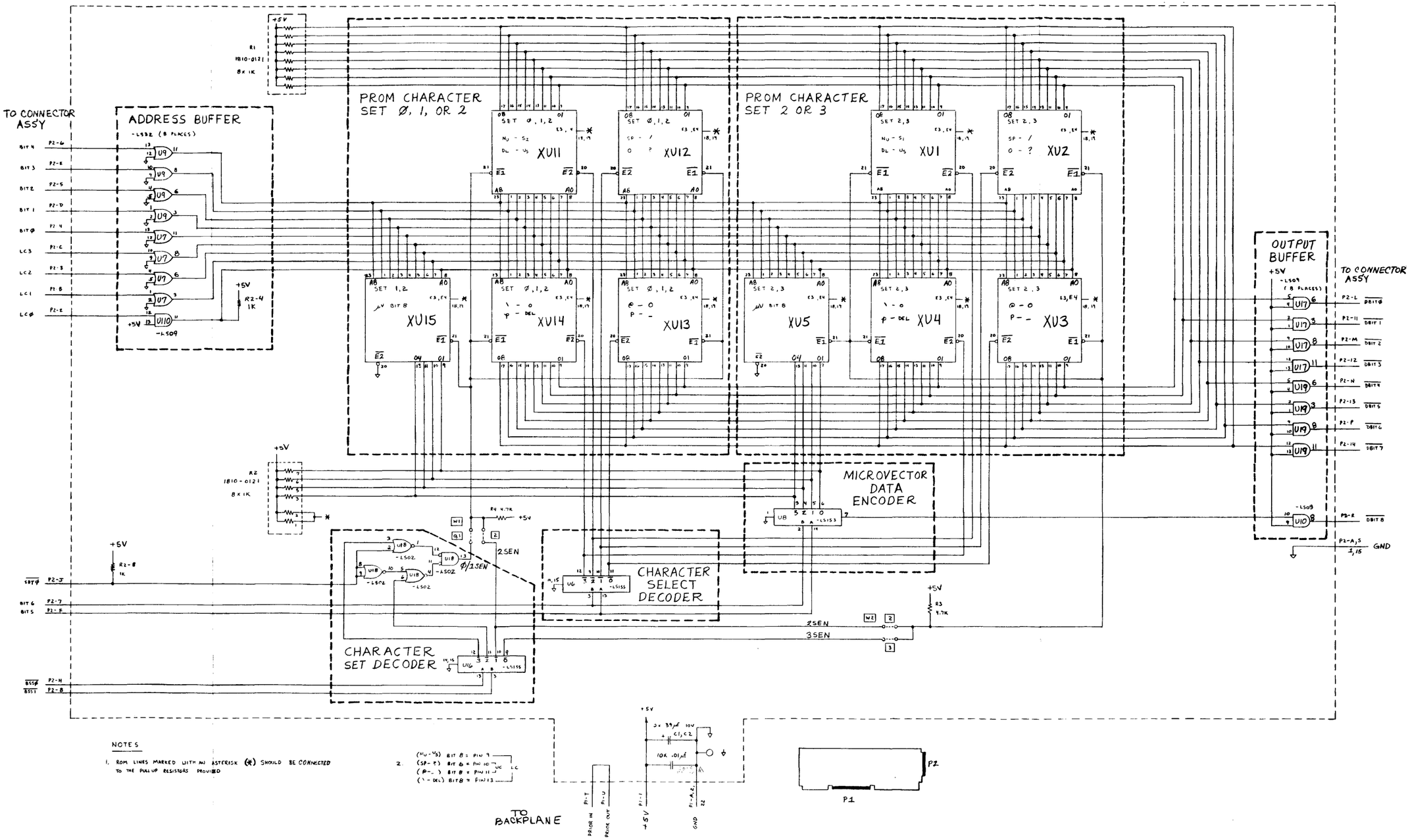


Figure 1
PROM Character Block Diagram
AUG-01-76 13255-91053



NOTES

1. ROM LINES MARKED WITH AN ASTERISK (*) SHOULD BE CONNECTED TO THE PULL UP RESISTORS PROVIDED

2. (MU-S2) BIT 8 = PIN 9
   (SP-/) BIT 6 = PIN 10
   (P-_) BIT 8 = PIN 11
   (\-DEL) BIT 8 = PIN 13

Figure 2
PROM Character PCA Schematic Diagram
AUG-01-76 13255-91053

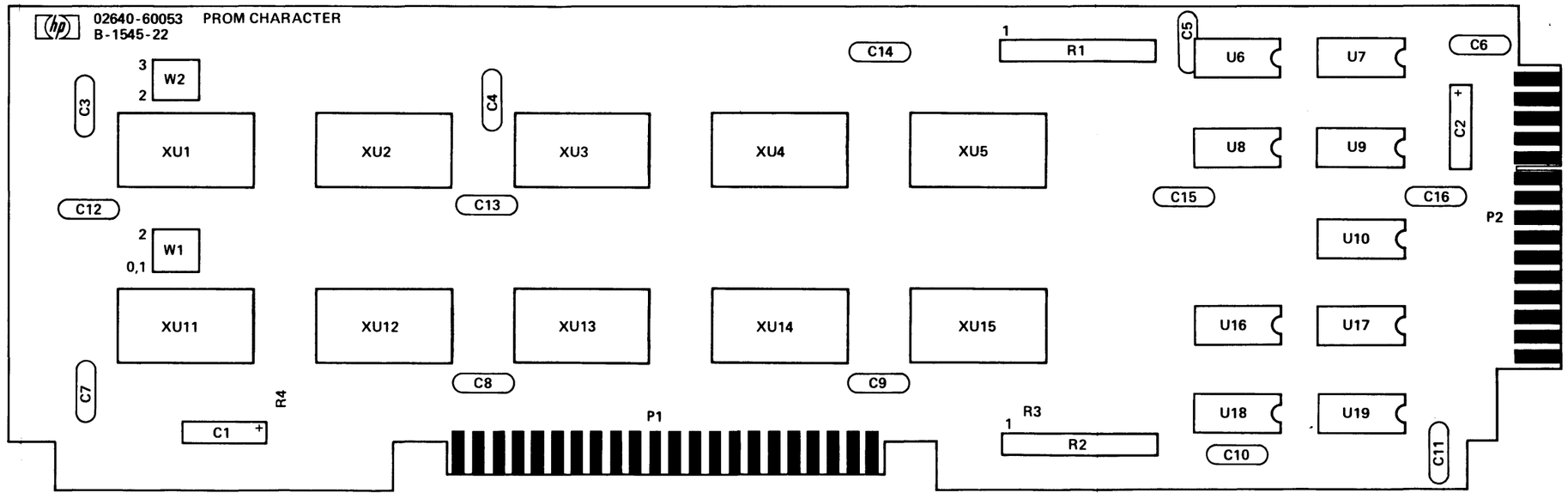
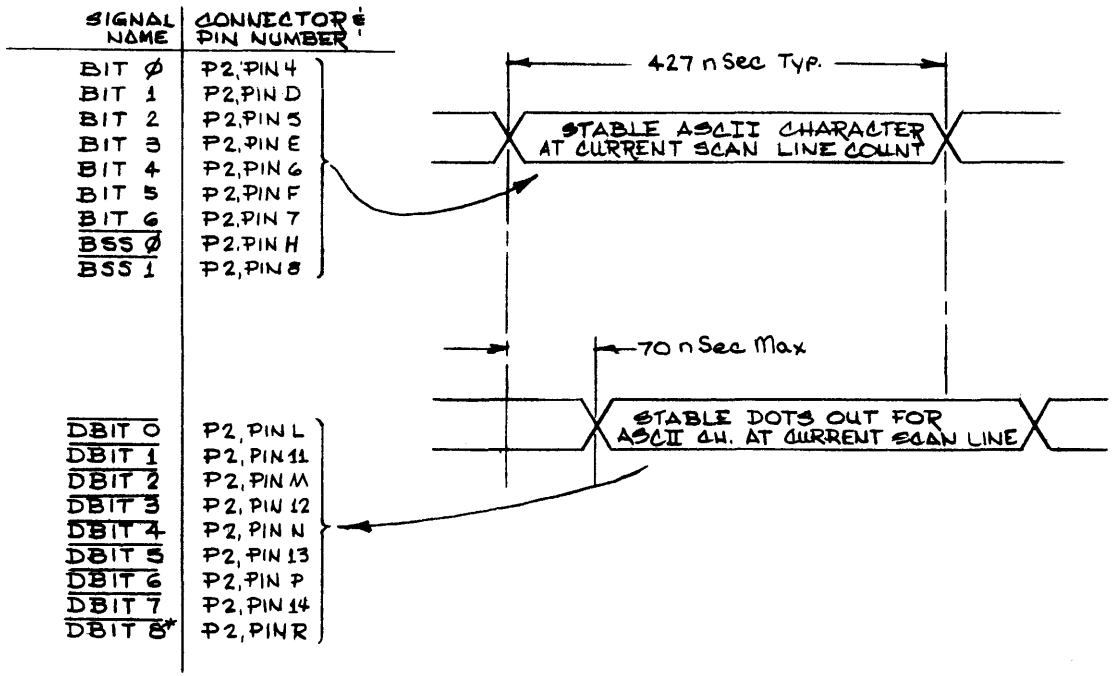


Figure 4
PROM Character PCA Component Location Diagram
AUG-01-76 13255-91053



*NOTE:

DATA IS PRESENT AT $\overline{\text{DBIT 8}}$ ONLY IF THE PROM CHARACTER SET ADDRESSED IS OF THE MICROVECTOR TYPE.

Figure 3
PROM Character Timing Diagram
AUG-01-76 13255-91053

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
	02640-60053	1	PROM CHARACTER ASSEMBLY DATE CODE: 8-1545-22 REVISION DATE: 04-15-76	28480	02640-60053
C1	0180-0393	2	CAPACITOR-FXD 39UF+-10% 10VDC TA	56289	150D396X901082
C2	0180-0393		CAPACITOR-FXD 39UF+-10% 10VDC TA	56289	150D396X901082
C3	0160-2055	14	CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C4	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C5	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C6	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C7	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C8	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C9	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C10	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C11	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C12	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C13	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C14	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C15	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C16	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
E1	0360-0124	1	TERMINAL-STUD SGL-PIN PRESS-MTG	28480	0360-0124
R1	1810-0121	2	NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0121
R2	1810-0121		NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0121
R3	0683-4725	2	RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
R4	0683-4725		RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
U6	1820-1245	2	IC-DIGITAL SN74LS155N TTL LS DUAL 2	01295	SN74LS155N
U7	1820-1208	2	IC-DIGITAL SN74LS32N TTL LS QUAD 2 OR	01295	SN74LS32N
U8	1820-1244	1	IC-DIGITAL SN74LS153N TTL LS 4	01295	SN74LS153N
U9	1820-1208		IC-DIGITAL SN74LS32N TTL LS QUAD 2 OR	01295	SN74LS32N
U10	1820-1246	3	IC-DIGITAL SN74LS09N TTL LS QUAD 2 AND	01295	SN74LS09N
U16	1820-1245		IC-DIGITAL SN74LS155N TTL LS DUAL 2	01295	SN74LS155N
U17	1820-1246		IC-DIGITAL SN74LS09N TTL LS QUAD 2 AND	01295	SN74LS09N
U18	1820-1144	1	IC-DIGITAL SN74LS02N TTL LS QUAD 2 NOR	01295	SN74LS02N
U19	1820-1246		IC-DIGITAL SN74LS09N TTL LS QUAD 2 AND	01295	SN74LS09N
XU1	1200-0541	10	SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU2	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU3	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU4	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU5	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU11	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU12	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU13	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU14	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
XU15	1200-0541		SOCKET-IC 24-CONT DIP DIP-SLDR	28480	1200-0541
	1251-0697	8	CONNECTOR-SGL CONT SKT .022-IN-BSC-SZ	22526	75540-001
	1258-0124	2	PIN-PROGRAMMING JUMPER;.30 CONTACT	91506	8136-475G1

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
	02640-60070	1	CONNECTOR ASSEMBLY (30-PIN) REVISION DATE: 03-26-76	28480	02640-60070
J1	1251-1886	2	CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-340
J2	1251-1886		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-340
	0380-0003	4	SPACER-RND .125LG .181D .250D BRS NI-PL	28480	0380-0004
	02640-00033	1	HANDLE, CONNECTOR	28480	02640-00033
	2190-0003	4	WASHER-LK HLCL NO.-4 .115-IN-ID	28480	2190-0003
	2260-0002	4	NUT-HEX-DBL-CHAM 4-40-THD .062-THK	28480	2260-0005
	02640-00032	1	INSULATOR	28480	02640-00032