IV PERSONALITY MODULE ASSEMBLY

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4.1 PARTS AND COMPONENTS

When ordering your Sol, you selected one of two types of Personality Modules: CONSOL Or SOLOS. The outer carton of your kit is stamped with the Personality Module type. Both use the same PC board marked 2708, assembly #107000, and differ only in the type of ROM's and their programming. (An alternative PC board marked 5204 and designed for type 5204 EPROM's is also available but not supplied with this kit. Schematic diagram X-4 and assembly drawing X2Ø refer to this alternative board.) Check all parts against Table 4-1 below. If you have difficulty identifying any parts, refer to Figure 3-1 on page III-5. One of two kits, using the same PC board: 2708-0 or 2708-1 may be supplied. The 2708-0 version uses one 9216 masked ROM which has no window on top of the IC package. The 2708-1 version uses two 2708 EPROM's which have windows.

Table 4-1. PM2708 Personality Module Parts List.

1	PM2708 PC Board	1 or 4*	1-ufd Capacitor, Tantalum Dipped
1 or 2*	9216 ROM or 2708 EPROM's with Personality program	1 or 2*	24-pin DIP Socket
1	74LSØ8	1	14-pin DIP Socket
0 or 2*	1N5231B Zener Diode	1	Handle Bracket (Sol-1045)
3 or 4*	10K ohm, ¼ watt, 5% Res.	2	2-56X1/8 Binder Head Screw
0 or 2*	100 ohm, ½ watt, 5% Res.		
1	.047-ufd Disc Ceramic		

* These are the quantities of parts used in the 2708-1 version.

4.2 ASSEMBLY TIPS

For the most part the assembly tips given in Paragraph 3.2 of Section III (Page III-1) apply to assembling the personality module.

4.3 ASSEMBLY PRECAUTIONS

For the most part the assembly precautions given in Paragraph 3.3 in Section III (Page III-6) apply.

4.4 REQUIRED TOOLS, EQUIPMENT AND MATERIALS

The following tools, equipment and materials are recommended for assembling the personality module.

1. Needle nose pliers
2. Diagonal cutters
3. Screwdriver
4. Soldering iron, 25 watt
5. 60-40 rosin-core solder (supplied)
6. Small amount of #24 solid wire

4.5 ORIENTATION

Capacitor location C2 will be located in the upper left hand corner of the board when the edge connector is positioned at the

left end of the board. In this position the component (front) side of the board is facing up. Subsequent position references related to the personality module circuit board assume this orientation.

4.6 ASSEMBLY-TEST

4.6.1 Circuit Board Check

( ) Visually check circuit board for broken traces, shorts (solder bridges) between traces and similar defects.

( ) Check circuit board to insure that the +5-volt bus, +12 volt bus and -12-volt bus are not shorted to each other or to ground. Using an ohmmenter, make the following measurements (refer to personality module assembly drawing in Section X):

( ) +5 volt Bus Test. On U1, measure between pin 12, (ground) and pin 24 (+5 volts). There should be no continuity.

( ) -5 volt Bus Test. On U1 and U2, measure between pin 12 (ground) and pin 21 (-5 volts). There should be no continuity.

( ) +12 volt Bus Test. Also on U1, measure between pin 12 (ground) and the bottom edge connector pin on the component side of the board marked A1.

( ) Inter-bus Test. On U1, measure between pins 12 and 21, then between edge connector pin A1 and pins 21, then 12. There should be no continuity in any of these measurements.

If visual inspection reveals any defect, or you measure continuity in any of the preceding tests, return the board to Processor Technology for replacement. If the board is not defective, proceed to next paragraph.

4.6.2 Assembly-Test Procedure

Refer to personality module assembly drawing X-6.

CAUTION

THE MEMORY IC'S USED ON THE PERSONALITY MODULE ARE MOS DEVICES. THEY CAN BE
(CAUTION continued on Page IV-3)

DAMAGED BY STATIC ELECTRICITY DISCHARGE. HANDLE THESE IC's SO THAT NO DISCHARGE FLOWS THROUGH THE IC. AVOID UNNECESSARY HANDLING AND WEAR COTTON, RATHER THAN SYNTHETIC, CLOTHING WHEN HANDLING MOS IC's. (STATIC DISCHARGE PROBLEMS ARE MUCH WORSE IN LOW HUMIDITY CONDITIONS.)

( ) Step 1. Install DIP sockets. Install each socket in the indicated location with its end notch oriented as shown on the circuit board and assembly drawing. Take care not to create solder bridges between the pins and/or traces.

INSTALLATION TIP

Insert socket pins into mounting pads of appropriate location. On back (solder) side of board, bend pins at opposite corners of socket (e.g. pins 1 and 9 on a 16-pin socket) outward until they are at a 45° angle to the board surface. This secures the socket until it is soldered. Repeat this procedure with each socket until all are secured to the board. Then solder the pins on all sockets.

LOCATION	TYPE SOCKET
( ) U1	24 pin
( ) U2*	24 pin*
( ) U3	14 pin

*Used on 2708-1 version only.

( ) Step 2. Install the following resistors in the indicated locations. Install these resistors parallel with the board. Bend leads by using needle nose pliers to grip the resistor lead right next to the resistor body, and bend the portion of the lead on the other side of the pliers with your finger. The bend must be the right distance from the resistor body for the resistor to fit easily into its two holes. Insert the leads into the two holes, and from the opposite side of the board pull the leads to bring the resistor body down to touch the board. Bend the leads outward on the solder (back) side of the board so the resistors do not slip out of position.

LOCATION	VALUE	COLOR CODE
( ) R1*	100 ohms	brown-black-brown
( ) R2*	100 ohms	brown-black-brown
( ) R3	10K	brown-black-orange
( ) R4*	10K	brown-black-orange
( ) R5	10K	brown-black-orange
( ) R6	10K	brown-black-orange

*not used on 2708-0 version

( ) Step 3. Install 1N5231B Zener Diodes in locations Z1, and Z2 if you have the 2708-1 version. Form the leads as in Step 2. Insert the diodes so that the white band on the diode is in the position indicated by the legend. Bend the leads outward to retain the diodes, then solder and trim the leads.

( ) Step 4. Install the following capacitors in the indicated locations. Take care to observe the proper value, type and orientation for each installation. On the dipped tantalum capacitors, the "+" lead is the one which is closest to the "+" marking on the body of the capacitor. Insert this lead in the hole marked "+" on the PC board legend. After inserting C5, remove it from the board before soldering to clear wax from the leads and holes. After inserting all capacitors, pull them close to the board and bend the leads outward to secure them. Solder and trim all leads.

LOCATION	VALUE (ufd)	TYPE
( ) C1*	1	Dipped Tantalum
( ) C2	1	Dipped Tantalum
( ) C3*	1	Dipped Tantalum
( ) C4*	1	Dipped Tantalum
( ) C5	.047	Disc Ceramic

*not used on 2708-0 version

( ) Step 5. Check for +5, +12, and -12 volt bus-to-ground shorts. Using an ohmmeter on OHMS times 1K or OHMS times 10K scale, make the following measurements. A typical reading is 1 Megohm. A reading less than 10K indicates a short.

( ) Measure between edge connector pins A2 and A15.

( ) Measure between edge connector pins A14 and A15.

( ) Measure between edge connector pins A1 and A15.

( ) If any measurement indicates a short, find and correct the problem before proceeding.

Rev C ( ) Step 6. Using two 2-56 x 1/8" binder head screws, install

handle bracket (Sol-1045). Position bracket on front (component) side of board at the right end as shown in Figure 4-2. Align bracket holes with mounting holes in board, insert screws from back (solder) side of board and drive into bracket. No nuts are needed since the bracket holes are tapped.

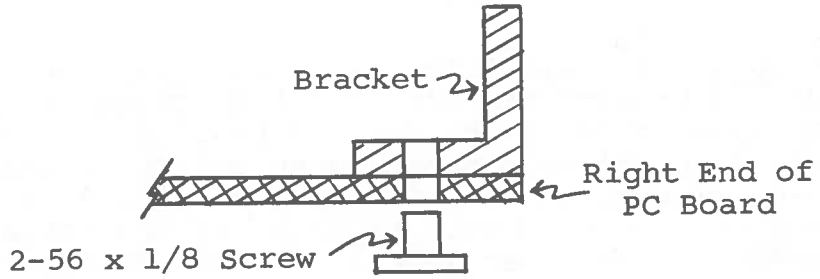


Figure 4-2. Handle bracket (Sol-1045) installation.

( ) Step 7. If you have a 2708-0 version with the 9216 ROM (windowless), omit this step. If you have the 2708-1 version, find the area above the U1 socket where the legend reads "-5V 21 CO 19 +12V." This legend designates five PC pads in a row directly underneath. On the back (solder) side of the board, there is a small trace which connects the "CO" and "21" pad. Cut this trace with a sharp knife or scribe point so there is no longer continuity between these pads. Form the clipping from a resistor lead, or other small bare wire into a loop and insert this jumper between the "-5V" pad and the "21" pad. Solder and trim the leads. Next find the two pads between C2 and R6, with legend "-16" under the right pad of the pair. On the back (solder) side of the board, cut the trace which connects these pads.

( ) Step 8. Stop assembly at this point and proceed with Sol-PC assembly and test up through Step 48. (See Section III.) Then go on to Step 9 of this procedure.

( ) Step 9. Plug personality module into J5 on Sol-PC, apply power to Sol-PC and make the following voltage measurements on the personality module, with respect to chassis ground:

MEASUREMENT POINT	VOLTAGE
Pin 24 of U1, U2	+5 V dc ± 5%
Pin 14 of U3	+5 V dc ± 5%
Pin 21*of U1, U2	-5 V dc ± 5%
Pin 12 of U1, U2	Ground
Pin 7 of U3	Ground

*For 2708-1 version only

( ) Measure between edge connector pin B14 and pin B15. You should measure more than 1M ohms. A reading less than 10K ohms indicates a short.

( ) If any voltages are incorrect, locate and correct the cause before proceeding to Step 10.

( ) If the voltages are correct, turn power off, disconnect power cable, unplug personality module and go on to Step 10.

( ) Step 10. Install IC's in the sockets numbered U1 through U3. Make sure the dot or notch indicating pin 1 on the IC package is in the correct position as indicated on the PC board component legend and the assembly drawing X-6. Socket U2 is left empty on 2708-0 versions (9216 ROM with no window). As shown in the table, the 2708 EPROM's have paper labels with the designation shown, while 9216 ROM's have the designation printed on the IC package itself.

	IC NO.	TYPE	IC LABEL CONSOL	IC LABEL SOLOS
2708-0 version	( ) U1*	2708	C	S4
	( ) U2*	2708	Empty	S5
	( ) U3	74LSØ8	--	--
2708-1 version	( ) U1*	9216	--	SOLOS
	( ) U2	Empty	--	--
	( ) U3	74LSØ8	--	--

*MOS devices. See CAUTION on pages IV-2, 3.

( ) Step 11. Plug personality module into J5 on Sol-PC and connect Sol-PC video output cable to video monitor. (Refer to CAUTION on Page III-22 in Section III.)

( ) Set S1 switches as follows:

No. 1 through 4: OFF

No. 5: ON

No. 6: OFF

( ) Turn monitor on and apply power to Sol-PC

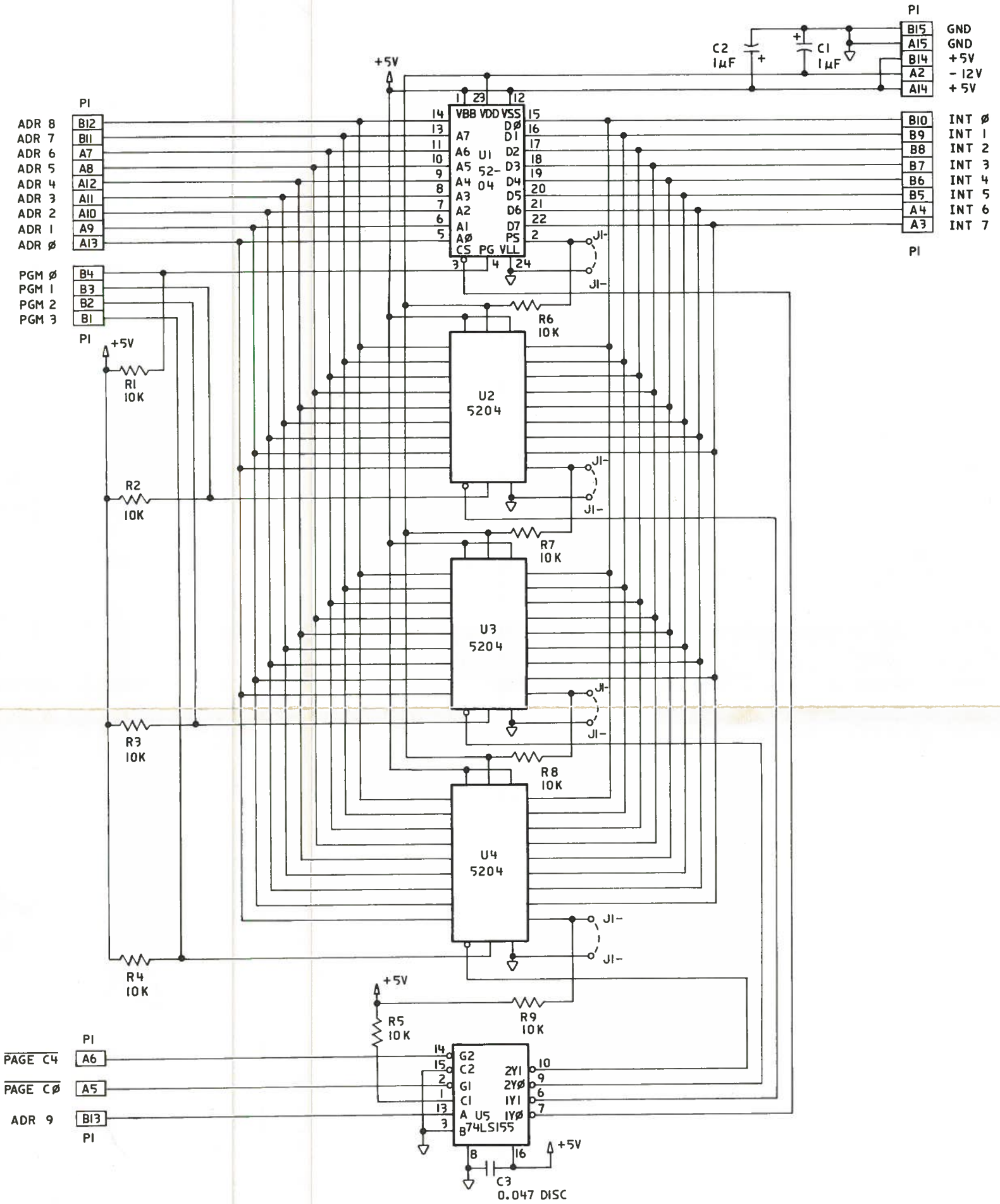
( ) With both the CONSOL and SOLOS modules, you should see the cursor, preceded by a prompt character, like this: >

( ) If you do not see a cursor, locate and correct the problem before proceeding.

( ) If a blinking cursor is present, the ENter and DUmp commands should operate as described in Section IX of this manual.

( ) If the ENter and DUmp commands do not operate correctly, locate and correct the problem before proceeding.

( ) If the personality module is operating correctly, turn monitor and power off, disconnect power cable and video output cable and go on to Step 50 in Section III. (The personality module can be left plugged in.)

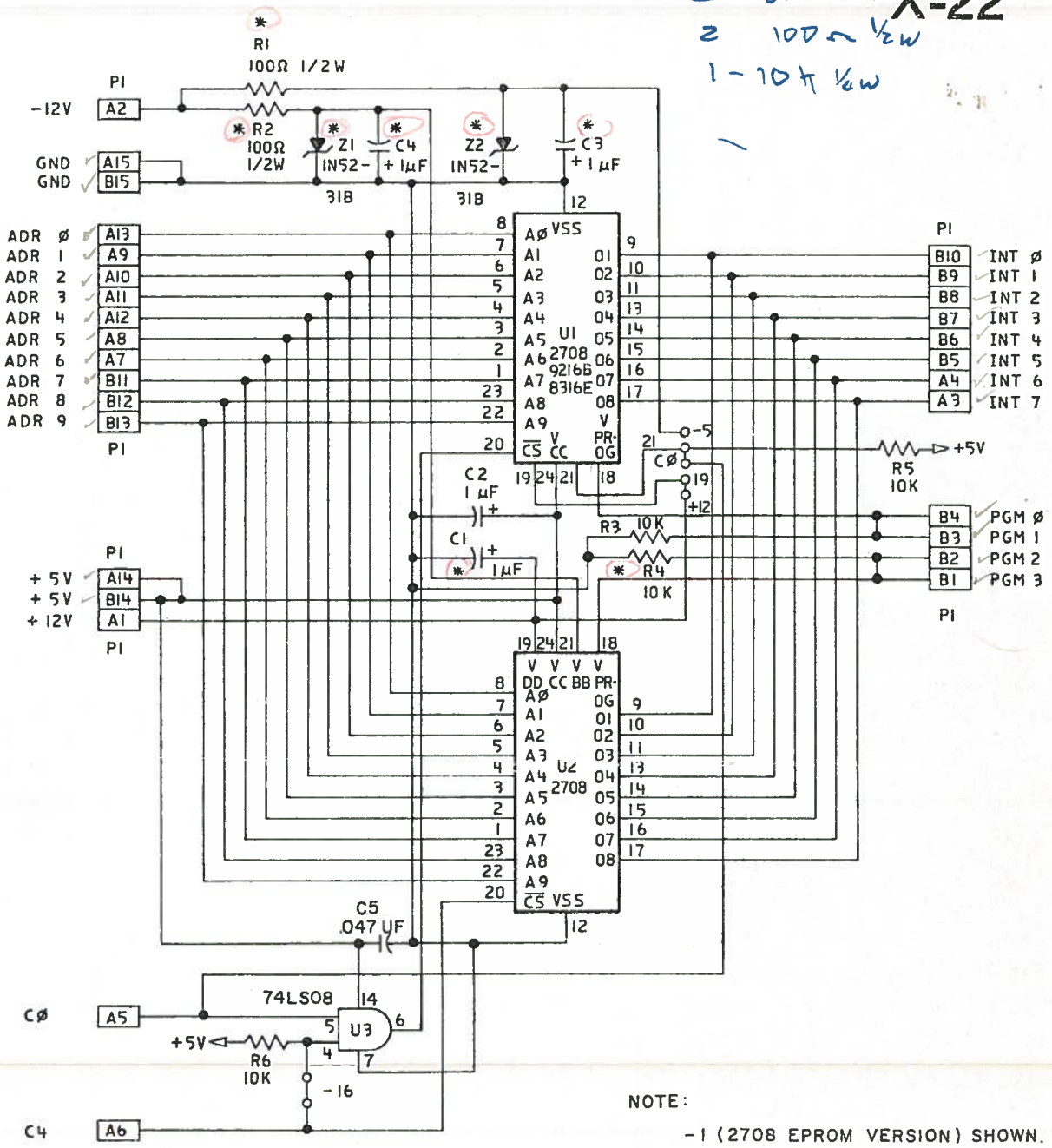


SCHEMATIC, Personality Module 5204		
SCALE: ——	APPROVED BY: ROBERT M. MARSH	DRAWN BY: LITO
DATE: 10-19-76		CHECKED BY: LEE
PROCESSOR TECHNOLOGY CORP.		
Sol		

2

2 - 5V Zeners (5231B)
3 - 1V Tantalums
2 100Ω 1/2W
1 - 10K 1/4W

X-22



NOTE:

-1 (2708 EPROM VERSION) SHOWN.

* = PART WHICH IS MISSING FROM REV. 0 (9216 MASKED ROM VERSION)

REF. DES.	PART OR DWG. NO.	PART DESCRIPTION
NEXT ASSY.	USED ON	
107000	501	

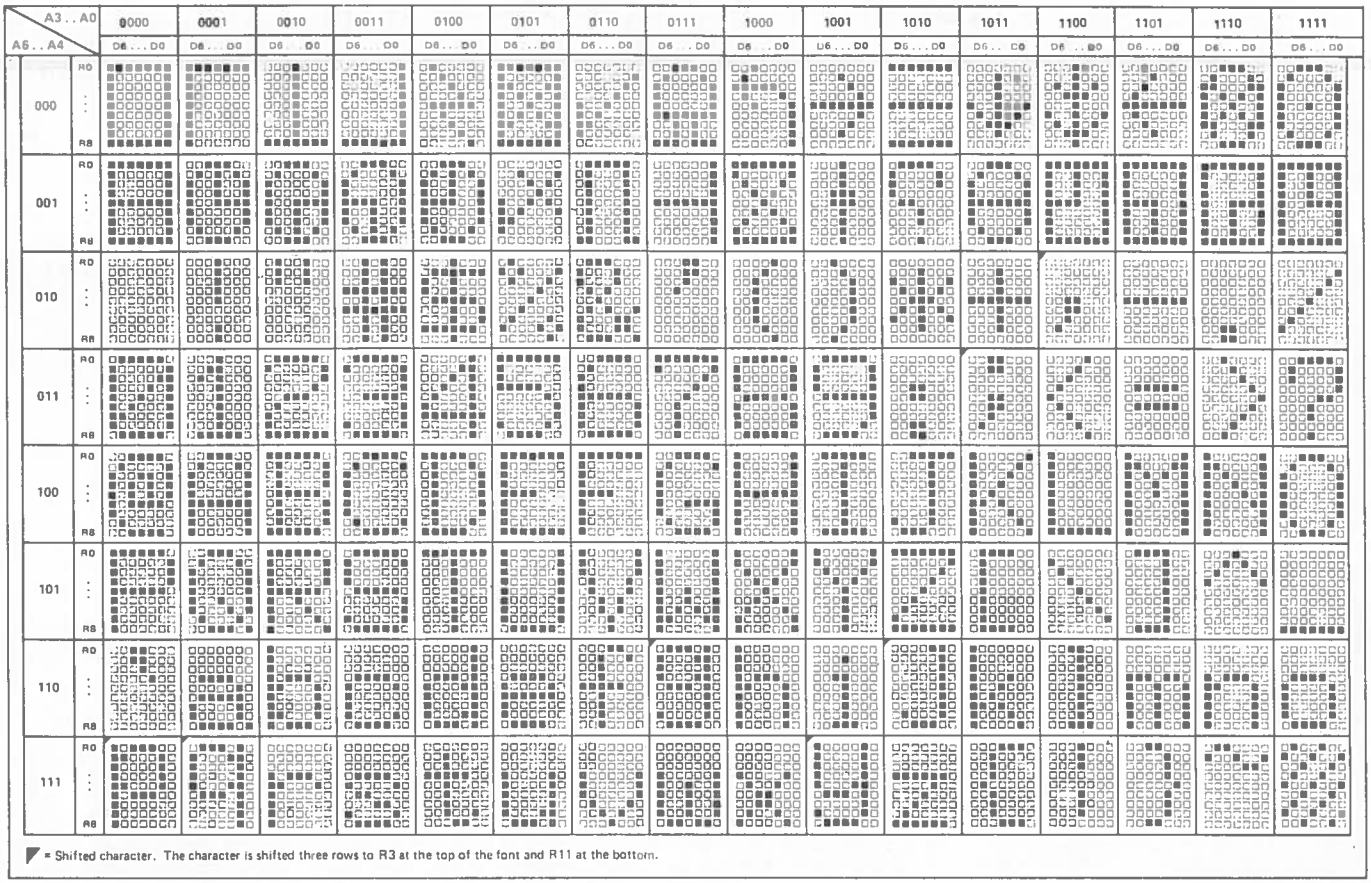
Processor Technology Corporation
6200 Hollis Street
Emeryville, CA 94608

DRAWN: LITO	ENGR:		
DATE: 10-20-76	DATE:		
CHECKED:	RELEASED:		
DATE:	DATE:		

SCHEMATIC, PERSONALITY MODULE 2708

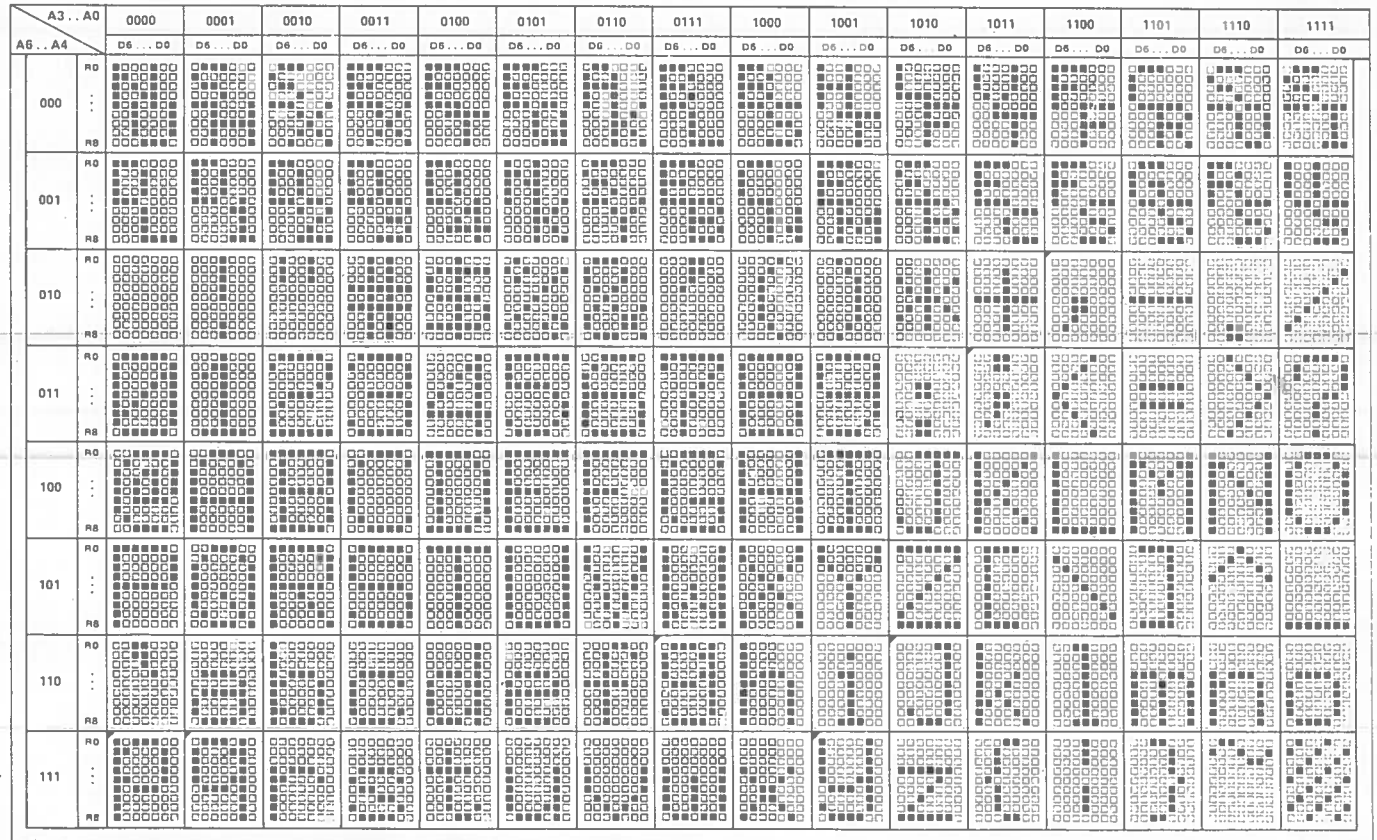
REV.	DRAWING NO.	SCALE: NONE	SIZE
B	07002	SHEET 1 OF 1	B

Figure 18-MCM6574 Pattern



▛ = Shifted character. The character is shifted three rows to R3 at the top of the font and R11 at the bottom.

Figure 19-MCM6575 Pattern



▛ = Shifted character. The character is shifted three rows to R3 at the top of the font and R11 at the bottom.