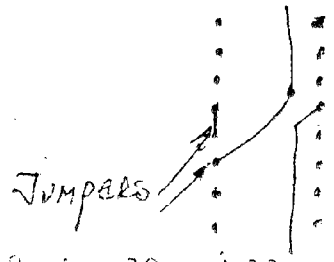
32K STATIC RAM BOARD

Assembly Instructions

1. Install 64/18 pin I.C. sockets at locations; A1 thru A16, B1 thru B16, C1 thru C16, and D1 thru D16.
Note: observe notch or indent on socket denoting pin 1 and orient accordingly. Pin 1 of all board pads is square.

2. Install 10/16 pin I.C. sockets at locations; C17, C18, C19, D17, E1, E2, E3, E4, E5, and E6.

3. Install 1/16 pin I.C. socket at location D18. For revision B boards proceed to step 4.



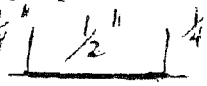
Jumpers are between D18 pins 12 and 13 and D18 pin 11 and the feedthrough adjacent to pins 3 and 4. Note: Install jumpers pushing ends into holes before soldering socket.

4. Install 1/14 pin I.C. socket at location D19.

5. Install 1/1.0 ufd dipped tantalum capacitor C 35 with the lead with the dot on it going into the pad marked (+).

6. Install 37/.1 ufd or .05 ufd ceramic capacitors at the locations shown on the silkscreen.

7. Prepare 8/1" jumpers as shown:



8. In the two jumper areas to the right of the memory array when viewed from the front install jumpers as follows.
a) If 2114 memory chips are included in your kit jumper 14 to D4, 13 to D5, 6 to A8, and 7 to D0, 13 to D1, 7 to A9, and 7 to A9 in the lower area. (A9 in the upper area. 14 to
b) If National 5257 or AMD 9130 memory chips are included jumper 14 to A8, 13 to A9, 6 to D4 and 7 to D5 in the upper area and 14 to A8, 13 to A9, 6 to D0, and 7 to D1 in the lower area.

9. Install the 3Ω/2w resistor next to the regulator area.

10. Install the heatsink using 4/#6 screws, washers and nuts. Align the heatsink so that the mounting holes for the regulators are exposed. Leave these bolts hand tight.

11. Install the LM340-5 or 7805 with the body of the device facing the edge connector. Secure to the board with #6 hardware.

12. Install the 2N6132 and the insulator with the body of the device facing the top of the board. Secure to the board with #6 hardware. Note: With an ohmeter check continuity from pin of location C19 to pin 8 of C19. If the reading is less than 100Ω then check that the leads of the two devices on the heatsink itself are not touching the heatsink itself. Check that the insulator is correctly positioned. If this doesn't help consult the factory or your dealer.

13. Check all soldering for cold connections. Install board without I.C. chips in backplane and apply power. Check VCC= +5VDC ±5% at C19-16. If not, remove power immediately and check step 12.

14. Install the integrated circuits as follows:
4/74LS138 at E1, E2, E4, E6
1/4009 at E5
1/4010 at E3
3/74367 at C17, C18, C19
2/74368 at D17, D18
1/74LS00 at D19

15. Install memory chips at the locations indicated:

Starting Addr. Decimal	Hex	Locations
0	0000	A9, C9
1024	0400	B9, D9
2048	0800	A10, C10
3072	0C00	B10, D10
4096	1000	A11, C11
5120	1400	B11, D11
6144	1800	A12, C12
7168	1C00	B12, D12
8192	2000	A13, C13
9216	2400	B13, D13
10240	2800	A14, C14
11264	2C00	B14, D14
12288	3000	A15, C15
13312	3400	B15, D15
14336	3800	A16, C16
15360	3C00	B16, D16

16384	4000	A1, C1
17408	4400	B1, D1
18432	4800	A2, C2
19456	4C00	B2, D2
20480	5000	A3, C3
21504	5400	B3, D3
22528	5800	A4, C4
23552	5C00	B4, D4
24576	6000	A5, C5
25600	6400	B5, D5
26624	6800	A6, C6
27648	6C00	B6, D6
28672	7000	A7, C7
29696	7400	B7, D7
30720	7800	A8, C8
31744	7C00	B8, D8

16. If this board is to occupy the top 32K of addressible memory, in the pad area in the center of the board adjacent to the edge connector, cut the etch from S2 to S3 and jumper S1 to S2.

This completes the assembly.

32K STATIC RAM TROUBLE SHOOTING

In the following discussion voltages may be checked with a meter or an oscilliscope and levels may be checked with a logic probe or oscilliscope.

1. Initial Checks
The following procedure checks the control terms and address drivers.

Remove 74367's from C18 and C19.
Remove all other system memory.
Apply power to system and reset if needed.
Check for pulse trains at:

D19-3	Board select
D19-8	Data Out Enable
D18-11	Data In Enable
C17-11	Address 9
C17-13	" 8
D17-9	" 7
D17-7	" 6
D17-11	" 5
D17-5	" 4
D18-5	" 3
D17-3	" 2
D18-3	1
D17-13	" 0
E4-15	Select 0-1K
E4-14	" 1-2K
E4-13	" 2-3K
E4-12	" 3-4K
E4-11	" 4-5K
E4-10	" 5-6K
E4-9	" 6-7K
E4-7	" 7-8K
E6-15	" 8-9K
E6-14	" 9-10K
E6-13	" 10-11K
E6-12	" 11-12K
E6-11	" 12-13K
E6-10	" 13-14K
E6-9	" 14-15K
E6-7	" 15-16K
E1-15	" 16-17K
E1-14	" 17-18K
E1-13	" 18-19K
E1-12	" 19-20K
E1-11	" 20-21K
E1-10	" 21-22K
E1-9	" 22-23K
E1-7	23-24K

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D19-8	Data Out Enable
D18-11	Data In Enable
C17-11	Address 9
C17-13	" 8
D17-9	" 7
D17-7	" 6
D17-11	" 5
D17-5	" 4
D18-5	" 3
D17-3	" 2
D18-3	" 1
D17-13	" 0
E4-15	Select 0-1K
E4-14	" 1-2K
E4-13	" 2-3K
E4-12	" 3-4K
E4-11	" 4-5K
E4-10	" 5-6K
E4-9	" 6-7K
E4-7	" 7-8K
E6-15	" 8-9K
E6-14	" 9-10K
E6-13	" 10-11K
E6-12	" 11-12K
E6-11	" 12-13K
E6-10	" 13-14K
E6-9	" 14-15K
E6-7	" 15-16K
E1-15	" 16-17K
E1-14	" 17-18K
E1-13	" 18-19K
E1-12	" 19-20K
E1-11	" 20-21K
E1-10	" 21-22K
E1-9	" 22-23K
E1-7	23-24K

7805 OR LM340-5 LEADS ARE NOT TOUCHING THE HEATSINK AND THAT NO SOLDER BRIDGES EXIST. IF YOU CANNOT OBTAIN THE PROPER READING CONTACT YOUR DEALER. DO NOT APPLY POWER UNLESS THE PROPER READING IS OBTAINED!!!

13. INSTALL INTEGRATED CIRCUITS AS FOLLOWS: 4 74LS138 AT LOCATIONS E1, E2, E4, AND E6, 1 4009 AT LOCATION E5, 1 4010 AT LOCATION E3, 3 74367 AT LOCATIONS C17, C18, AND C19, 2 74368 AT LOCATIONS D17, AND D18, 1 7400 AT LOCATION D19.

ADVANCED COMPUTER PRODUCTS

14. INSTALL MEMORY CHIPS AT THE LOCATIONS DESIRED.

STARTING ADDR.(10)	STARTING ADDR.(16)	BIT 7-4 LOCATION	BIT 3-0 LOCATION
0	0000	A9	C9
1024	0400	B9	D9
2048	0800	A10	C10
3072	0C00	B10	D10
4096	1000	A11	C11
5120	1400	B11	D11
6144	1800	A12	C12
7168	1C00	B12	D12
8192	2000	A13	C13
9216	2400	B13	D13
10240	2800	A14	C14
11264	2C00	B14	D14
12288	3000	A15	C15
13312	3400	B15	D15
14336	3800	A16	C16
15360	3C00	B16	D16
16384	4000	A1	C1
17408	4400	B1	D1
18432	4800	A2	C2
19456	4C00	B2	D2
20480	5000	A3	C3
21504	5400	B3	D3
22528	5800	A4	C4
23552	5C00	B4	D4
24576	6000	A5	C5
25600	6400	B5	D5
26624	6800	A6	C6
27648	6C00	B6	D6
28672	7000	A7	C7
29696	7400	B7	D7
30720	7800	A8	C8
31744	7C00	B8	D8

15. IF THIS BOARD IS TO OCCUPY THE TOP 32K OF ADDRESS SPACE, IN THE PAD AREA ADJACENT TO THE EDGE CONNECTOR, CUT THE ETCH FROM S2 TO S3 AND JUMPER S1 TO S2. IF THE SYSTEM CONTAINS A DMA CONTROLLER WHICH DOES NOT GENERATE PSYNC, REMOVE THE 7400 AT D19, BEND OUT PIN 1 SO THAT IT WILL NOT MAKE CONTACT AND REINSTALL.

16. END OF ASSEMBLY

9. Install the 3Ω/2w resistor next to the regulator area.

10. Install the heatsink using 4/#6 screws, washers and nuts. Align the heatsink so that the mounting holes for the regulators are exposed. Leave these bolts hand tight.

11. Install the LM340-5 or 7805 with the body of the device facing the edge connector. Secure to the board with #6 hardware.

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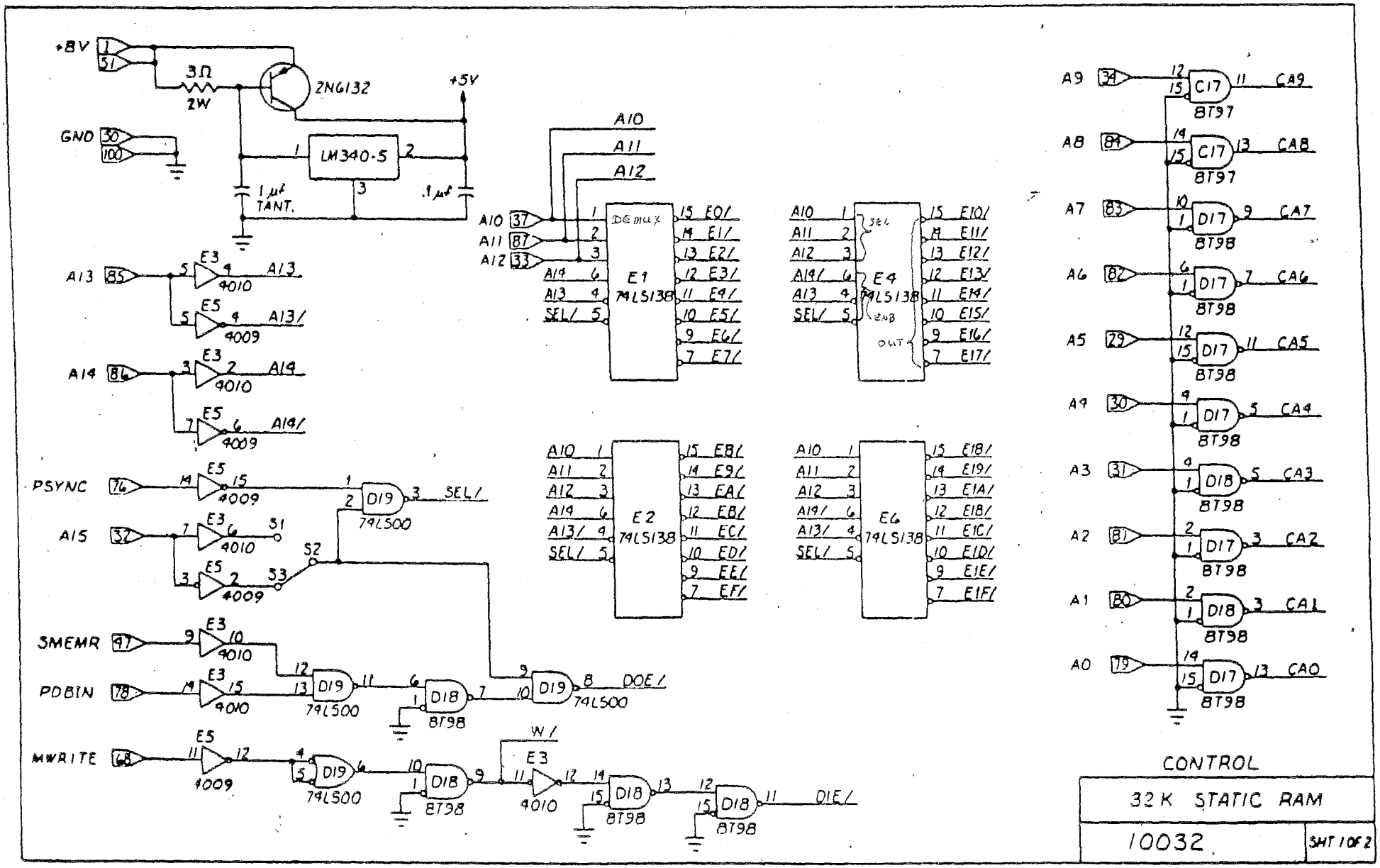
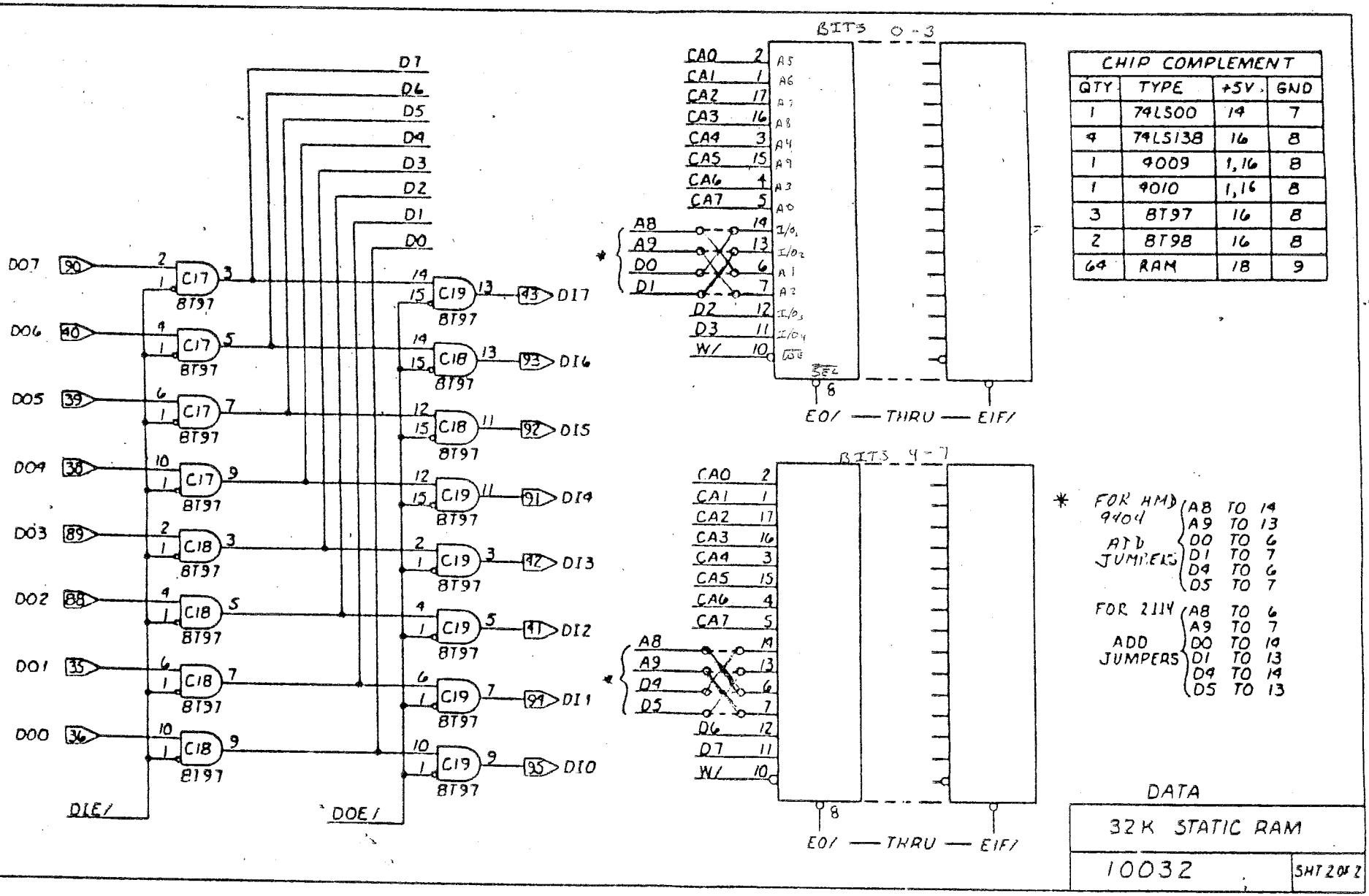

+8V
3Ω
2W
2NG132
+5V
GND
LM340-5
1 µf TANT.
.1 µf
A13
A14
PSYNC
A15
SMEMR
PDBIN
MWRITE
E3
E5
4010
4009
74LS00
8T98
DOE/
DIE/
SEL/
S2
S3
W/
A10
A11
A12
DEMUX
E1
74LS138
E2
E4
E6
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
C17
D17
D18
D19
8T97
CA9
CA8
CA7
CA6
CA5
CA4
CA3
CA2
CA1
CA0
CONTROL
32K STATIC RAM
10032
SHT 1 OF 2



CHIP COMPLEMENT			
QTY	TYPE	+5V.	GND
1	74LS00	14	7
4	74LS138	16	8
1	4009	1,16	8
1	4010	1,16	8
3	BT97	16	8
2	BT98	16	8
64	RAM	18	9

* FOR HM4 4904 ADD JUMPERS

A8	TO	14
A9	TO	13
D0	TO	6
D1	TO	7
D4	TO	6
D5	TO	7

FOR 2114 ADD JUMPERS

A8	TO	6
A9	TO	7
D0	TO	14
D1	TO	13
D4	TO	14
D5	TO	13

DATA

32K STATIC RAM

10032

SHT 2 OF 2