How to build 1 MB SIMM in NMS8245

Hans Oranje, 2003

English translation by HansO, 2003

After it became possible to build a 1 MB SIMM in the NMS8250/55/80 requests came to build the 1MB SIMM in a NMS8245.

Required are:

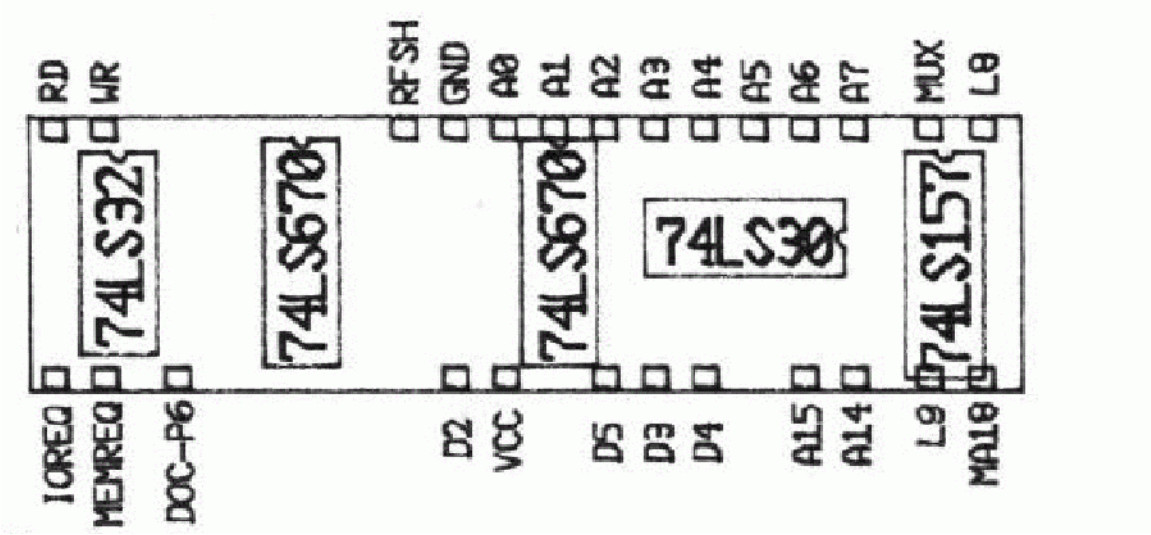
- 1 x mini mapper print (see text) with
  1x 74LS32
  1x 74LS30
  2x 74LS670
  1x 74LS157
- 1 x #CAS selection print (see text) with
  1x 74LS08
  1x 74LS00
- 1 x 1 MB 3 chip PC SIMM 30 pins (as found in older PC's)
- thin! isolated wire
- small soldering iron

Step 1: Remove memory chips

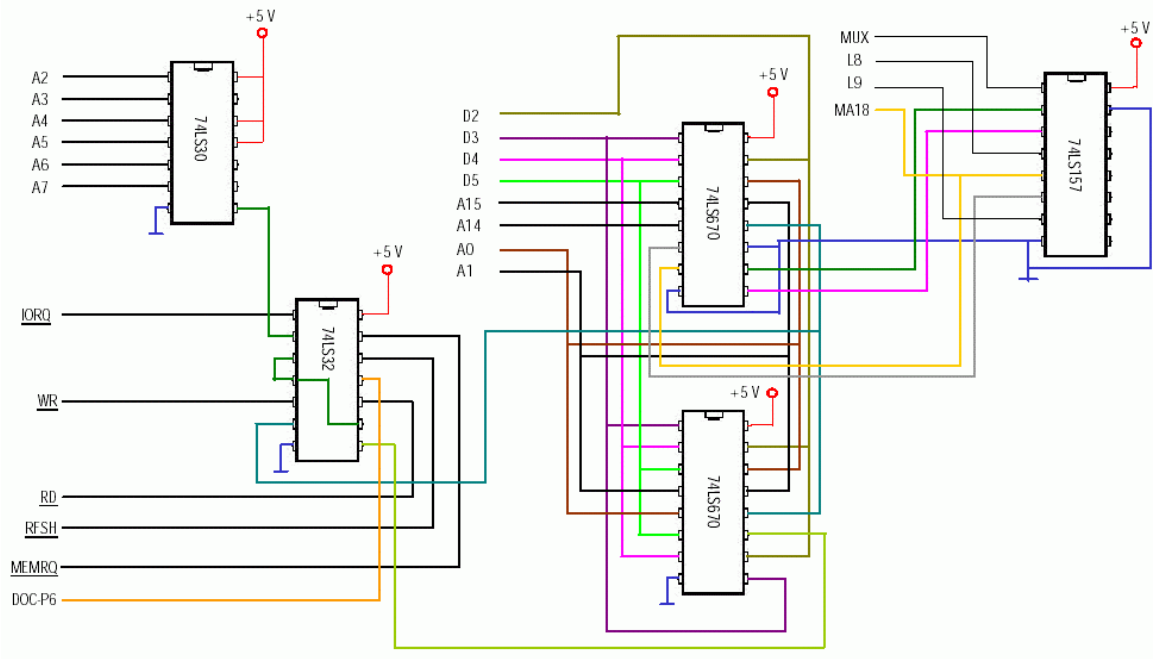
Remove from the mainboard the memory IC's U3, U4, U5 and U6 (41464) by cutting the pins and then desolder the remaining pins left in the mainboard.

Step 2: Add minimapper

The minimapper can be used for many memory configurations as seen in the next picture.



The minimapper print can be ordered from Hans Oranje or can be build on experimenters board, see the following circuit diagram wit the layout as seen in the picture above.



The connections are to be made between Z80 cpu en the minimapper print, this print needs to be fitted on the bottom of the mainboard in between the pins of the Z80.

Table 1. Connect the minimapper circuit to the Z80

Description	**Z80 pin**	**Description**	**Z80 pin**
IOREQ	20	RD	21
MEMREQ	19	WR	22
D2	12	RFSH	28
Vcc	11	GND	29
D5	9	A0	30
D3	8	A1	31
D4	7	A2	32
A15	5	A3	33
A14	4	A4	34
		A5	35
		A6	36
		A7	37

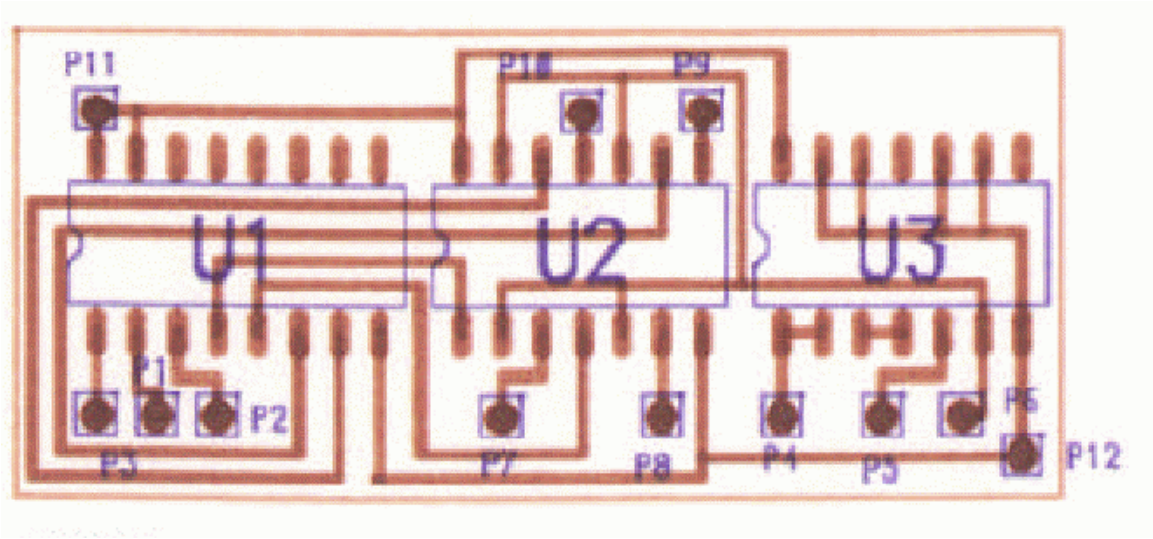
Note that some connections are also to be made to the 1 MB SIMM and the #CAS selection circuit as shown in table 2.

Table 2. Connect the minimapper circuit to the #CAS circuit and the 1 MB SIMM

Description	**To**
DOC-P6	#CAS circuit P4
L8	Pin 17 SIMM
L9	Pin 18 SIMM
MUX	M600003 pin 34 (printspot)

Step 3: #CAS selection circuit

The #CAS selection circuit is shown in the next picture. It is the view of the component side. The PCB is available from Hans Oranje, but can also be made with experimenters board. See the picture as a wiring guide.



For this configuration only U2 (74LS08) and U3 (74LS00) are needed.
And a wire from pin 1 of U1 and pin 1 of U2.

U3 is required to prevent writing of testbits during refresh into memory.
U2 combines the signals from U3 with the #CAS2/E signal.

Mount the #CAS selection circuit underneath the ROM of the mainboard.

Table 3. Connections to the #CAS circuit

Description	**To**
P11	+ 5V
P12	GND
P7	#CAS pin 2 SIMM
P5	#WE of pin 4 U3 (formerly 41464)
P4	Minimapper print DOC-P6
P3	#CAS2/E from M60003A pin 80 (TP7) printspot

Step 4: 1 MB SIMM

The 1 MB SIMM is mounted on the bottom of the mainboard underneath the M60003A and the S3527.

Table 4. Connections to the 1 MB SIMM

1 MB SIMM	Pin	To
Vcc	30	Pin 9 of U6 (+5V)
Din(9)	29	
#CAS(9)	28	
#RAS	27	Pin 5 of U6 (#RAS)
Dout(9)	26	
D7	25	Pin 17 of U4 (D3)
NC	24	
D6	23	Pin 15 of U4 (D2)
GND	22	Pin 18 of U4
#WE	21	Pin 4 of U4 (#WE)
D5	20	Pin 3 of U4 (D1)
NC	19	
L9	18	Minimapper circuit L9
L8	17	Minimapper circuit L8
D4	16	Pin 2 of U4 (D0)
L7	15	Pin 10 of U5
L6	14	Pin 6 of U5
D3	13	Pin 17 of U3 (D7)
L5	12	Pin 7 of U5
L4	11	Pin 8 of U5
D2	10	Pin 15 of U3 (D6)
GND	9	Pin 18 of U3
L3	8	Pin 11 of U3
L2	7	Pin 12 of U3
D1	6	Pin 3 of U3 (D5)
L1	5	Pin 13 of U3
L0	4	Pin 14 of U3
D0	3	Pin 2 of U3 (D4)
#CAS	2	#CAS selection circuit P7
Vcc	1	Pin 9 of U3