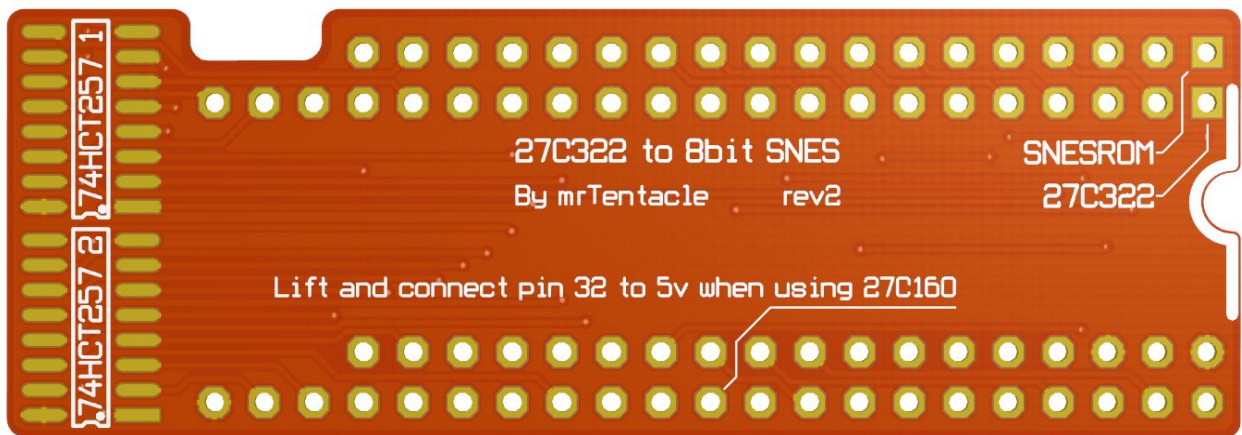# mrTentacles
27c322 to SNES adapter
Instructions

A word of warning, this build is tricky, please keep in mind that the adapter pcb is extremely thin, breaking it is a real possibility. Trimming everything down is very important, space in snes shells are very limited.
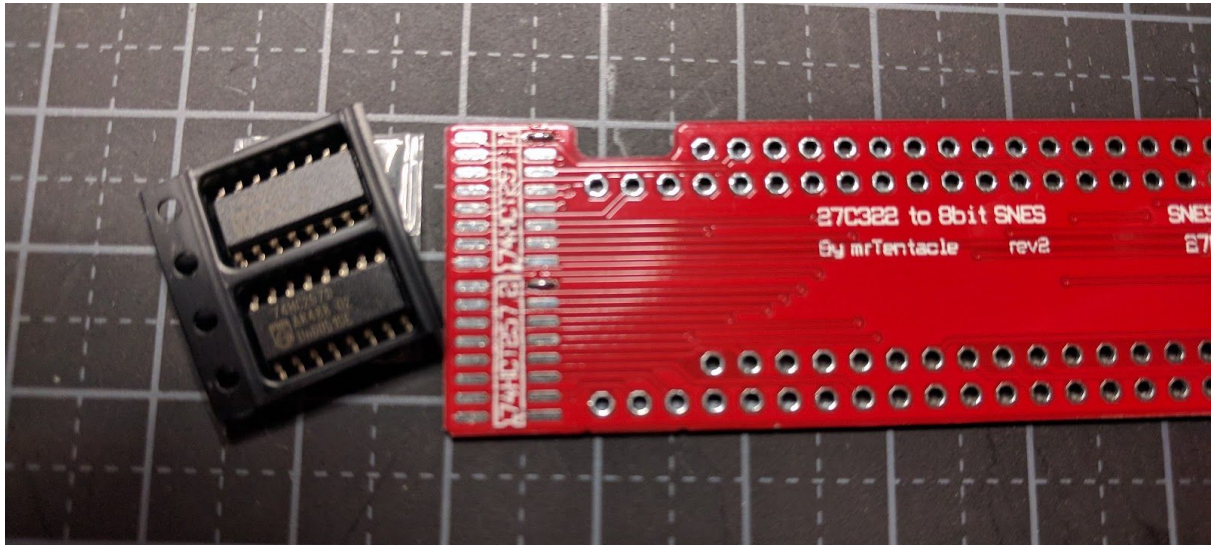
Be prepared to make a few until you get it right.

Components needed:

- Preprogrammed 27c322 chip, 27c160 chips are supported, see page 7
- 2x 74hc257
- 2x 1x18 header pins
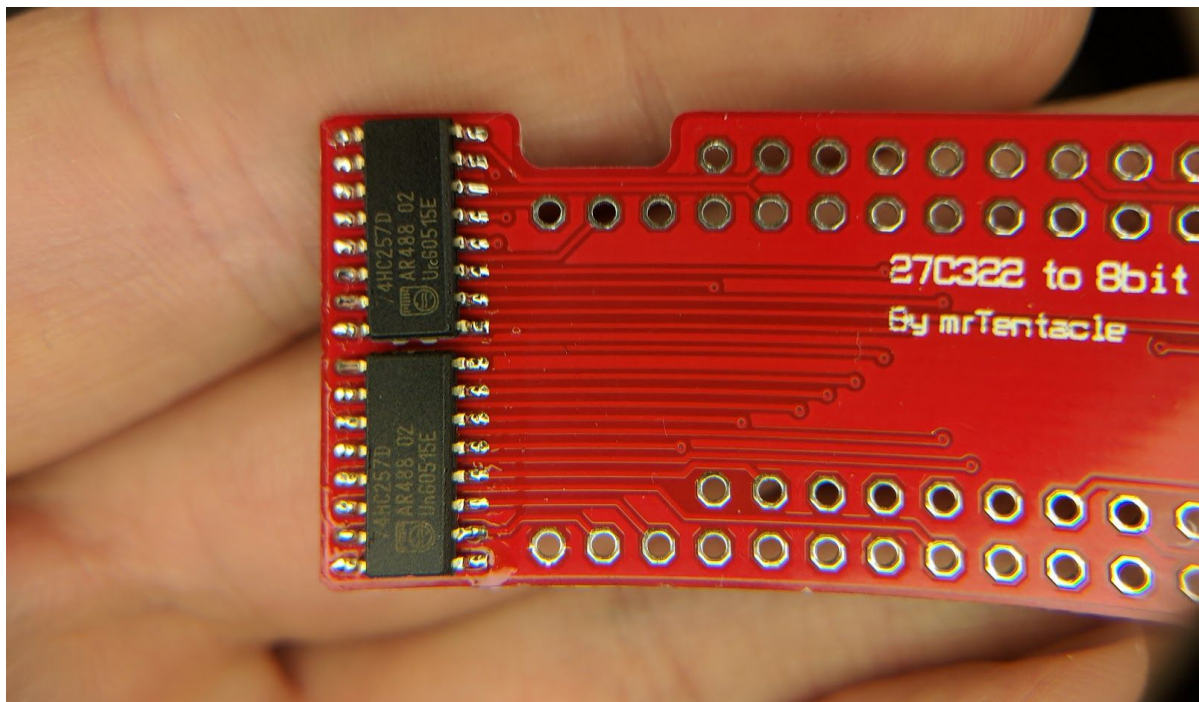- Nice flush cutters
- A sheet of perf board
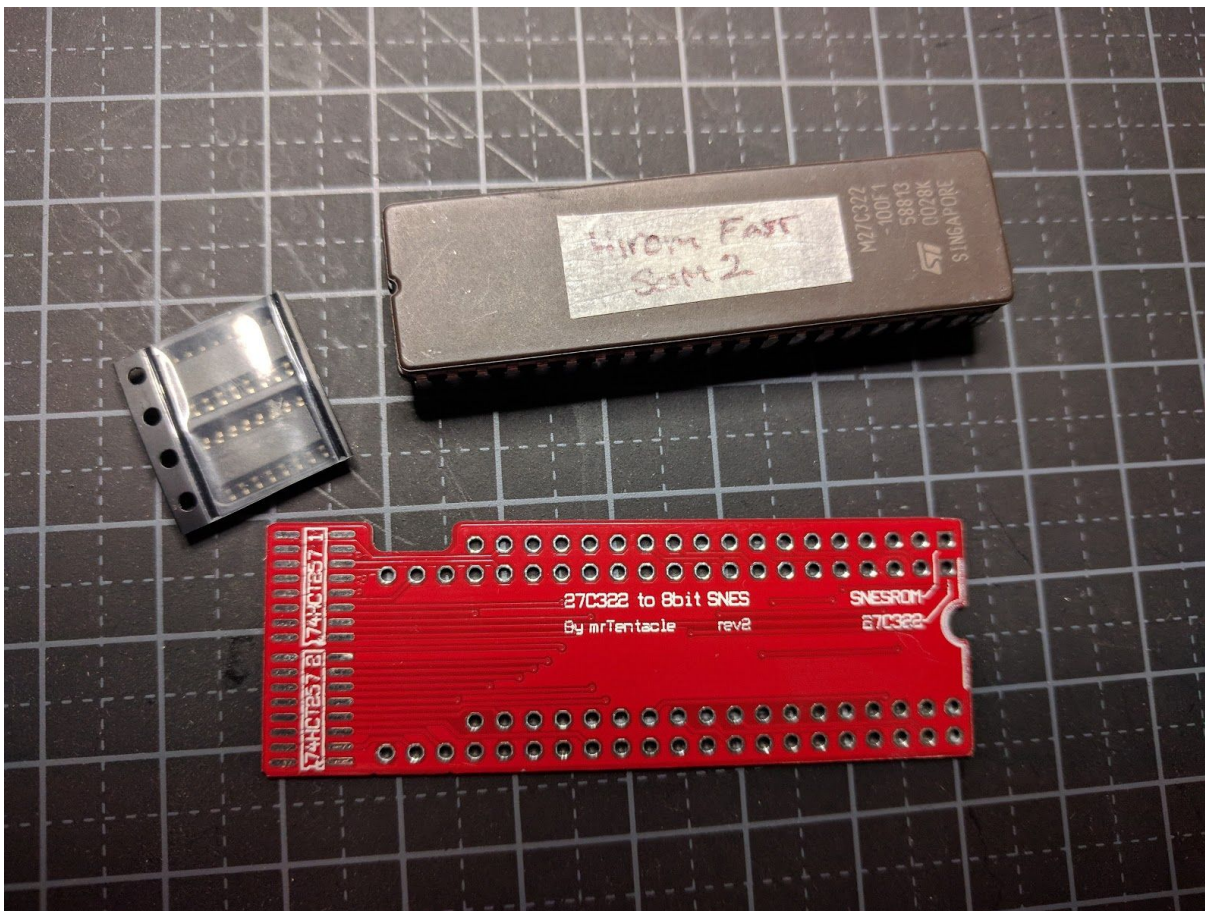
Solder the two 74hc254s

Tack down one leg on each chip, solder the rest of the legs

Orientation and a closer look on the soldered chips

Solder pins to the adapter

This may seem weird, but it works very well. ***Thanks KML!***
We are doing this to be able to remove the black plastic from the pin headers.

1. Place the pin headers under a piece of perfboard, see photo
2. Stack the adapter on top. Header pins on the bottom, perfboard in the middle and adapter on top.
3. Make sure to place the headers in the correct holes, the two shorter rows
4. Note that the header pins don't stick out more than absolutely necessary on the top
5. Solder the pin headers to the adapter pcb
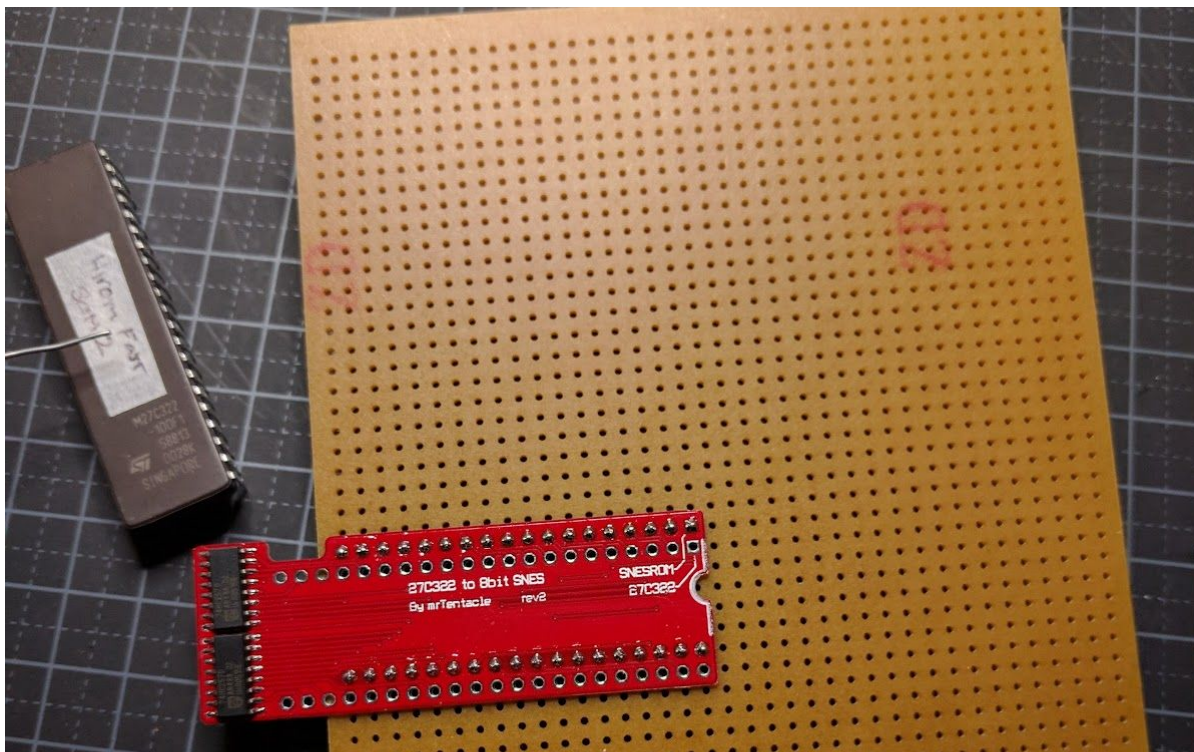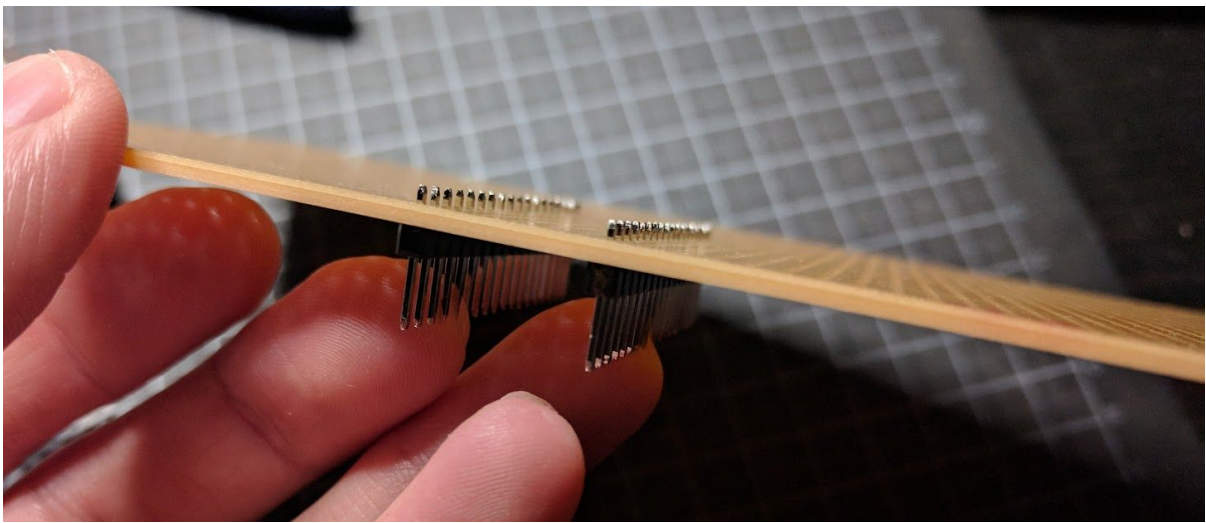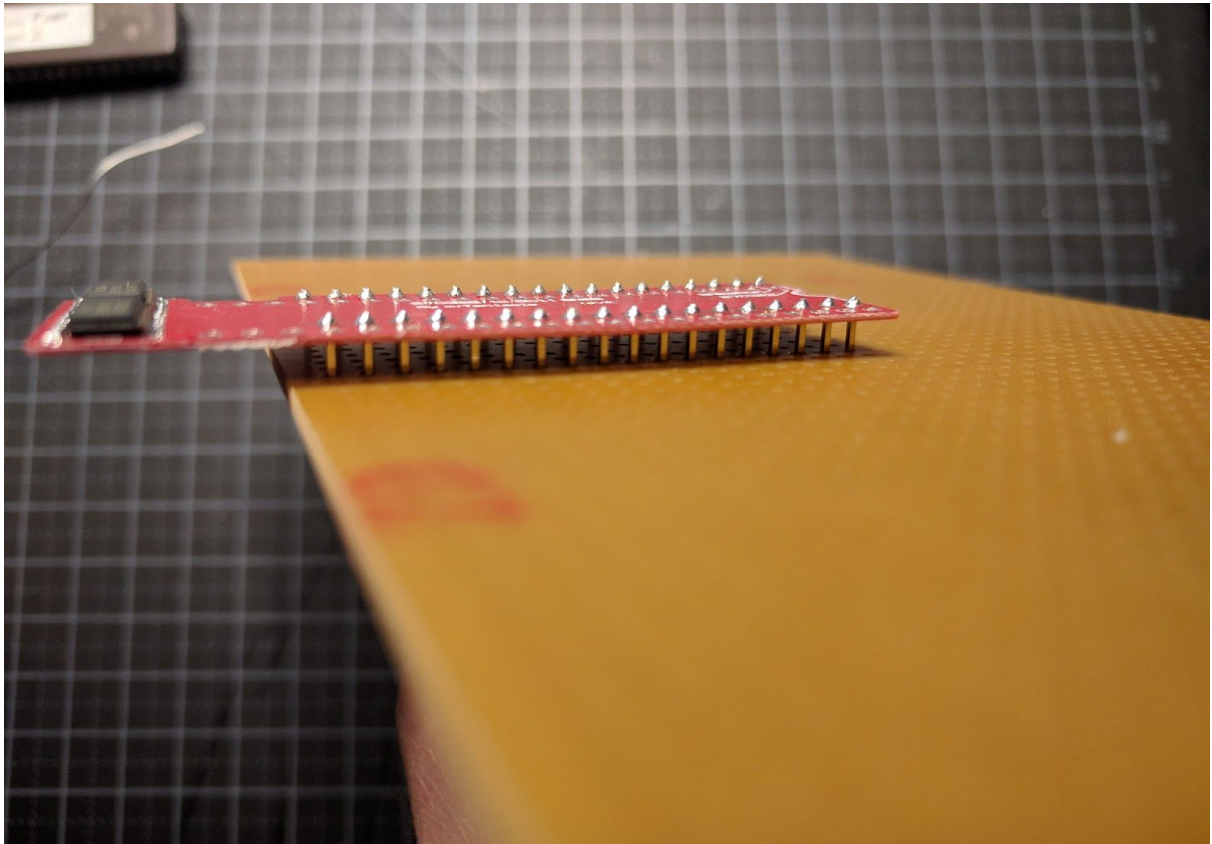
Removing the black spacer plastic from the header pins

This is very important, with the plastic still in place the chip and adapter won't fit in a snes cartridge shell.

With the adapter stuck to the perfboard
Press down on the perfboard, moving the plastic down on the header pins

It takes a bit of force to get it going, when the plastic reaches the end simply pull them off
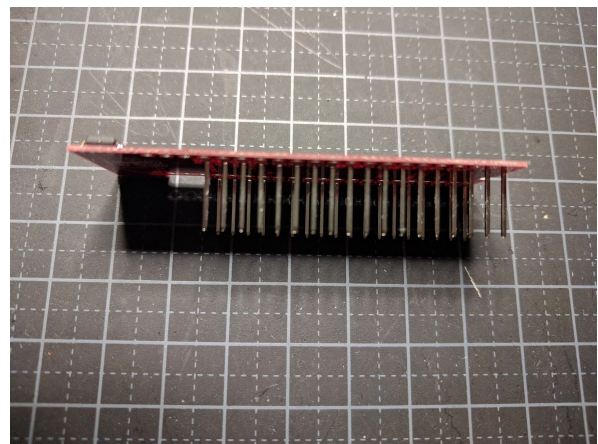
Adding the 27c322 chip

Place the 27c322 chip in the adapter and solder from the underside
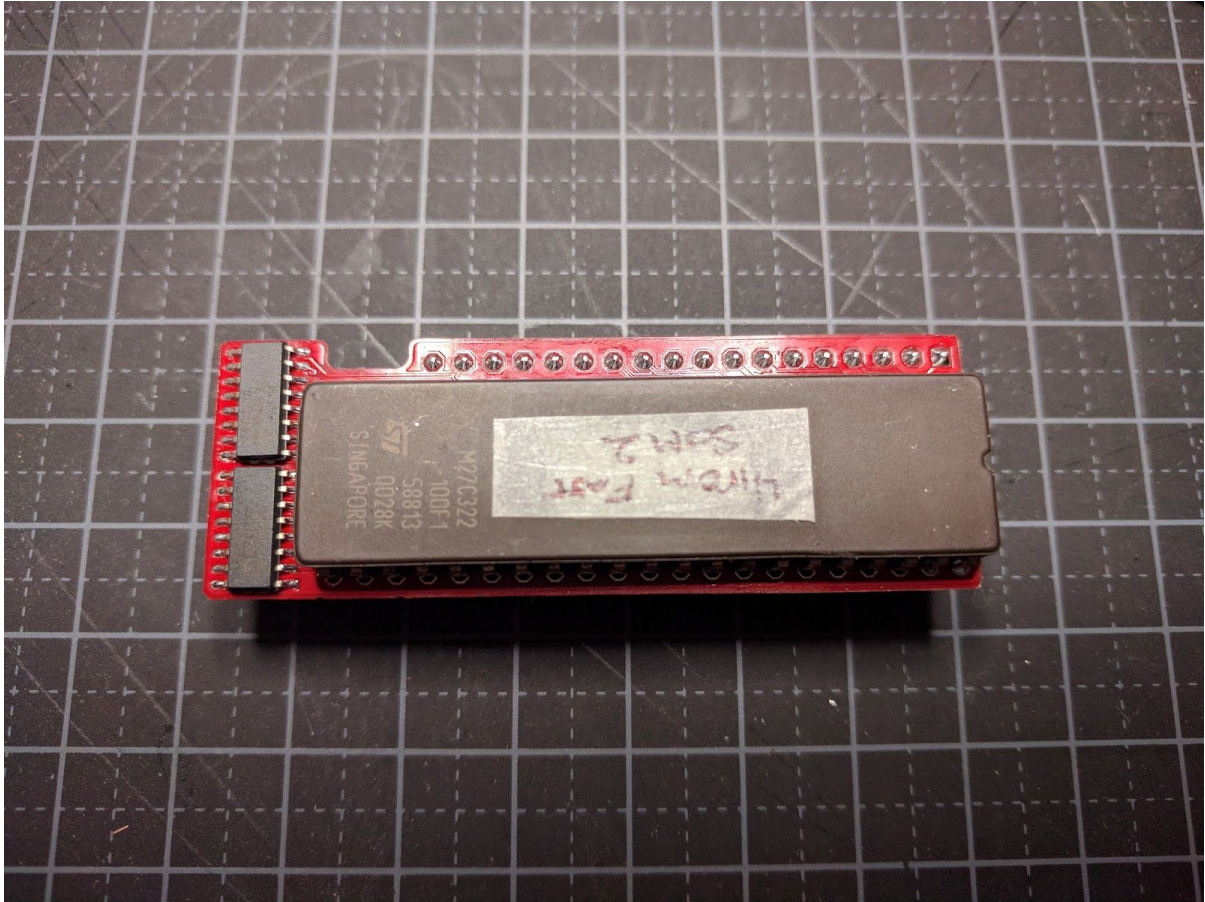
Trim down the pins on the 27c322, you also need to trim down one row of the header pins and a few on the other side

Solder the adapter on snes cartridge pcb

On my repro board

On standard SNES board, should fit most boards, on this revision I had to move a capacitor to the back of the SNES pcb

Notes on using 27c160

27c160 chips do work in the adapter as well, afew modification is needed.

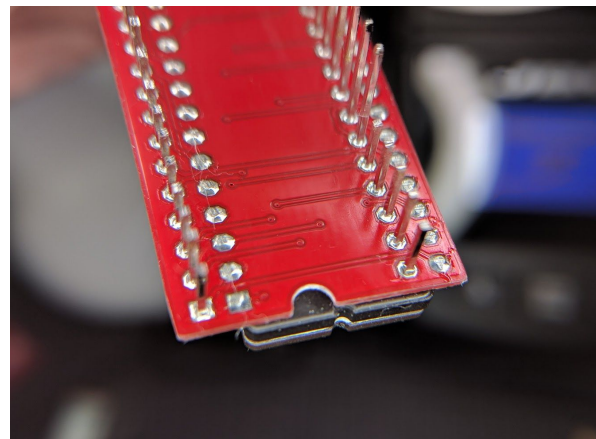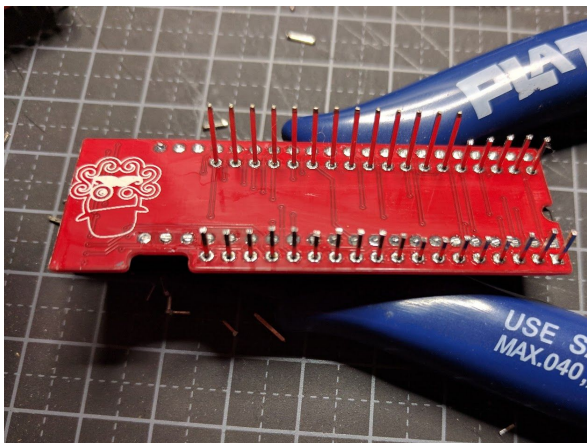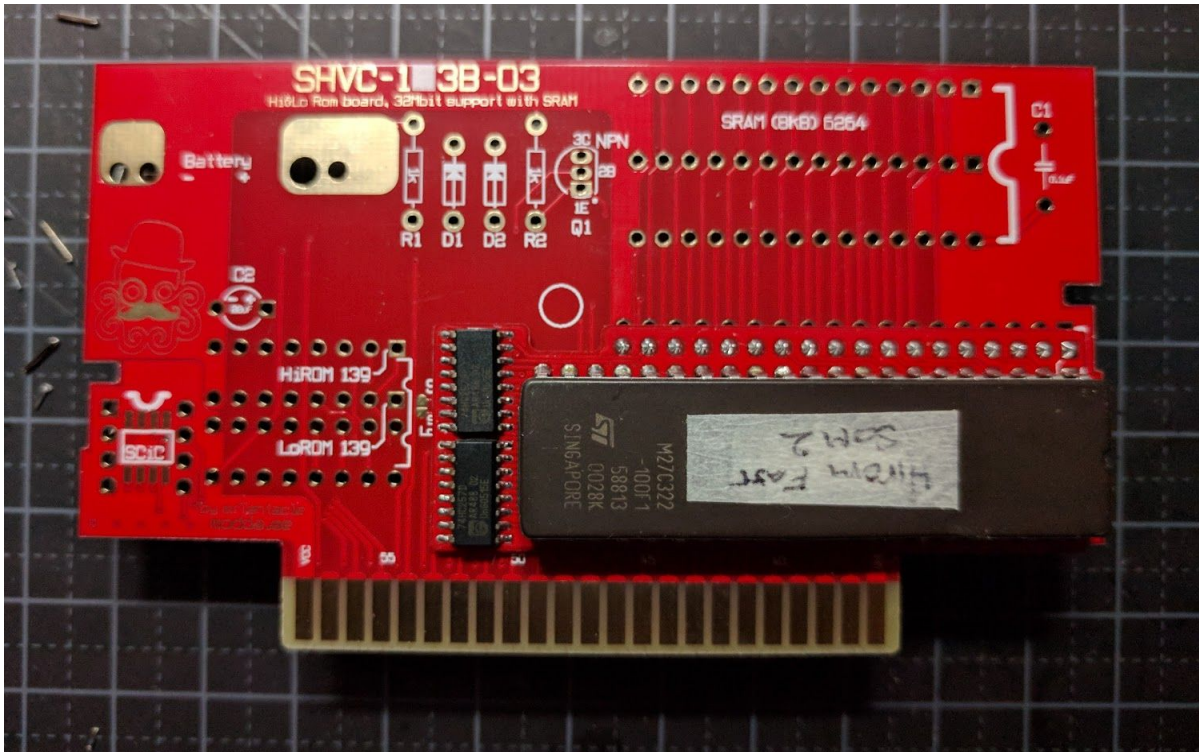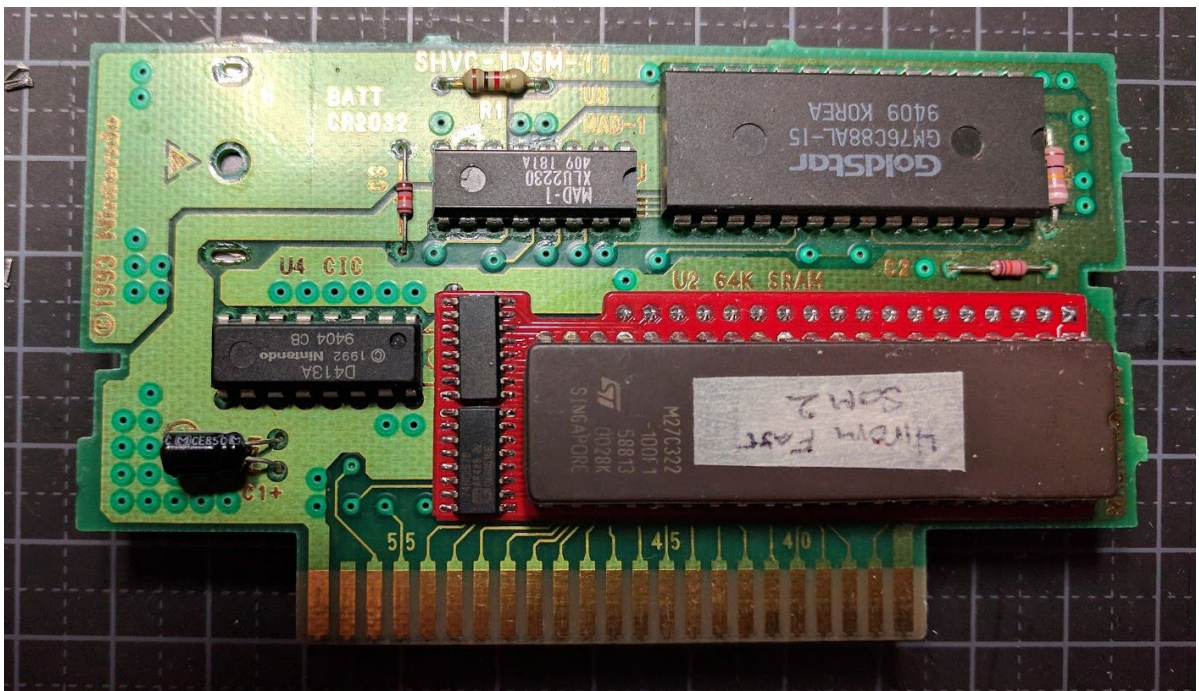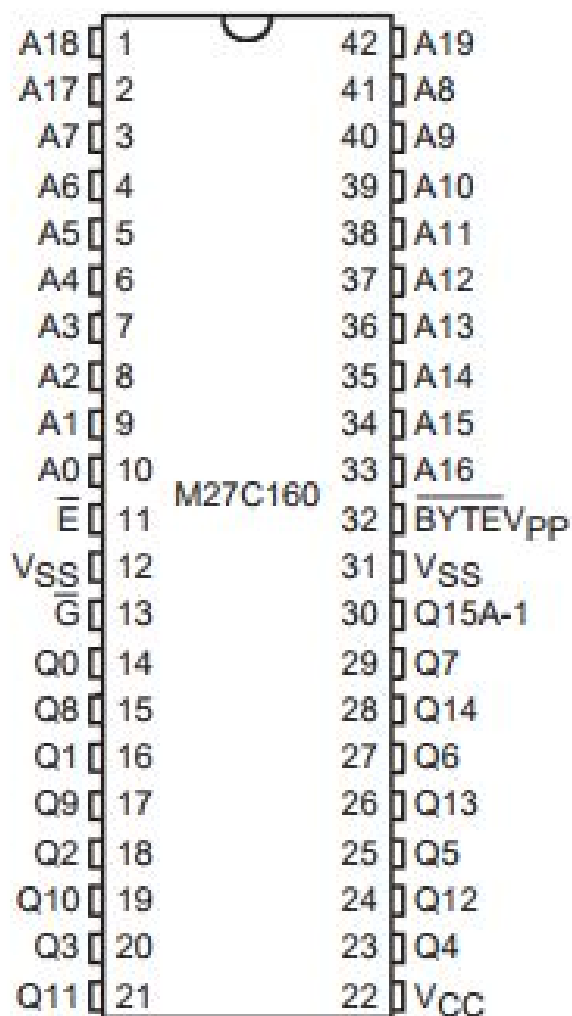Pin 32 of the memory chip needs to be attached to VCC (5v), the nearest vcc line is on the same chip, pin 22

1. Bend up pin 32, and then solder the chip as normal. Leaving 32 unconnected.
2. Solder a wire onto pin 32 that isn't attached to anything and then solder the other end onto pin 22 which is VCC (5v)
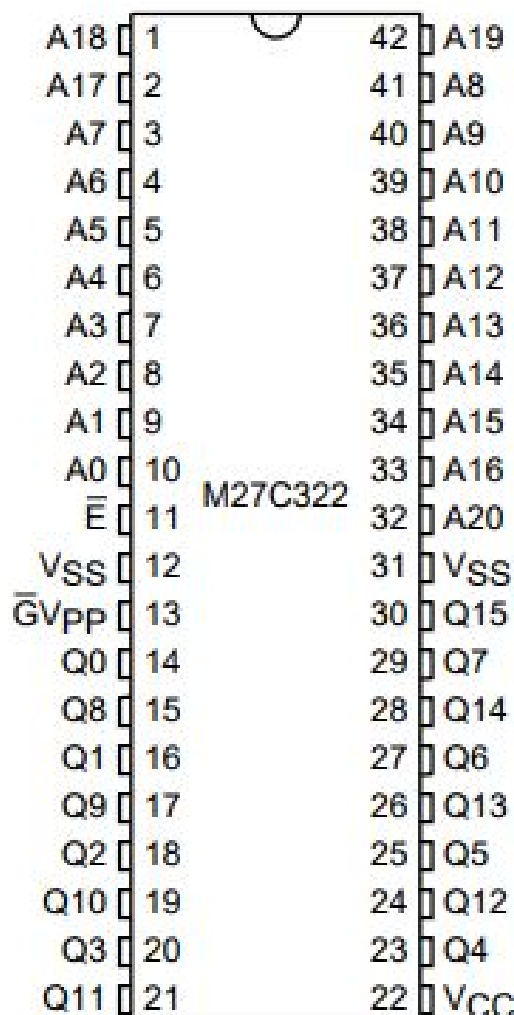
Theory

The 27c160 have an optional 8bit mode that isn't supported by the adaptor, the two 74hc254 converts the 16bit bus to a 8bit bus.

16 vs 8bit output is is set by pulling pin 32 BYTEVpp either high or low, we need the chip to be in 16bit mode, therefore we pull the pin high by connecting it to VCC (5v)

	M27C160	
A18 [1		42] A19
A17 [2		41] A8
A7 [3		40] A9
A6 [4		39] A10
A5 [5		38] A11
A4 [6		37] A12
A3 [7		36] A13
A2 [8		35] A14
A1 [9		34] A15
A0 [10		33] A16
$\overline{E}$ [11		32] $\overline{BYTE}V_{PP}$
V_{SS} [12		31] V_{SS}
$\overline{G}$ [13		30] Q15A-1
Q0 [14		29] Q7
Q8 [15		28] Q14
Q1 [16		27] Q6
Q9 [17		26] Q13
Q2 [18		25] Q5
Q10 [19		24] Q12
Q3 [20		23] Q4
Q11 [21		22] V_{CC}

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	M27C322	
A18 [1		42] A19
A17 [2		41] A8
A7 [3		40] A9
A6 [4		39] A10
A5 [5		38] A11
A4 [6		37] A12
A3 [7		36] A13
A2 [8		35] A14
A1 [9		34] A15
A0 [10		33] A16
$\overline{E}$ [11		32] A20
V_{SS} [12		31] V_{SS}
$\overline{G}V_{PP}$ [13		30] Q15
Q0 [14		29] Q7
Q8 [15		28] Q14
Q1 [16		27] Q6
Q9 [17		26] Q13
Q2 [18		25] Q5
Q10 [19		24] Q12
Q3 [20		23] Q4
Q11 [21		22] V_{CC}

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