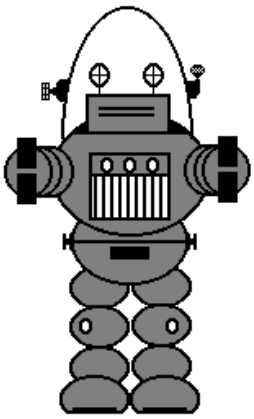


P.A.R.T.S

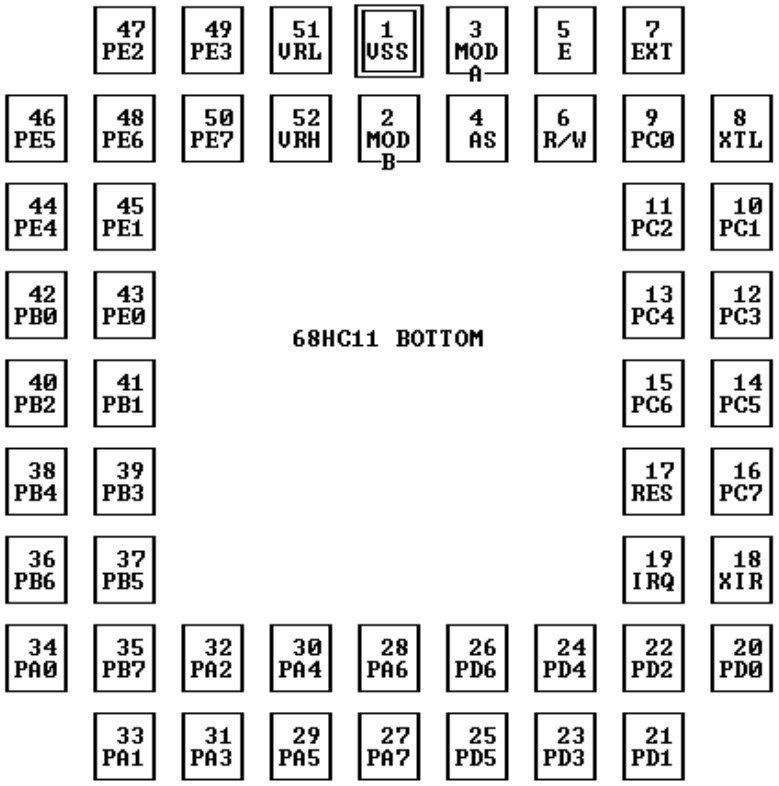
Portland **A**rea **R**obo**t**ics **S**ociety

Issue # 07 By. Marvin Green (503) 656-8367.

Mobile Robots Inspiration to Implementation $39.95 -10% to club members! A K Peters (617) 235-2210

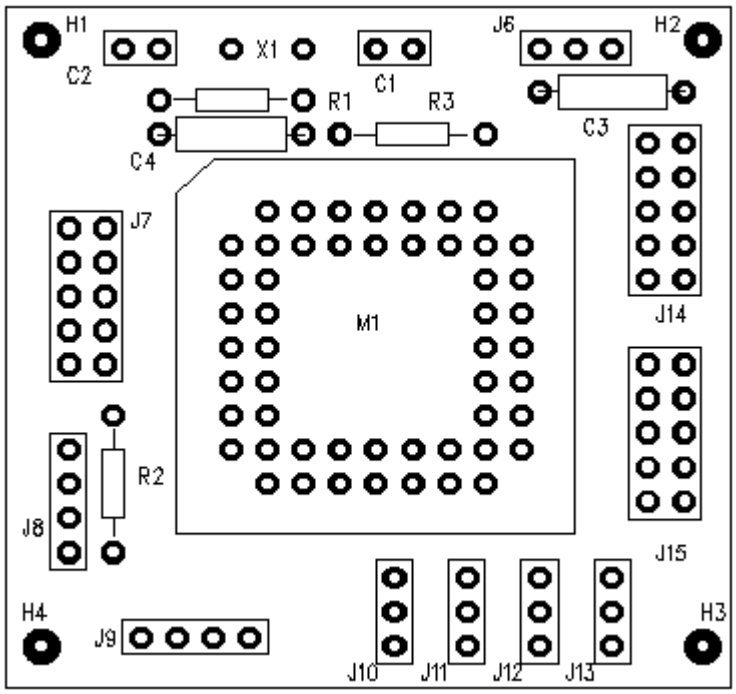
PIN OUT!

Using the 68HC11 microprocessor isn't difficult. Although the documentation from Motorola is excellent, it doesn't have a PLCC 52 pin wiring diagram. I found it awkward counting out the pins and trying to make connections, so I decided to make the job easier by drawing a pin wiring diagram. The bottom side of the 68HC11 is shown, complete with pin numbers, locations, and pin function.



68BOARD

The 68BOARD is my first attempt at creating a printed circuit board. I listed my design goals to have a clear idea of what I wanted. First it must be small, I wanted to try to design it in a 2 inch square board. The second goal was to make the board single sided. This would allow the board to be produced with a laser printer using heat transfer film. The third goal was to have all (or most) of the I/O pins come out to a header.

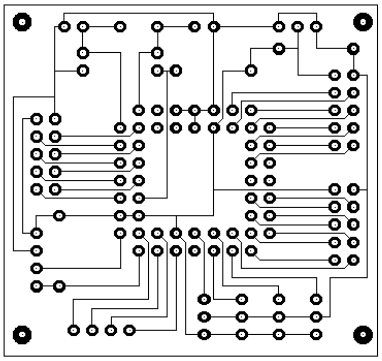


With those goals in mind I also wanted to have power supply pins on each header, four servo ports, separate serial and SPI ports, and a small prototyping area. Later I decided against the prototyping area because it would increase board size, and proto boards can be purchased cheaply from Radio Shack and Digi Key etc.

I ran through the PADS demo and the manuals exercises to get an idea of what the software could do. I felt confident. After creating the board outline, and adding a few components, my confidence was sinking. PADS has a lots of bells and whistles, and the shareware version is free, but it's not user friendly. Menu after sub menu, navigating around was a chore. In time I learned to fly from menu to menu. I just kept thinking ' FREE is a very good price.'

Using the examples in the manual, I was able to create a 68HC11 PLCC socket. I did all my parts placement, and routing by hand [ON THE FLY] even though much of this could (or should) have been automated.

I tried dozens of different layouts. The finished 68BOARD has most everything I wanted, including mounting holes. The board could be stacked and used in a network fashion. I now find it relaxing to pull up this board in PADS and just move parts around.



Manufacturing. I have called several pc board manufacturing places and found that the board could be produced for about $4.00 a board per 100 boards. Much cheaper for a greater number. The lead time is about five or six weeks. Contact me if you are interested in getting this board...

I will place all my printouts and documentation on the SRS BBS. (206) 362-5267. The file will also contain the PADS circuit if you want to play with it. The print files can be used to create a board using the heat transfer method.

Please think about adding your own experiences to the pages of the PARTS newsletter.