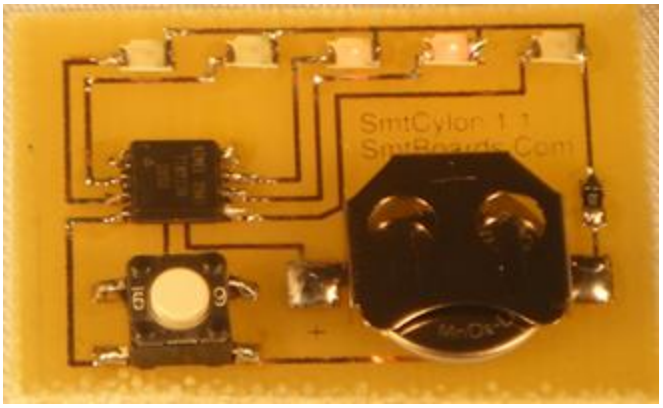
SMTCylon



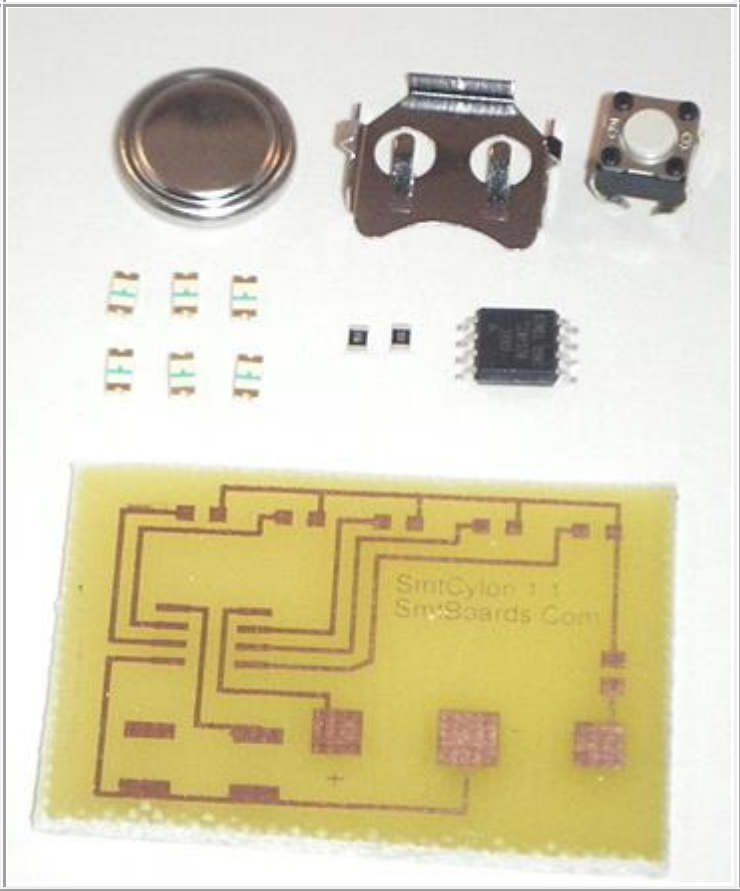
Step	Picture	Detail

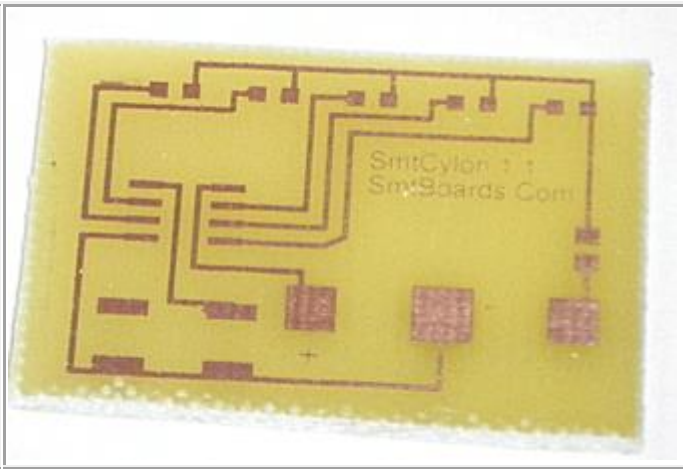
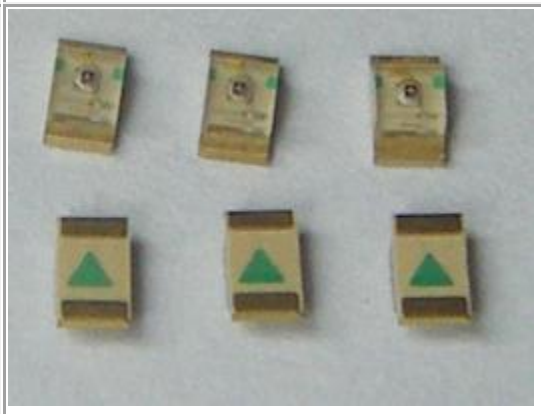
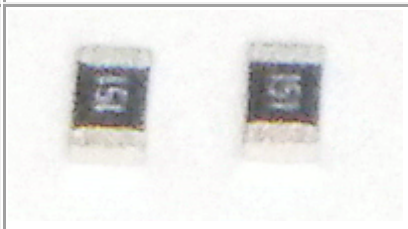
ABOUT

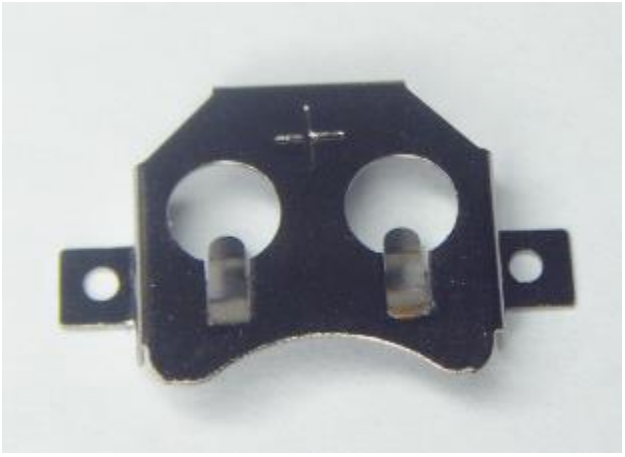
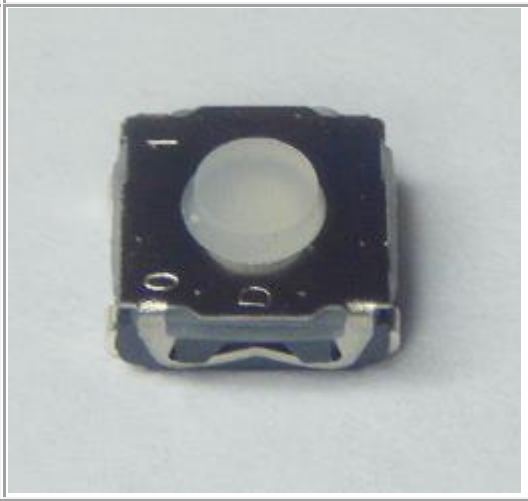
SMTCylon is based on prior work performed by Dale Wheat under the product name tinyCylon. Mr. Wheat released tinyCylon as Open Source, and hence I chose to produce this project in an SMT Version.Original information on this kit can be found at:
http://dalewheat.com/tinycylon/

SMTCylon designed by Charley Jones, PMP
aka Dataman
For SMTBoards.Com
3/2010

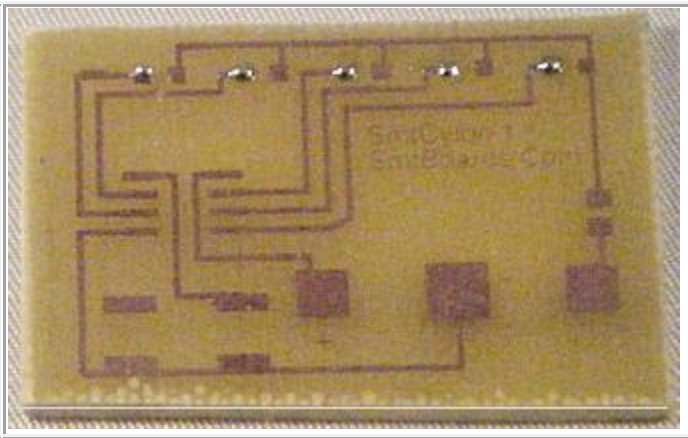
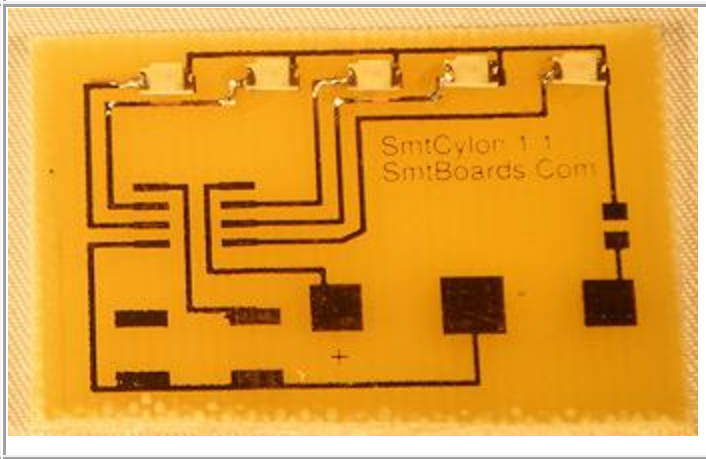
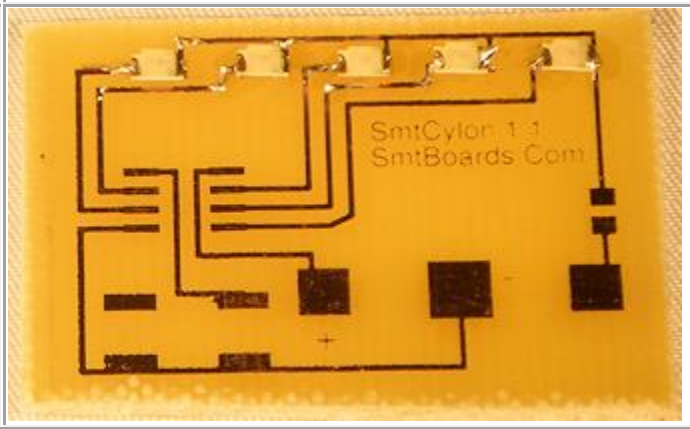
PARTS LIST

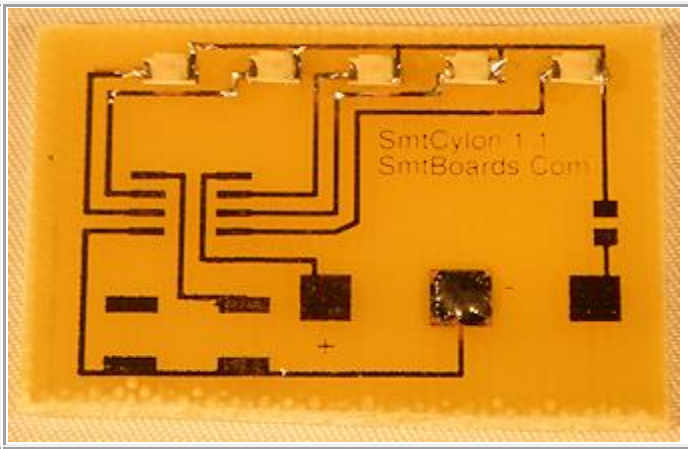
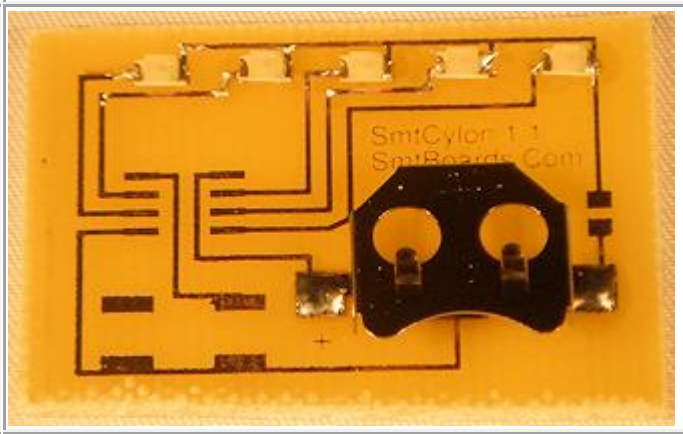
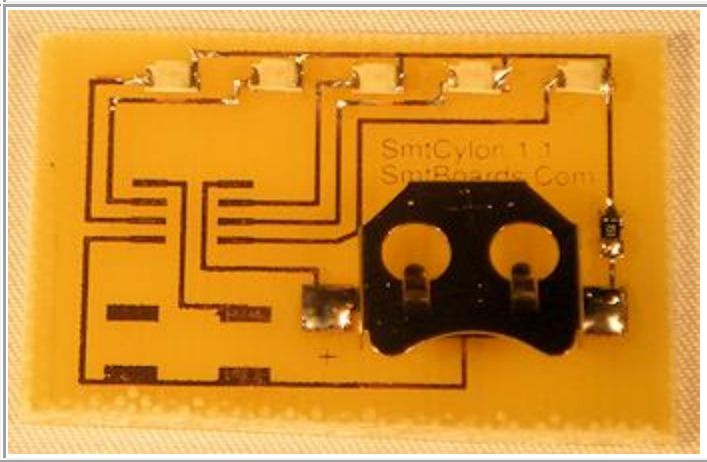
1		Kit as distributed
1a		Kit Contents, Details follow.

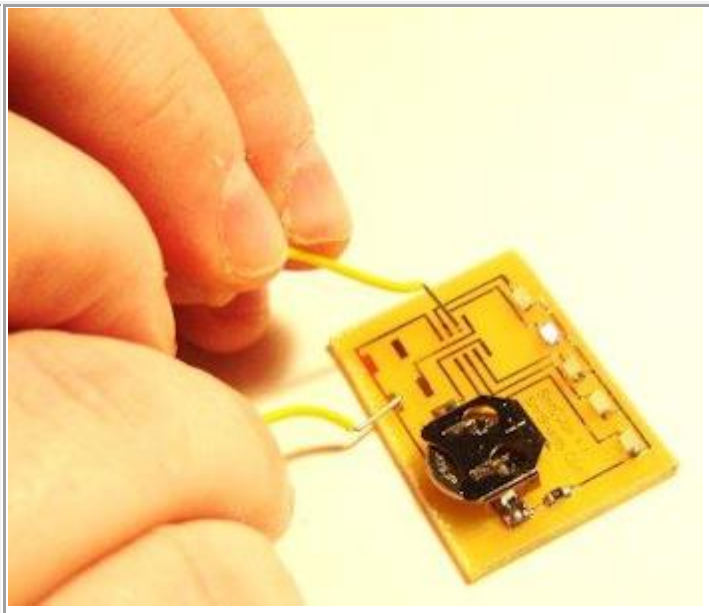
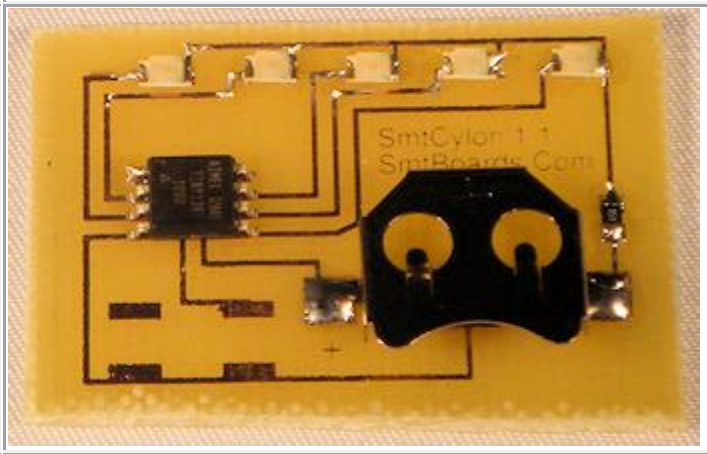
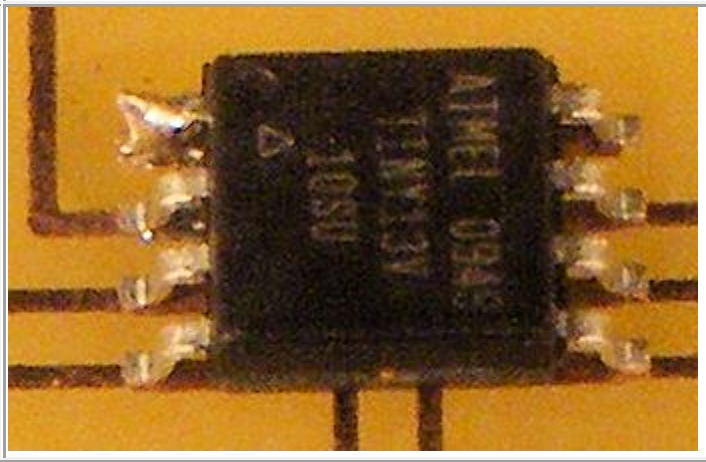
1b		SMT Cylon Board.
1c		High Intensity RED SMT LEDs. Digikey Part #: 754-1128-2-ND Note the markings on the bottom, The arrow points toward ground, as well as do the dots. Be very careful, under low magnification, the dots seem to get distorted by the lens and switch sides. We suggest flipping over and checking the arrow, which should point LEFT in this project. 5 are required by this project, An extra LED is provided as a spare and to help build your inventory. If your LEDs look huge in comparison to the resistors, you probably have a beta kit. Please follow instructions here from this point.
1d		150ohm 1/8w 0805 Resistors Wow, they really do say 151. Mouser#: **660-RK73B2ATTD151J** 1 is required by this project, An extra Resistor is provided as

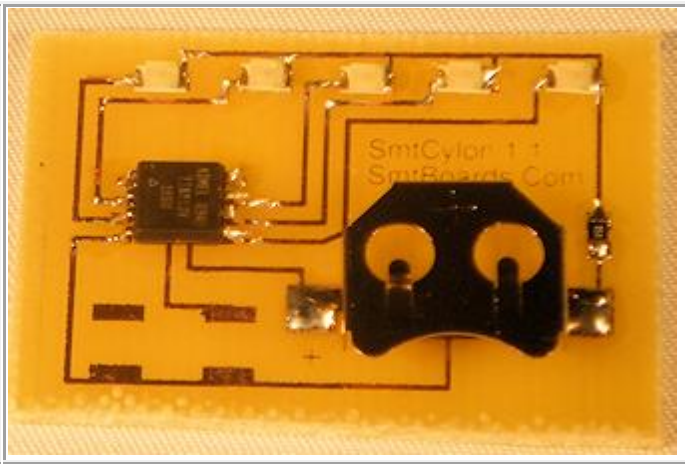
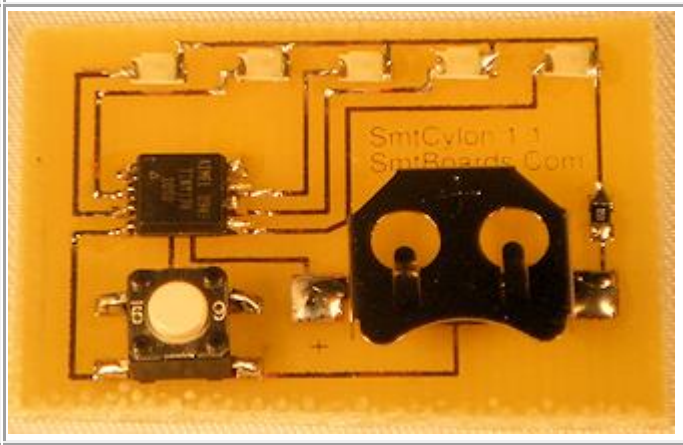
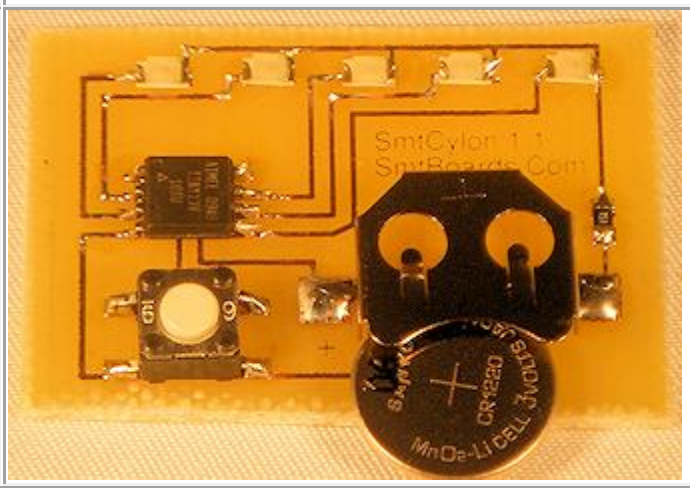
		a spare and to help build your inventory.
1e		Atmel Tiny13v CPU Pre-programmed with modified TinyCylon code, here. Mouser#: **556-ATTINY13V10SU** Or buy from me, here:
1f		Battery holder. Digikey Part #: 3000KTR-ND
1g		CR-1220 Battery. Digikey Part #: SY033-ND
1h		Push button switch. Digikey Part #: CKN9194CT-ND

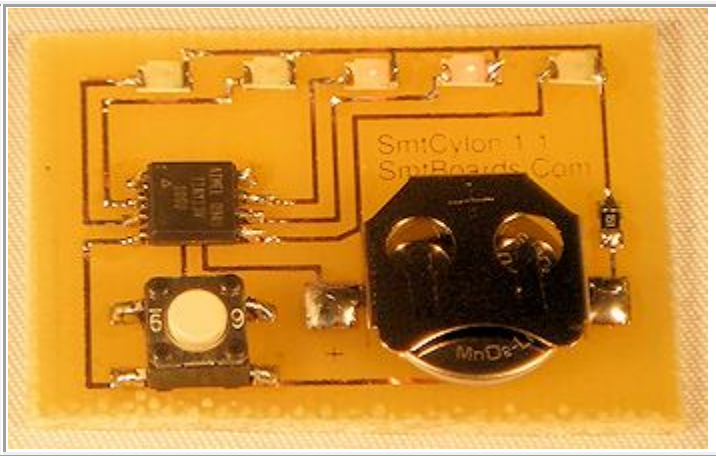
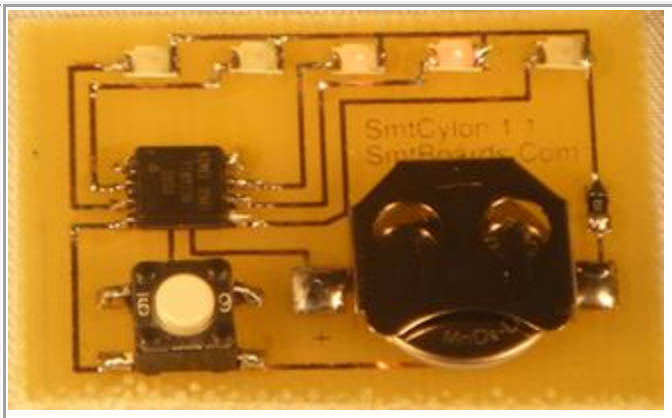
ASSEMBLY INSTRUCTIONS

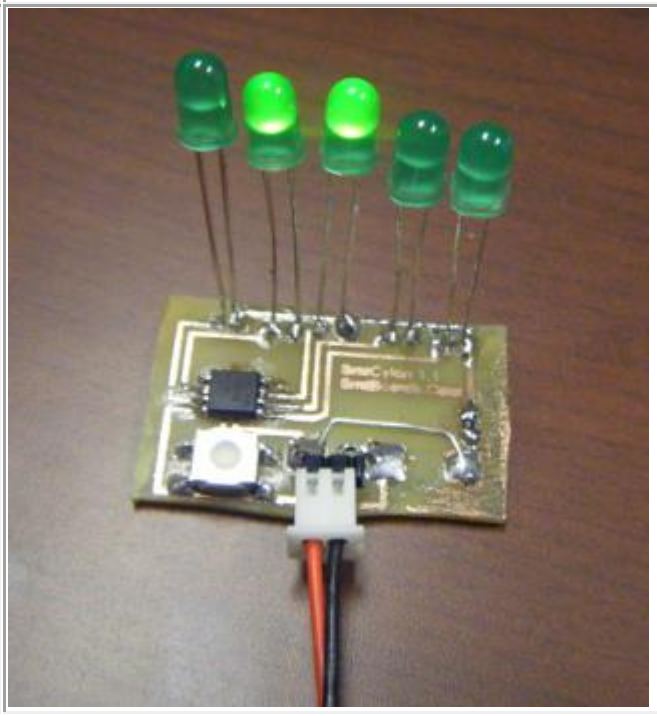
2		If right handed, drop tiny drops of solder on the left pad of each led. This is the negative side of LED. If a lefty, seems to be easiest to drop solder on the right, positive pad.
3		Next, heat the solder and push the led into place from the right. You are soldering the negative side, side with the dot, be sure to check that the arrow points LEFT. Be sure to leave some space on the right pad to solder to later. Of course, if you're a lefty, you'll be soldering the positive, non-dot side, to the right pad.
4		Now, solder up the opposite side. Just a tiny drop will do. We will be testing solder joints shortly, As soon as we get the battery and resistor in.

5		Drop a dab of solder onto the center pad for the battery. This is marked with a - on the pcb.
6		Next, solder in the battery holder. Drop some solder onto onto the left pad, Then push the holder into place with the tweezers. This gets hot awfully fast, so use tweezers.
7		Solder in the 150 ohm resistor much like you did the LEDs. Seems to be easier to solder the top pad first. Push the resistor into the solder. Solder the other side to complete this task.

77a		You may now test your work by temporarily inserting the battery, positive side up.br /> With a small pice of wire, short between the pad in the lower left of the board, To pins 2,3,5,6, and 7. (Counter clockwise from pin 1, upper left, of the cpu). If you trace with your eyes, you will see this is the ground lead for each LED. Shorting to these points should trigger the LED. If it does not, reheat your solder joints. If it still does not, you may have solder in an LED backwards. Correct any problems at this point.
8		Next, probably the most difficult solder of the kit. Drop a dab of solder on the top left most pad for the cpu. Orientate the CPU with the small dimple to the upper left, That's pin 1. Push the cpu into the hot solder, Lining up the remaining feed on the correct pads.
9		Here's a close up of the solder joint. Note that pin 8, just opposite pin 1 to the right, falls just short of its pad. You'll need to apply enough solder to make sure that pin 8 makes connection.

10		Ok, so like I said, I'm still learning to surface mount. I should have cleaned up this cpu with some solder wick, But it works.
11		Lastly, solder in the button. If you notice, it's not quite square, So you want to solder it long way accross.
12		Next insert the battery, Positive (+) side up.

13		The circuit should immediately jump to life, And the cylon eyes should move back and forth.
USAGE INSTRUCTIONS		
14		The 13 basic modes of operation of SMTCylon can be reached by clicking the button. MODE_0, // cylon scanner MODE_0a, // single direction cylon scan MODE_0b, // other direction cylon scan *MODE_0c, // turbo cylon scan *MODE_0d, // turbo cylon left scan *MODE_0e, // turbo cylon right scan MODE_1, // glowing pig eyes (2) MODE_1a, // single glowing pig eye MODE_1b, // single (random) glowing pig eye MODE_2, // randomblinking - multi MODE_2a, // randomblinking - single MODE_2b, // randomblinking - intermittant MMODE_2c, // random bblinking - really sparse The 14th mode puts the SMTCylon into deep sleep mode.

		MODE_MAX // off It is not neccessary to remove the battery when the SMTCylon is in deep sleep mode. * Note that we only started shipping in the turbo cylon mode with version 1.2
MODS		
		Show your SMTCylon pride by attaching a 1" self-sticky badge pin to the back of the board. Available from your local crafts store.
		Nothing says that you have to assemble the kit exactly as shown. The SMTCylon can be used as a control circuit for full sized LEDs powered by a 5v power supply. I have a spare mutant version 1.1 to torture, so I tied the positives together, something I corrected in 1.3, and soldered in a power connector. Works pretty well...