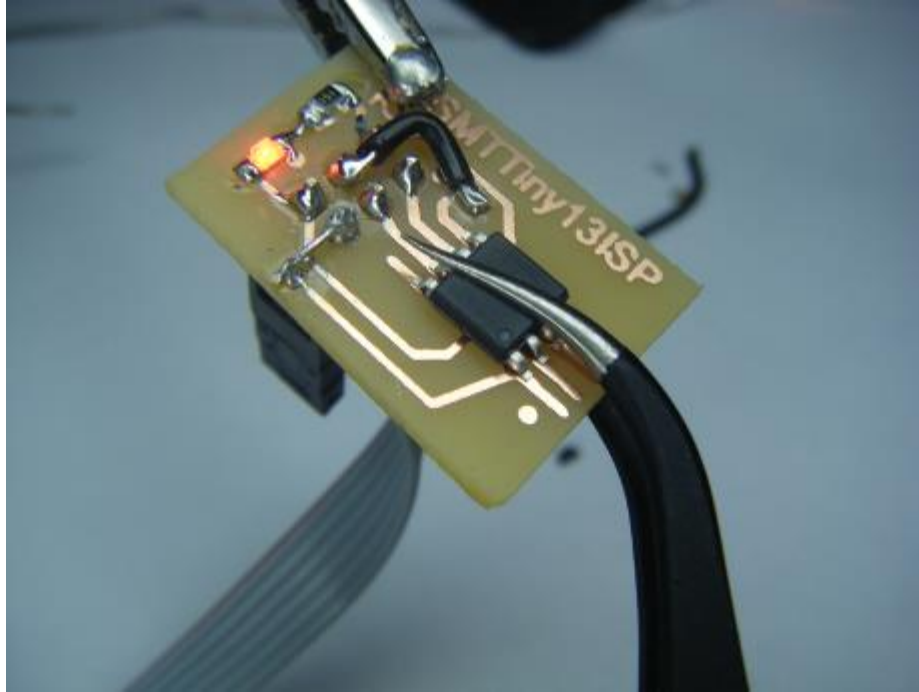


SMTTiny13ISP



Step

Picture

Detail

ABOUT

While designing SMTBoards.Com, I decided that all CPUs would be preprogrammed in my kits.

To do this, I needed some way of programming SMT CPUs, without soldering them in first.

My solution is the SMTTiny13ISP, it adds a very temporary ISP port to a Tiny13,

Allowing a left handed program upload.

(As we shall see.)

SMTTiny13ISP designed by Charley Jones, PMP
aka Dataman

For SMTBoards.Com

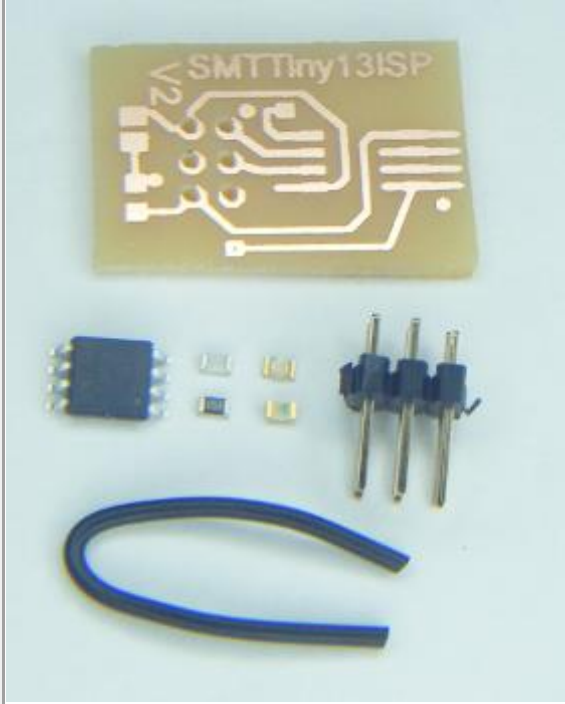
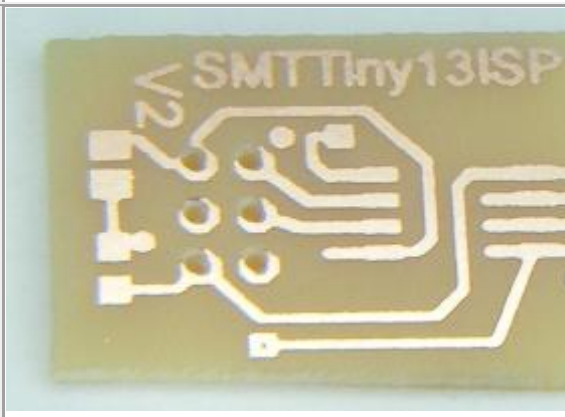
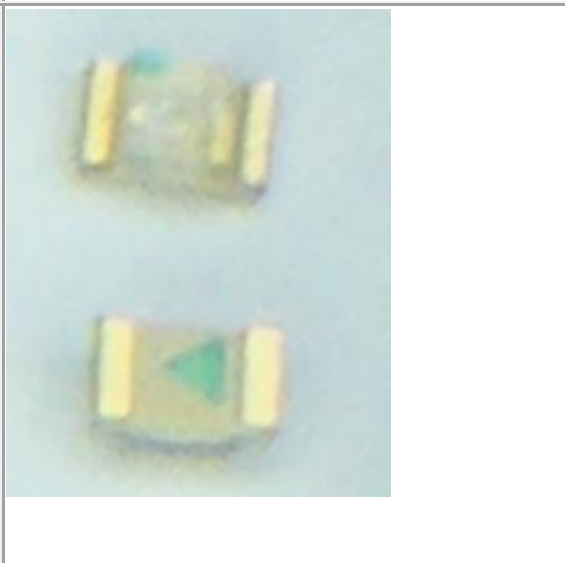
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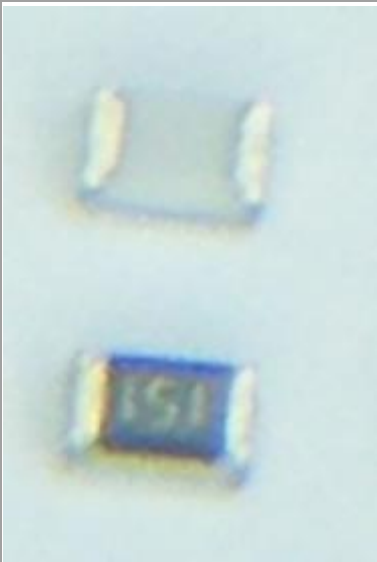
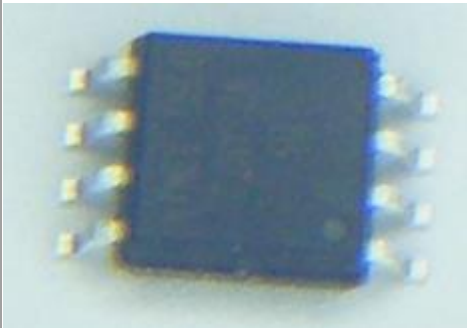
PARTS LIST

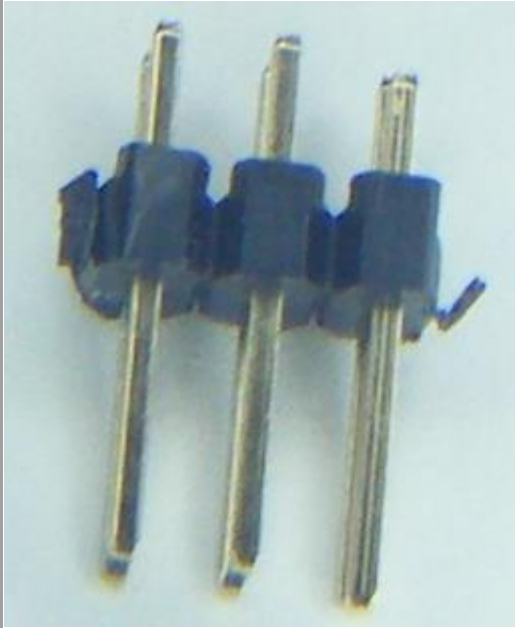
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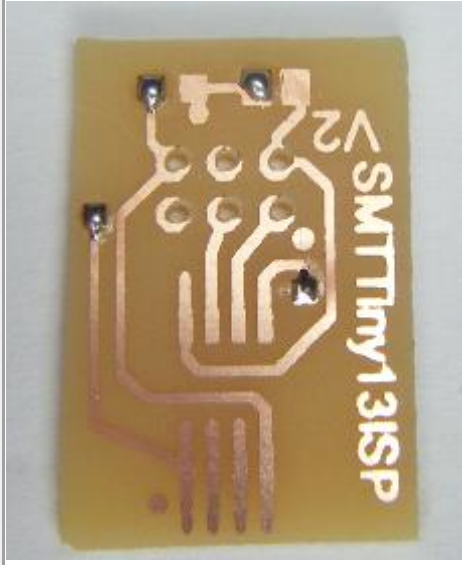


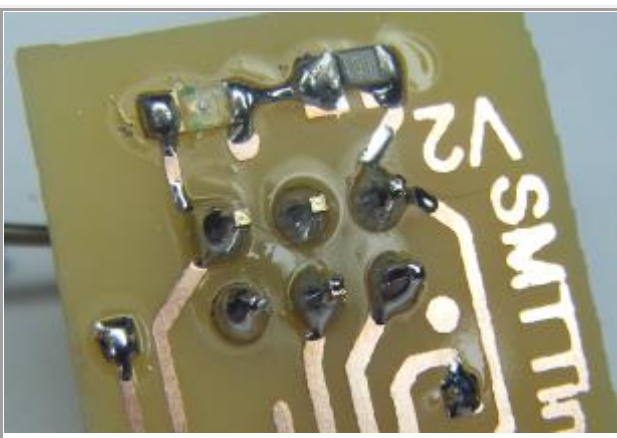
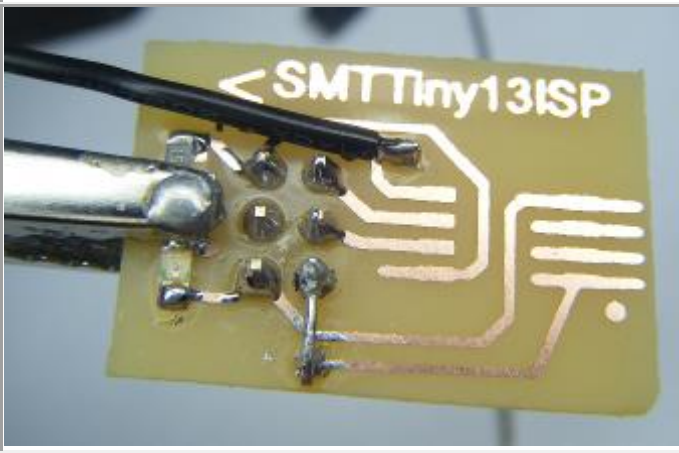
Kit as distributed

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

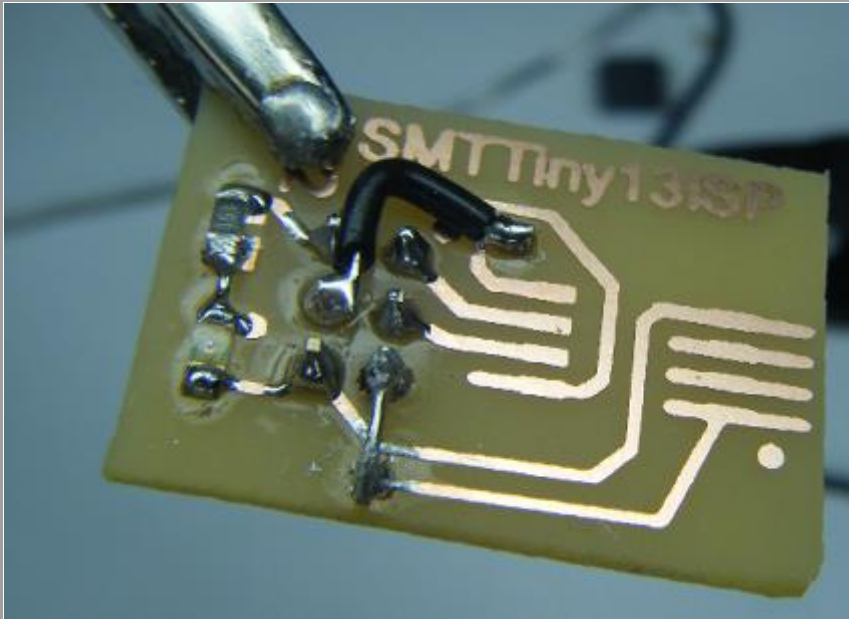
		and switch sides. We suggest flipping over and checking the arrow, which should point LEFT in this project. 1 is required by this project, An extra LED is provided as a spare and to help build your inventory.
1d		150ohm 1/8w 0805 Resistors Wow, they really do say 151. Mouser#: 660-RK73B2ATTD151J 1 is required by this project, An extra Resistor is provided as a spare and to help build your inventory.
1e		Atmel Tiny13v CPU Not programmed, factory fresh. Mouser#: 556-ATTINY13V10SU :

1f		Double row pin header x3 Various
1g		18 gauge jumper wire. Various
REQUIRED / NOT PROVIDED		
1h		USB Tiny ISP, assembled Or similar 6 pin ISP programmer. Avaialble from AdadFruit.Com
	<pre> charley@crjmsl:~\$ ls Password: root@crjmsl:/home/charley# avrdude -c usbtiny -p t12 avrdude: AVR device initialized and ready to accept instructions Reading ##### 100% 0.01s avrdude: Device signature = 0x1e0807 avrdude: safemode: Fuses OK avrdude done. Thank you. root@crjmsl:/home/charley# </pre>	AVRDude, configured and operational. Free from Savannah.NonGuru.Org
ASSEMBLY INSTRUCTIONS		

2		Drop solder on pads as shown. If Lefty, you might choose to drop solder on the right pad, rather than the left.
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. Solder in the resistor as well.
4		Now, solder up the opposite sides. Just a tiny drop will do.

5		Next, solder in the ISP header from underneath the board. Nice full dome shapes making full contact please.
6		Now here's where the circuit gets a bit gross. As a single layer board, 2 jumpers are needed. For the first, cut off a very small pice of wire. This will between the two points shown. Be sure not to touch the trace running underneath.
7		If you thought that one was fun, next we strip a tiny end and solder it to the remaining pad.

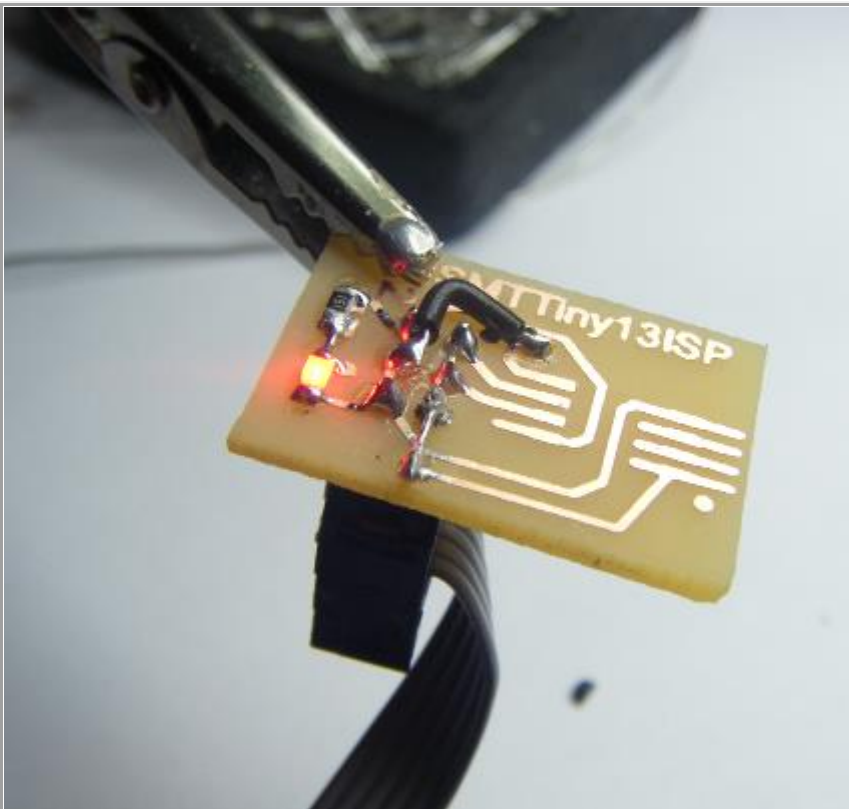
8



Next, probably the most difficult solder of the kit. Loop the wire to to the top center pin of the ISP connector. Cut and strip off a tiny bit. Solder in place.

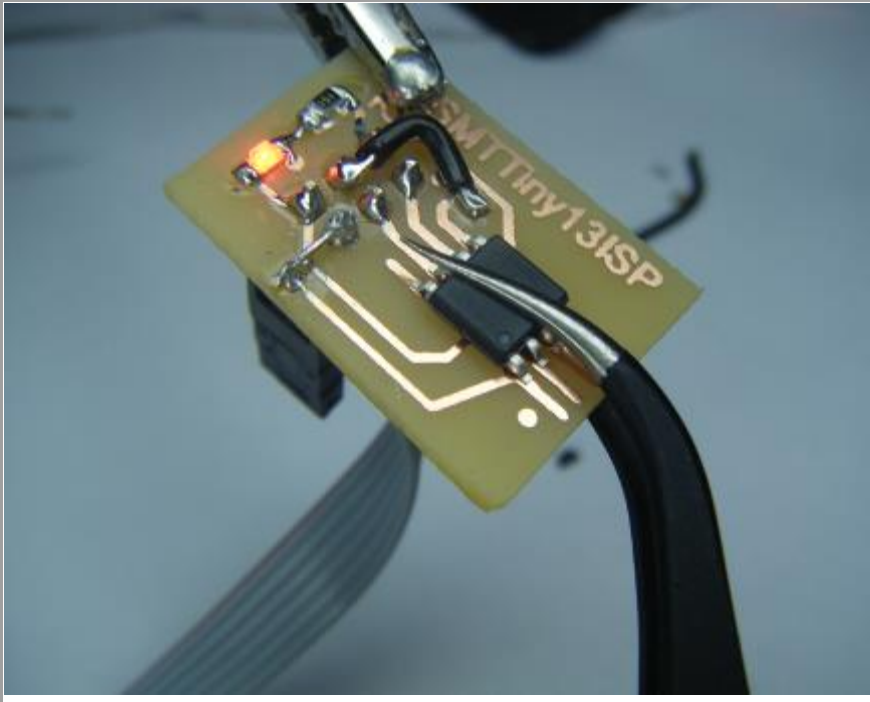
USAGE INSTRUCTIONS

9



That's it! Mount the SMTTiny13ISP into your helping hands, clamp in place. Plug the USBTinyISP into the ISP connector, and plug the other end into your pc. The red LED should light up. If not, try reversing the plug.

If not, ensure you USBTinyISP is working correctly. (Is the green light on?) Maybe you soldered in the LED backwards?

10		Very carefully, place the cpu in the correct orientation, that is, Dot on CPU matches Dot on the board. Note, the traces are live, and reverse voltaging the Tiny13 will be deadly! Make sure dot matches dot! Carefully, and swiftly, clamp down with your tweezers. This will keep the CPU in place.
11	<pre>charley@crjmini:~\$ su Password: root@crjmini:/home/charley# avrdude -c usbtiny -p t13 avrdude: AVR device initialized and ready to accept instructions Reading ##### 100% avrdude: Device signature = 0x1e9007 avrdude: safemode: Fuses OK avrdude done. Thank you. root@crjmini:/home/charley#</pre>	Your right hand is occupied holding the CPU in place, so this is entirely left handed typing. If you're a left, I know you'll figure it out. If under Linux, be sure to "su" first to become super user. AVRdude needs elevated permissions to talk to the USBTinyISP. Execute the command "avrdude -c usbtiny -p t13" to test connection to the CPU. If not successful, try reseating the CPU and try again. I'm told these traces

		will oxidize quickly. I live in Las Vegas, with low humidity, typically under 8% and after 2 months, still no problems. If you're having problems connecting you might try wiping with acetone (nail polish remover.)
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