Tiny Interface

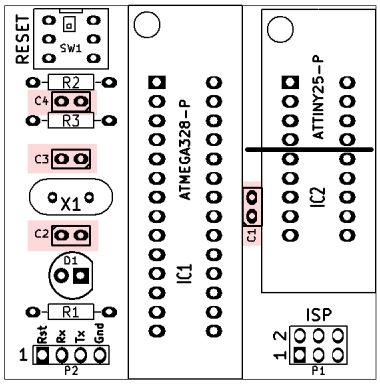
The Tiny Interface allows programming of Tiny85 and ATMEGA328 (AKA Arduino) devices with a USBTinyISP programmer via the 6 pin ISP connector. USBTinyISP, Tiny85, and ATMEGA328 are not incuded in the kit.

Parts List:

Qty	Ref	Description	Markings
1	IC1	Socket ZIF DIP 28 pin .3”	
1	IC2	Socket ZIF DIP 18 pin .3”	
1	X1	Crystal HC49ULF 16Mhz	16.000
1	SW1	Switch DPDT 8x8mm non-latching	
1	R1	Resistor 1/4W 5% 1K	Brown-Black-Red-Gold
2	R2,R3	Resistor 1/4W 5% 10K	Brown-Black-Orange-Gold
1	D1	LED 5mm Red	
1	P1	Header .1ls 2x3	
1	P2	Header .1ls 4 pin	
2	C2,C3	Capacitor Disc 15pF	15
2	C1,C4	Capacitor Disc 100n .1uF	104
1		PCB	

PCB Assembly

1. Install, solder and clip the excess leads on the following disc capacitors:
   a) 15pf (15) at C2 and C3
   b) .1uF (104) at C1 and C4



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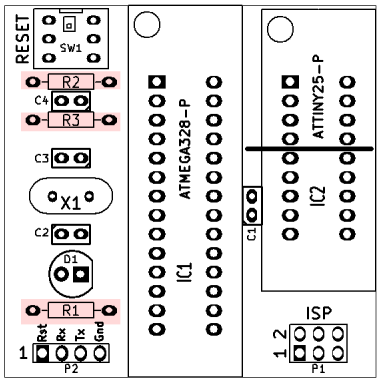
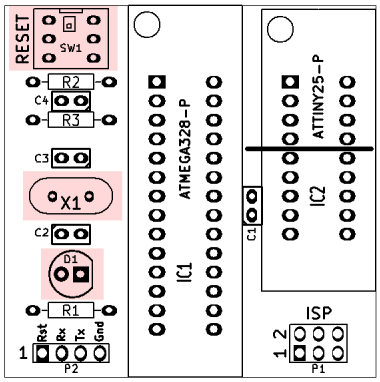
2. Install, solder and clip the excess leads on the following resistors:
   a) 1K (Brown-Black-Red-Gold) at R1
   b) 10K (Brown-Black-Orange-Gold) at R2 and R3



3. Install, solder and clip the excess leads on the following components:
   a) Push button switch SW1
   b) 16Mhz Crystal at X1
   c) LED at D1, note the flat side of the diode should match with the flat side on the PCB silkscreen.



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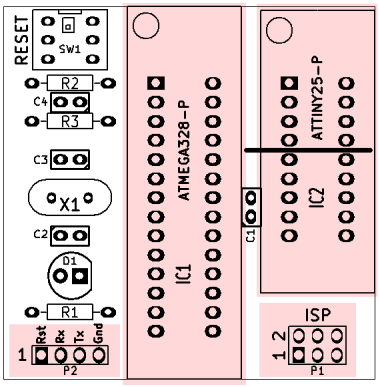
4. Install, solder and clip the excess leads on the following components:
   a) 4 pin header at P2
   b) 2x3 header at P1
   c) 28 pin ZIF socket at IC1 – Note the release bar on the socket should align with the circle insude the silkscreen. The ZIF socket should be in the latched (bar horizontal to the socket) when soldering.
   d) 18 pin ZIF socket at IC2 - Note the release bar on the socket should align with the circle insude the silkscreen. The ZIF socket should be in the latched (bar horizontal to the socket) when soldering.



This completes the PCB assembly.

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Using the Tiny Interface

- Note: The LED normally does not light during programming. However, this LED can be used as an "Arduino Blink Test" LED using I/O D9.
- Connect the USBTinyISP programmer to the Tiny Interface using the 6 pin ISP cable. Note the polarity of pin 1 on the programmer, cable, and interface should be aligned. Typically the ribbon cable runs away from thePCB.
- Open the release bar (the bar should be vertical), add a microcontroller to be programmed into the ZIF socket and close the release bar.
  - For the ATMEGA328P use socket IC1, make sure the IC is properly seated with pin 1 (dot or notch in the IC edge) is nearest to the release bar.
  - For the AtTiny85 use socket IC2, Use **ONLY the first 4 rows** if the IC socket. Make sure the IC is properly seated with pin 1 (dot or notch in the IC edge) is nearest to the release bar.
  - DO NOT PUT MORE THAN 1 IC IN AT A TIME!
- Use programming software such as AVRDude or Arduino as instructed in their software to program the microtroller.
  - It is best to follow the instructions found on Ladyada, Sparkfun, or your USBTinyISP manufacturer to properly load the drivers and AVRDude software.

Programming Tips:

ATTiny85 and AVR Studio:

External Tool example:

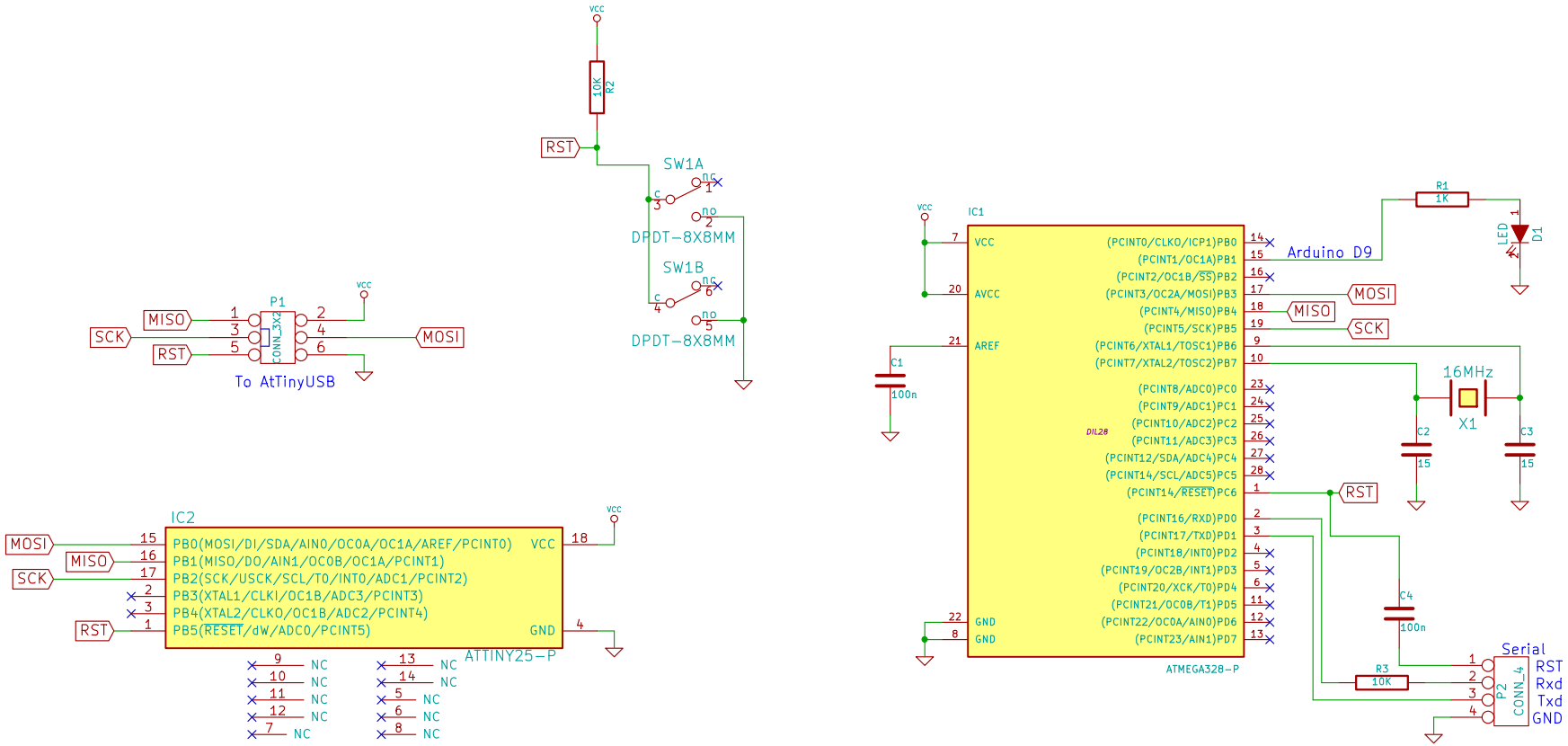
COMMAND: C:\arduino\hardware\tools\avr\bin\avrdude.exe
Arguments: -c usbtiny -p t85 -U flash :w :"$(ProjectDir)\Debug\$(ItemFileName).hex":i

AVRDude example:

Copy AVRDude.exe into your .hex file directory
Manually invoke AVRDude from a DOS prompt:
C:\>avrdude -c usbtiny -p t85 -U flash:w:MYPROGRAMNAME.hex

Arduino ATMEGA328P:

Select Tools->Programmer->USBTinyISP
Seledct Tools->Burn Bootloader to put the Arduino bootloader on a fresh ATMEGA328
Select File->"Upload using programmer" to send the program to the ATMEGA328.
Once the program is uploaded, the serial port connector P1, along with LED (D9), and the reset button are available for testing.
Remember if you are performing the Arduino Blink example to change the Blink code from "int led = 13;" to "int led = 9;" before uploading. The LED should begin to blink when program finished loading.



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