Cheap AVR/51 Development board

by **Silvius** on May 26, 2013

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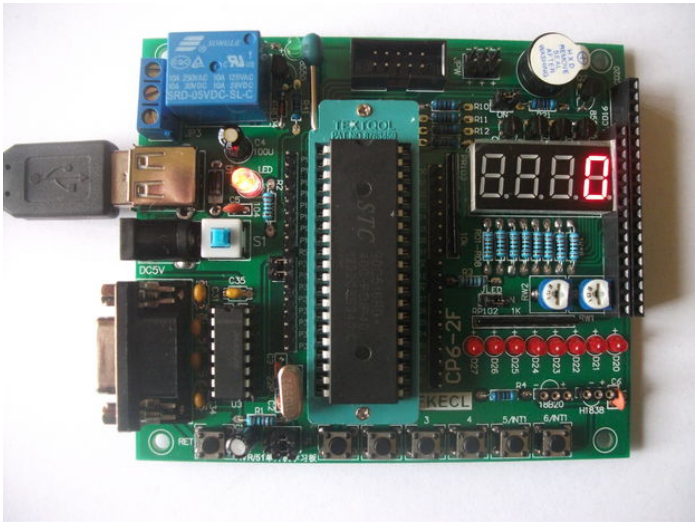
Intro: Cheap AVR/51 Development board

I recently discovered STC microcontrollers produced by TSMC. Being curious about these microcontrollers I started looking for a development board for them.
After some searches on google / ebay / AliExpress / I decided to buy this PCB that I ordered on AliExpress at an affordable price of $ 10 / 2 pieces (In fact I reordered ten pieces of PCB in total and five complete kits for me and my team)

After analyzing circuit I realized that may be used for ATMEGA162, ATMEGA8515, AT89S51, AT89S52 besides STC8051 and that made it interesting enough to continue.



Step 1: PCB

The PCB is very well made. and the component side is very good marked.

Although the markings on the PCB are self-explanatory I felt the need to have a circuit diagram of it (and some sort of user-manual).

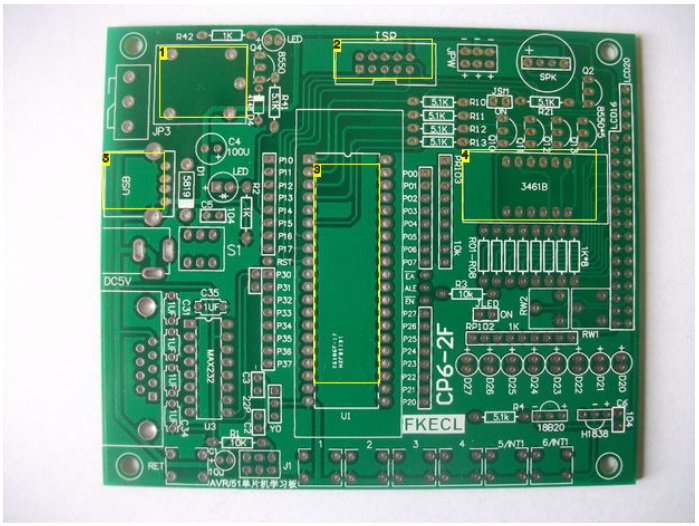


Image Notes
1. Relay 5V 10A 220V
36.11.005.4001
or SRD-05VDC-SL-C

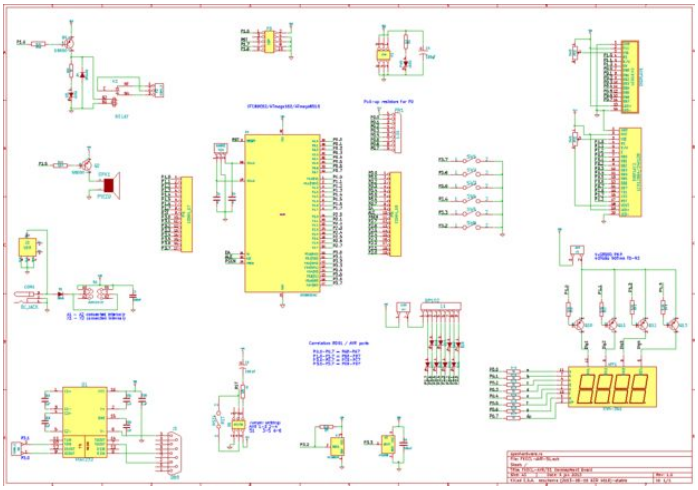
2. 5x2 Pin ISP header
3. 40 Pin ZIF soket
4. Led Display 4x7 Segments 3461BS or KW4-361A
5. USB A connector

Step 2: Schematics

I made circuit diagram in Kicad (In my opinion the best freeware software for drawing electronic diagrams and printed circuits boards).

For printing I recommend downloading the PDF file attached. Although it is in A3 format can be printed on A4 or Letter.

KIcad project files will be available after completion of the PCB design (will be posted as reference are not required for this Instructables, nor for the use of the development board). For this tutorial it is sufficient diagram in PDF format.

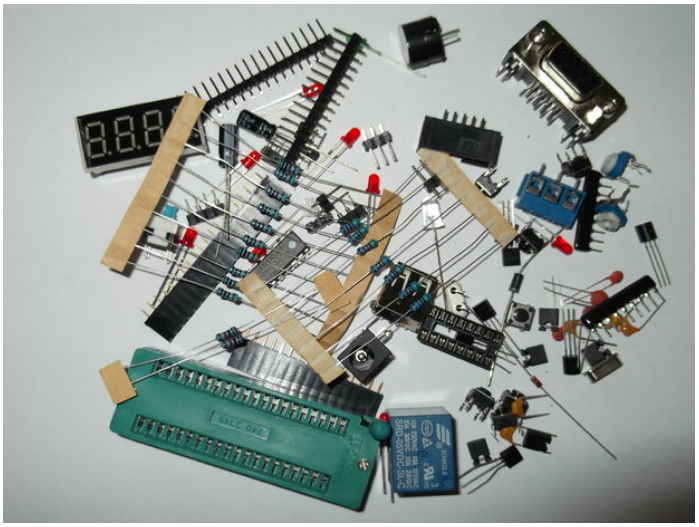


File Downloads

FKECL-AVR-51.pdf (116 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'FKECL-AVR-51.pdf']

Step 3: Overview of components

All components will be detailed in the following steps



Step 4: Resistors

We started installing the small components. This step is about resistors.

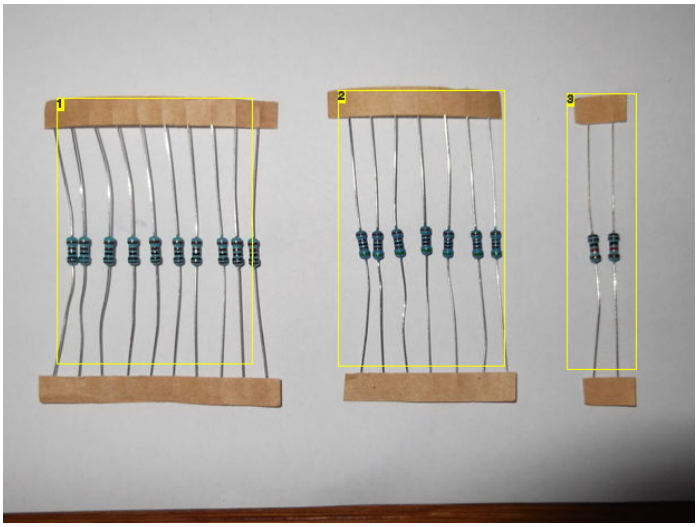


Image Notes
1. 10 x 1K resistors
2. 7 x 5.1K resistors
3. 2 x 10K resistors

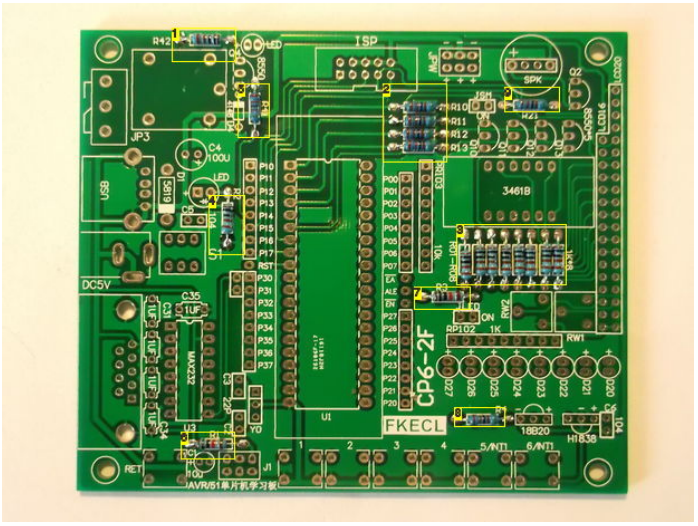


Image Notes
1. 1k
2. 5.1K x 4
3. 1K x 8
4. 1K
5. 5.1K
6. 10K
7. 10K
8. 5.1K
9. 5.1K

Step 5: Diodes and LEDs

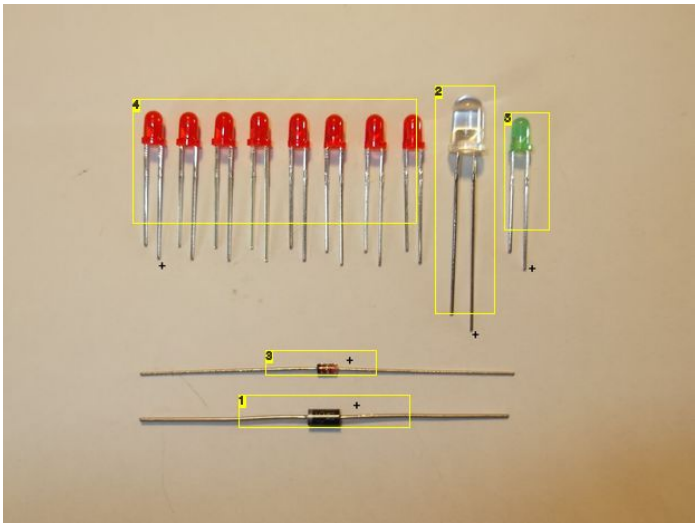


Image Notes
1. 1N5819 Diode
2. 5mm LED
3. 1N4148 Diode
4. 3mm LED x 8
5. 3mm LED

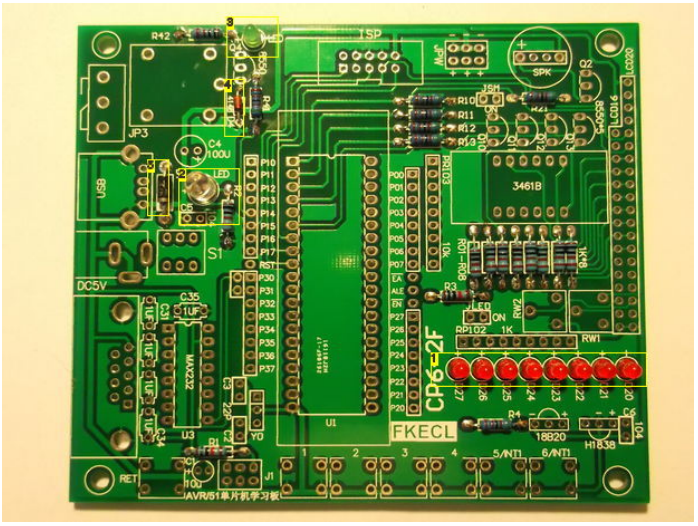


Image Notes
1. 3mm LED x 8
2. Power LED
3. Relay LED
4. 1N4148
5. 1N5819 Diode

Step 6: Capacitors and Transistors

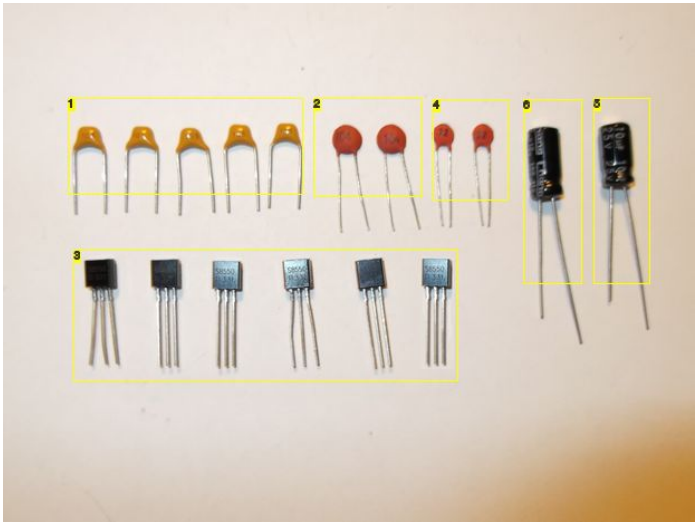


Image Notes
1. 1uF x 5
2. 100nF x 2
3. S8550 x 6
PNP Transistors
4. 22pF x 2
5. 10uF
6. 100uF

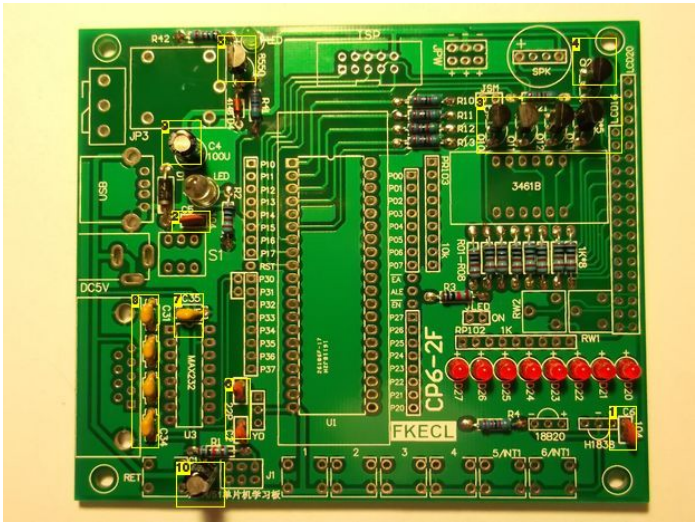


Image Notes
1. 100nF
2. 100nF
3. S8550 x 4
4. S8550
5. S8550
6. 22pF x 2
7. 1uF
8. 1uF x 4
9. 100uF
10. 10uF

Step 7: Small connectors and switches

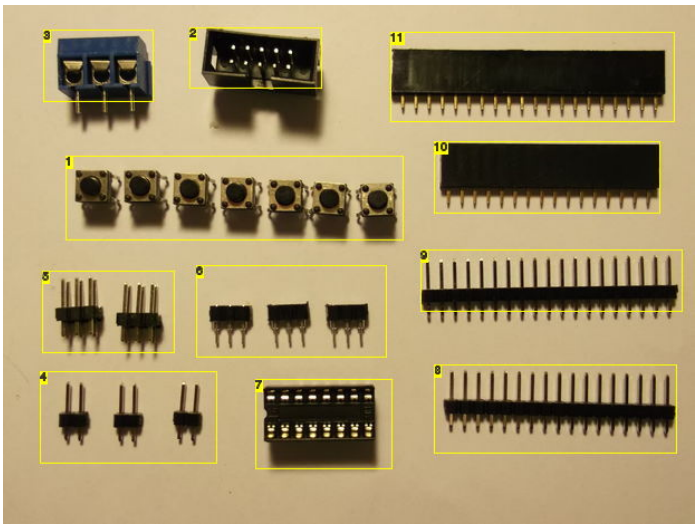


Image Notes
1. 6x6mm switches x 7
2. ISP connector
10 pin
3. relay connector
4. 2 pin jumper x 3
5. 3x2pin header x 2
6. 3pin round socket x 3
7. DIP16 socket
8. 17 pin header
9. 19pin header
10. 16 pin socket for LCD16x2
11. 20 pin socket for graphic LCD

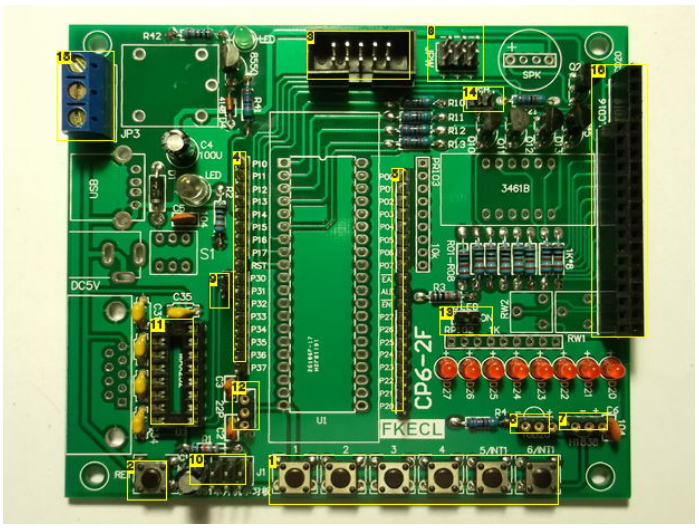


Image Notes
1. 6x6mm push buttons
2. Reset
3. ISP Header
4. 17pin header
5. 19pin header
6. Socket for DS18B20
7. Socket for IR1838
8. PWR Header
9. UART Jumpers
10. AVR/51 config jumpers
11. DIP16 Socket for MAX232
12. Quartz socket
13. LED enable jumper
14. 7Segments enable jumper
15. Relay connector
16. 16pin and 20pin LCD connectors

Step 8: Last components

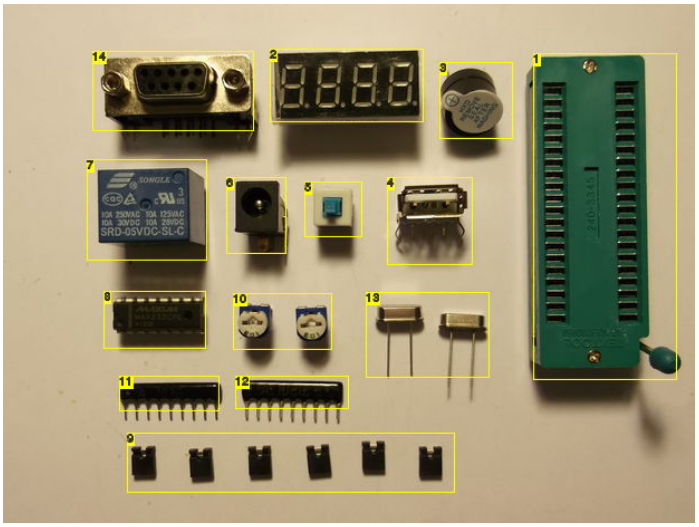


Image Notes
1. ZIF Socket DIP40
2. 3461BS common anode display
3. Buzzer
4. USB A
5. Power switch
6. DC Jack
7. Relay
8. MAX232
9. jumper caps
10. Trimmer 10K x 2
11. Resistor pack 10k
12. Resistor pack 1k
13. Quartz 12MHz, 11.0592MHz
14. DB9-Female

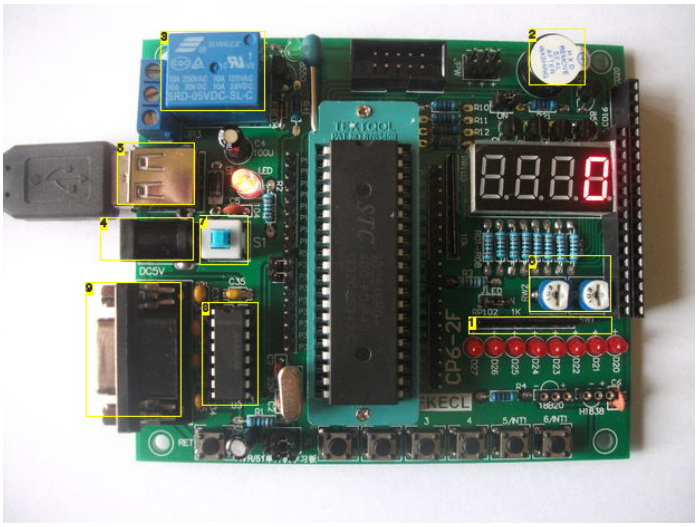
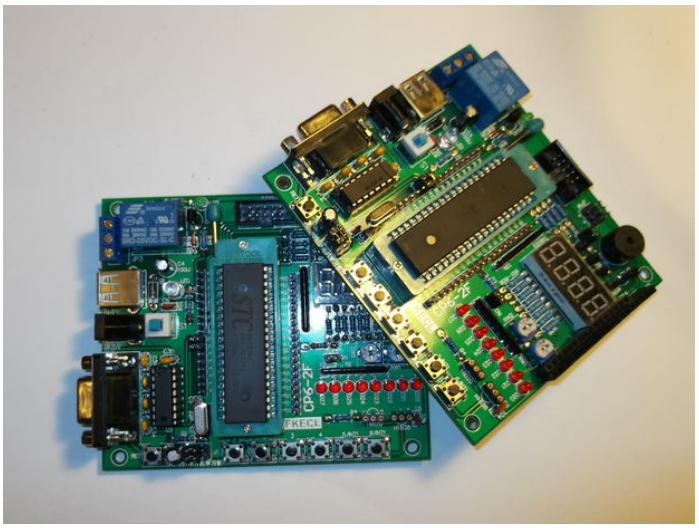


Image Notes
1. Resistor pack 1K
2. Buzzer
3. Relay
4. DC Jack
5. USB-A
6. Trimmer 10K x 2
7. Power switch
8. MAX232
9. Serial connector DB9-Female

Step 9: Completed boards.

I will supplement with additional information as soon as possible.

At www.openhardware.ro will also be source code for supported processors.



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