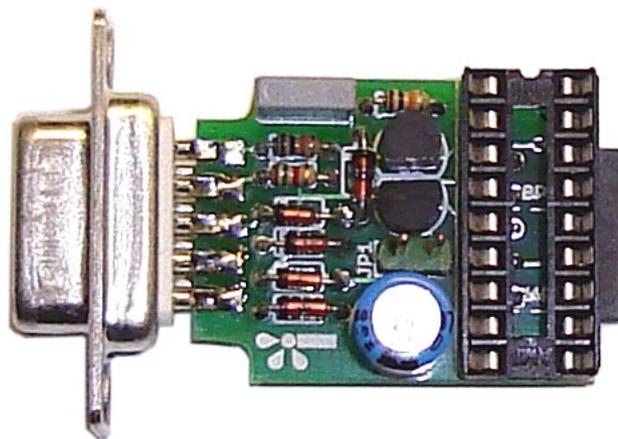


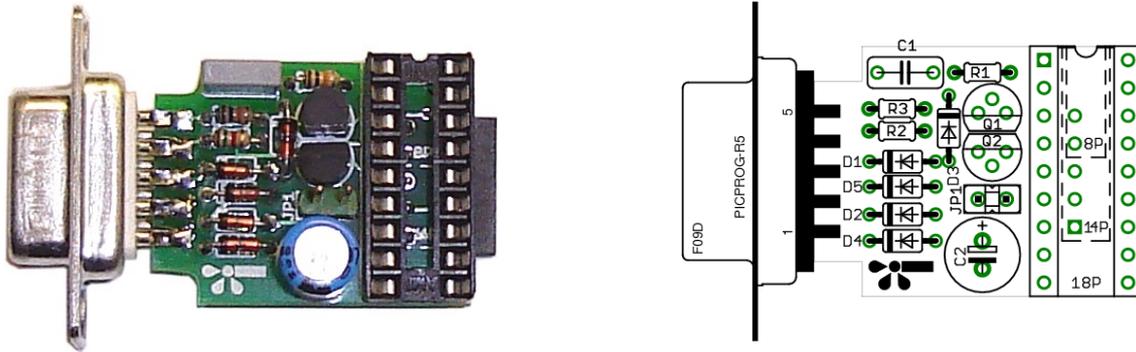
PicProg R5



Simple PIC programmer for the PC serial port.

Doc rev. date: 2007-10-05

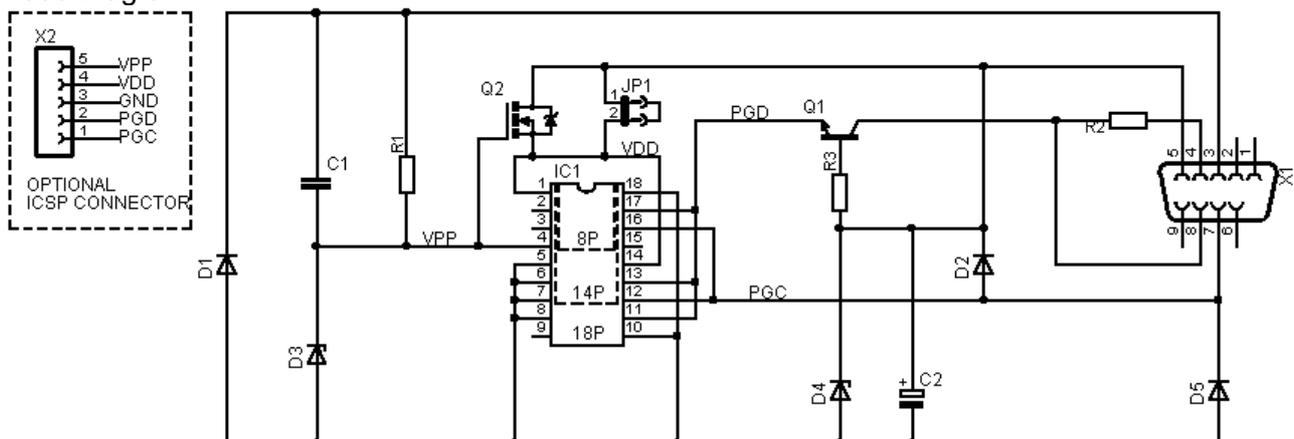
Simple PIC programmer for the PC serial port.



Parts List:

Ref.	Qty	Description
R1, R3	2	Resistor, 0,125W 10kΩ 5% (color code brown, black, orange, gold) or 1% (color code brown, black, black, red, brown)
R2	1	Resistor, 0,125W 1,5kΩ 5% (color code brown, green, red, gold) or 1% (color code brown, green, black, brown, brown)
D1, D2, D5	3	Diode, 1N4848 (marking 4148)
D3	1	Zenerdiode, 13V 0,5W, DO-35 (marking BZX55-C13, or BZX79-C13)
D4	1	Zenerdiode, 5,1V 0,5W, DO-35 (marking BZX55-C5V1, or BZX79-C5V1)
SOCKET	1	IC Socket, DIL 0.3" 18P
Q1	1	Transistor, NPN TO-92, BC547
Q2	1	MOSFET, N-Channel TO-92, 2N7000
C1	1	Capacitor, 100nF (marking 100n, or 104)
C2	1	Capacitor, electrolytic, 4.7μF (or 10μF), radial
JP1	1	2 pin header and jumper
X1	1	Connector, Sub-D socket, 9P
X2	1	Connector, 5P

Schematic Diagram:

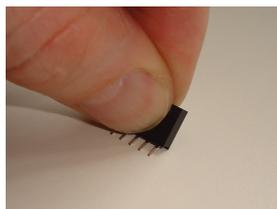


First mount the small parts such as diodes and resistors. Next, mount the bigger components in order of their height. The diodes are in a small glass DO34 package, and at times the printing on these can be hard to read. It is important that you do not mix up the three types. If needed use a magnifying glass and a bright light to identify each diode. Note the polarity of D1 though D5 and C2. Especially with C2 because the circuit board has a marking for the positive terminal, while the capacitor itself has a marking for the negative terminal.

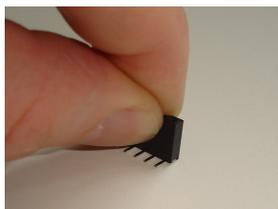
Before soldering the 18 pin IC socket you should first cut of pins 12 through 16 as close as possible to the circuit board, or bend to pins flat to the board before soldering. Otherwise it will not be possible to mount the 5 pin ICSP connector flush to the board.

The 2 final components to mount are the 9 pin sub-D connector and optionally the 5 pin ICSP connector (X2). Slide the circuit board between the pins of the 9P Sub-D connector. Take care not to apply too much force to push it in all the way. The board should slide about half way in between the pins. When pushed in too far, then the internal contact of the connector may be pushed out of alignment.

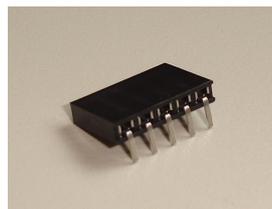
Connector X2 is optional, and can be mounted on the bottom side of the board. First bend the pins at a right angle to allow the connector to lay flat on the board. Bend the pins on a flat hard surface as shown below. It is important that you bend the pins as shown on step 3, i.e. the bend pins do not cover the contact holes. If the pins would be bend the other way around, then there is the risk that the soldering tin will creep into the contact during soldering. It is a good idea to use some double-sided foam-tape to mount X2 on the board, this will make it easier to mount this connector level, and the raised position will reduce the risk that soldering tin will flow into the connector during soldering.



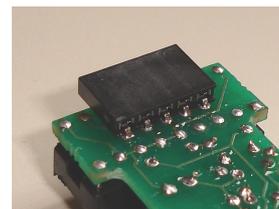
step 1



step 2



step 3



step 4

It is a good idea to clearly mark pin 1 of the ICSP connector with a dot of white paint. And do the same with the mating connectors on your projects.

Jumper JP1: If the 2-pin header is left open, then Q2 will force the programmer to use the “Vpp before Vdd principle”. This is necessary for certain types of PIC that need to be re-programmed, and in which the internal oscillator had been enabled in the previously programmed firmware. If in such cases the “Vpp before Vdd principle” not would be used, then those kind of PIC can not be re-programmed. There are PICs for which it does not matter if jumper JP1 is placed or not. E.g. PIC16F627, PIC16F6x8. But there are also PIC types that require the opposite, i.e. “Vdd before Vpp”. This is the case with the PIC16F88. Check the programming specification of the PIC to be programmed (see Microchip web-site) to determine need of “Vpp before Vdd” or “Vdd before Vpp”. Place jumper JP1 accordingly.

PIC programmers like this one, that derive the programming voltage from the serial port, are depending on a computer that gives a high enough output voltage. This is usually not a problem but in some cases, laptops may give problems.

You can use these software tools with PicProg R5 :

[WinPIC](#) - PIC programmer software for Windows, by Wolfgang Büscher (DL4YHF).

[ICPROG](#) – PIC programmer software for Windows, by Bonny Gijzen

[PICPROG](#) – My favorite. PIC programmer software for Linux, by Jaakko Hyvätti

[Piklab](#) – A Linux IDE for PIC and dsPIC micro-controllers.

In WinPIC or ICPROG select JDM as programmer type.

If you would like to use a high level programming language then these are some possible choices:

[JAL](#) – (not?) Just Another Language. Open-Source PIC compiler. A programming language that is similar to Pascal and is suited as a first introduction to programming PICs.

[CCS](#) – C Compiler that comes with a generous library set of functions.

[HI-TECH PICC-Lite](#) – Another C Compiler for PIC micro-controllers.