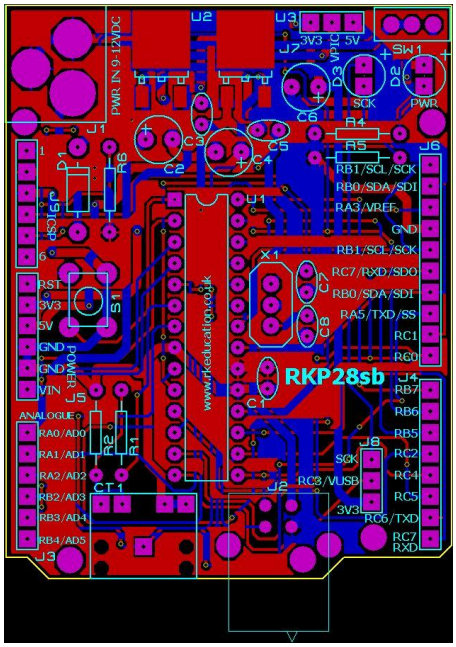
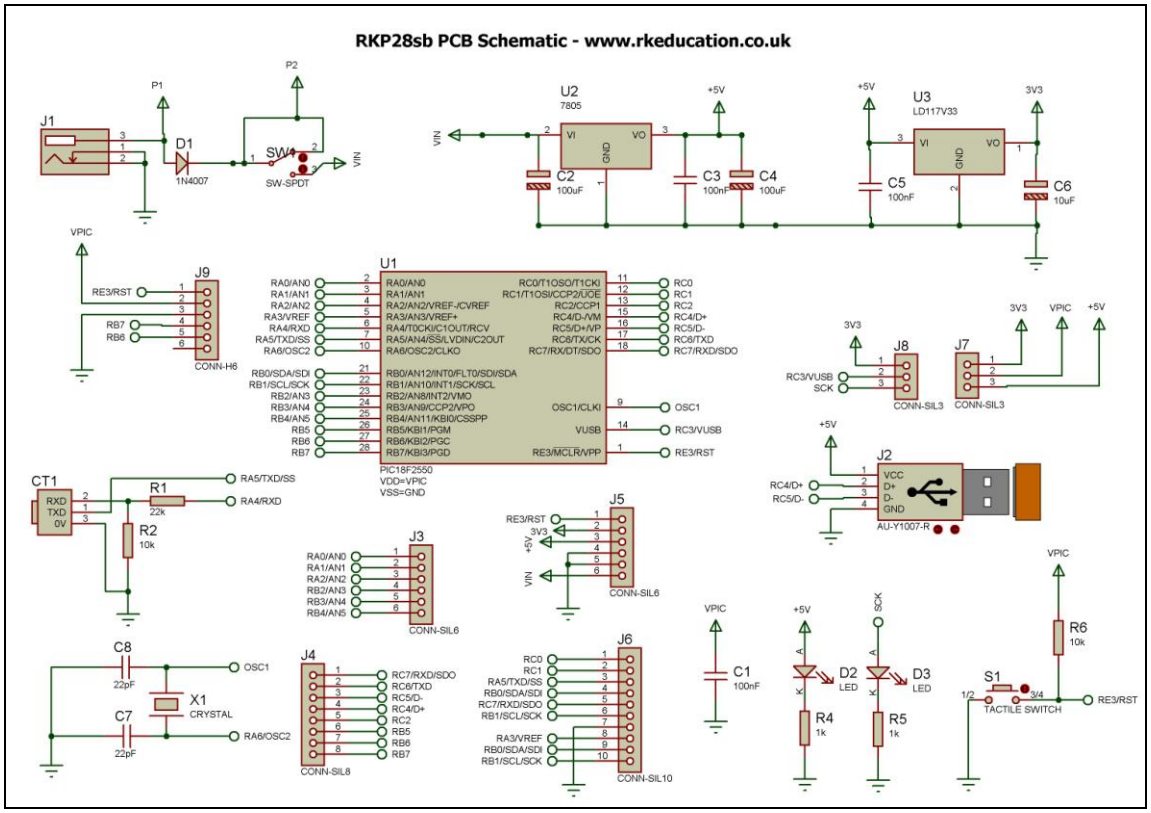
RKP28sb Shield Compatible PCB for PIC and PICAXE
Component List and Instructions



PCB layout

Constructed PCB



Schematic

Description

The RKP28sb shield compatible project PCB has been designed to use PIC, Genie and PICAXE microcontrollers

- Designed for use with 28 pin PIC MCUs such as the PIC18F2550, Genie E28 and PICAXE-28X2
- Software is downloaded from a PC into the microcontroller via an ICSP header, a USB cable or a download socket
- Hardware reset switch included
- The clock reference can be either a ceramic resonator or crystal oscillator
- Input and outputs are accessed via PCB headers
- Designed to accept Arduino shields
- Power rails with outputs on PCB headers
- Powered by a DC power socket
- +12VDC input and +5VDC and +3.3VDC regulated outputs
- LEDs used to indicate SCK and power
- High quality, double sided black PCB

Component List

CT1 - 3.5mm stereo socket for programming Genie and PICAXE
J1 – 2.1mm DC socket
J2 – USB socket
J3, J5 - 6 way PCB header - 2.54mm pitch
J4 - 8 way PCB header - 2.54mm pitch
J6 - 10 way PCB header - 2.54mm pitch
J7, J8 - 3 way PCB pin header - 2.54mm pitch
J9 - 6 way right angled PCB header - 2.54mm pitch
C1, C3, C5 – 100nF multilayer ceramic capacitor
C2, C4 – 100uF electrolytic capacitor 16VDC
C6 - 10uF electrolytic capacitor 16VDC
C7, C8 - 22pF capacitor (do not use when using ceramic resonator)
D1 – 1N4007
D2, D3 – 3mm LEDs
R1 - 22k ¼ watt resistor (red, red, orange)
R2 – 10k ¼ watt resistor (brown black orange)
R4, R5 – 1k ¼ watt resistor (brown black red)
R6 – 10k ¼ watt resistor (brown black orange)
S1 – 6mm tactile switch
SW1 - Ultra miniature slide switch for power switch
U1 – 28 way DIP socket with microcontroller e.g. PIC18F2550

U2 – 7805 voltage regulator TO252 package
U3 –LD117V33 3V3 voltage regulator TO252 package
X1 – ceramic resonator or crystal oscillator

When constructing always start with the components that have the lowest profile and work high, for example start with the resistors and end on the DC power socket.

Instructions

The PCB has been designed to use PIC microcontrollers as well as those MCUs based on PICs such as Genie and PICAXE.

Connecting Power

The power is connected to the 2.1mm DC socket marked **PWR IN 9-12VDC**, a quality, regulated 9-12VDC 1Amp power supply should be used. The circuit incorporates a 7805 and LD117V33 voltage regulators, the regulators are surface mounted and are designed to dissipate heat through a power plane on the PCB, if these I.C.s become hot they will need a heat sink attaching.

Downloading software

Once the software has been written using the relevant Programming Editor it can be downloaded into the PIC (or equivalent). This is downloaded using a download cable that connects to your PC's USB port. Insert the download plug into the download socket and activate the program function in your Programming Editor. If all goes well it will tell you the program download was successful.

Using the PCB

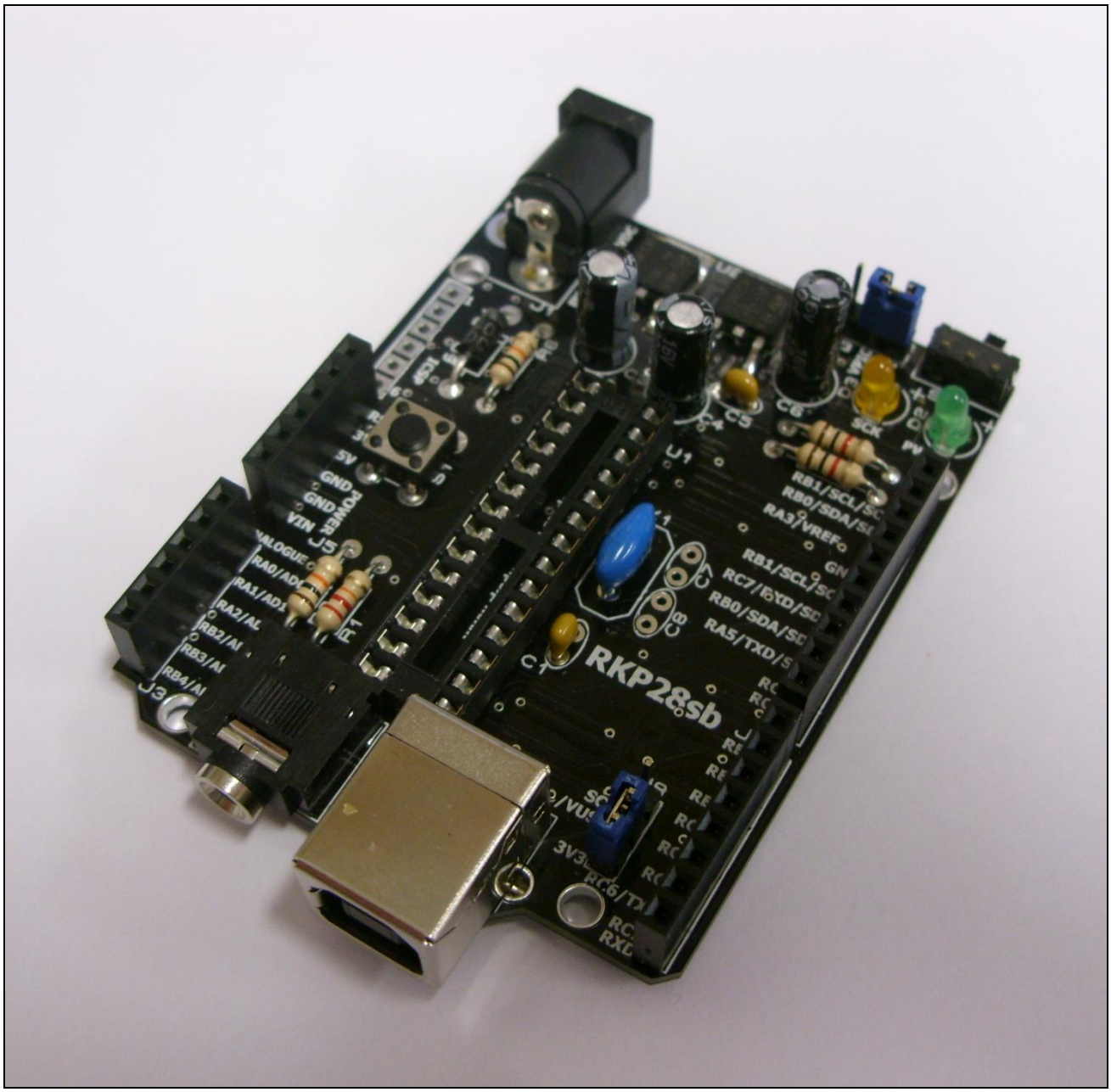
The PCB has been designed to work with shields. How the PCB is used will depend on what the user is trying to achieve.

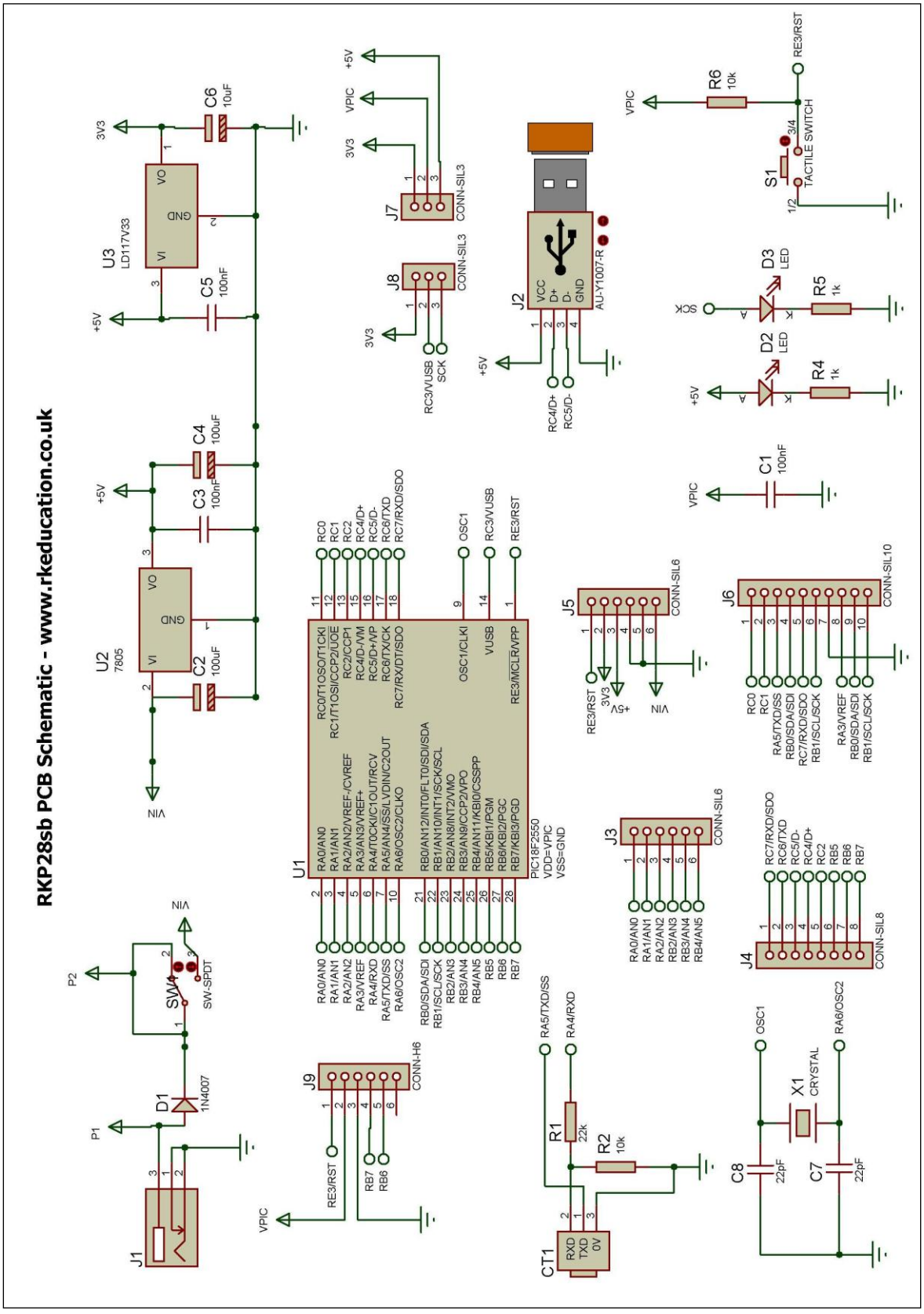
A great deal of useful information is available on websites such as the Arduino forum.

This document is a work in progress, any contributions will be gratefully received.

Please visit our website
www.rkeducation.co.uk

If you have any comments or queries please email us at
technical@rkeducation.co.uk




RKP28sb PCB Schematic - www.rkeducation.co.uk
U1
PIC18F2550
U2
7805
U3
LD117V33
J1
J2
AU-Y1007-R
J3
CONN-SIL6
J4
CONN-SIL8
J5
CONN-SIL6
J6
CONN-SIL10
J7
CONN-SIL3
J8
CONN-SIL3
J9
CONN-H6
S1
TACTILE SWITCH
SW1
SW-SPDT
D1
1N4007
D2
LED
D3
LED
X1
CRYSTAL
CT1
C1
100nF
C2
100uF
C3
100nF
C4
100uF
C5
100nF
C6
10uF
C7
22pF
C8
22pF
R1
22k
R2
10k
R4
1k
R5
1k
R6
10k
VIN
VPIC
3V3
+5V
RC3/VUSB
SCK
RC4/D+
RC5/D-
RE3/RST
RA5/TXD/SS
RA4/RXD
OSC1
RA6/OSC2