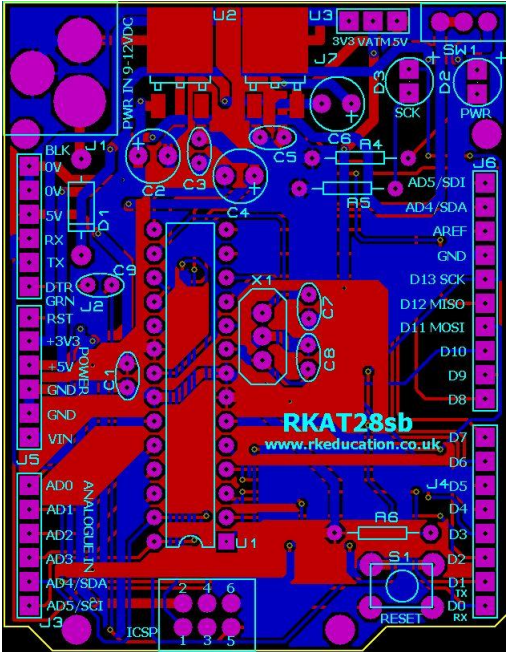
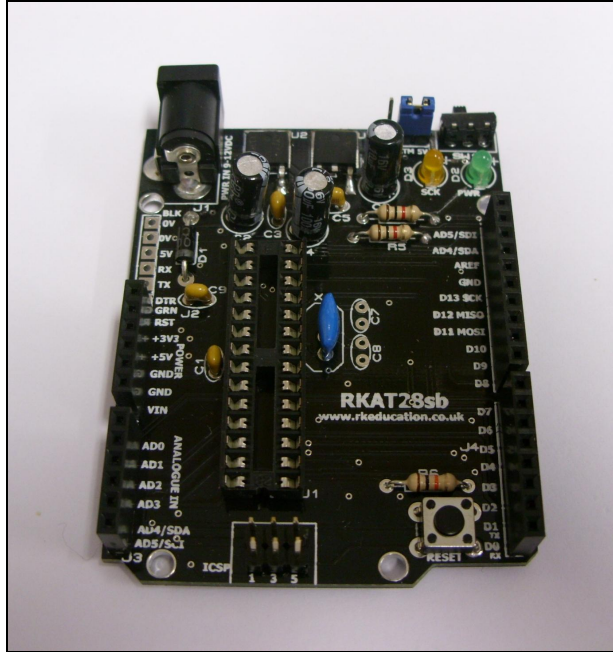


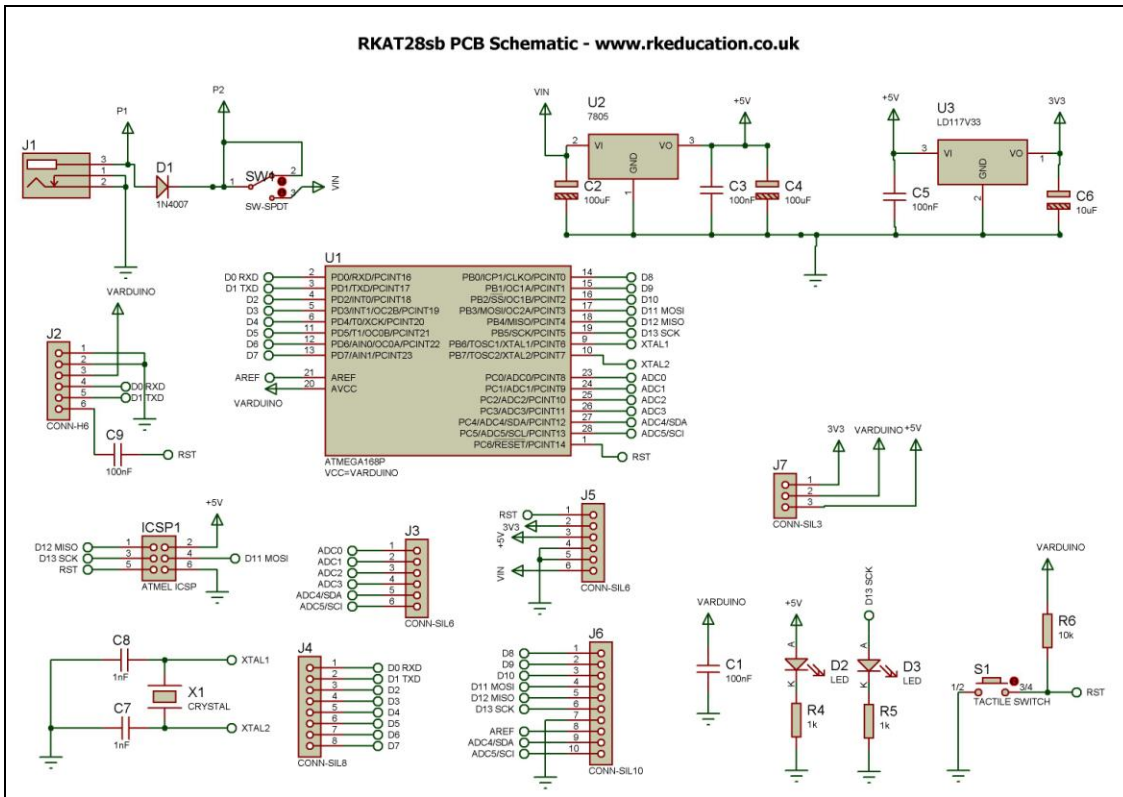
# RKAT28sb Shield Compatible PCB Component List and Instructions



PCB layout



Constructed PCB



Schematic

## Description

The RKAT28sb shield compatible project PCB has been designed to use Atmel and Arduino microcontrollers

- Designed for use with 28 pin Atmel and Arduino MCUs
- Software is downloaded from a PC into the microcontroller via an ICSP header or via an FTDI cable
- 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 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

J1 – 2.1mm DC socket

J2 – 6 way right angled header - 2.54mm pitch

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 - 3 way PCB pin header - 2.54mm pitch

C1, C3, C5 – 100nF multilayer ceramic capacitor

C2, C4 – 100uF electrolytic capacitor 16VDC

C6 - 10uF electrolytic capacitor 16VDC

C7, C8 - 15pF capacitor (do not use when using ceramic resonator)

C9 – 100nF multilayer ceramic capacitor

D1 – 1N4007

D2, D3 – 3mm LEDs

ICSP1 - 3x2 header for ICSP

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. Arduino

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 ATMEL and Arduino microcontrollers.

## **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 Arduino Programming Editor (or equivalent) it can be downloaded into the Arduino (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.

Please note that this PCB does not have an on-board FT232 IC.

## **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.

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[www.rkeducation.co.uk](http://www.rkeducation.co.uk)

If you have any comments or queries please email us at

[technical@rkeducation.co.uk](mailto:technical@rkeducation.co.uk)

