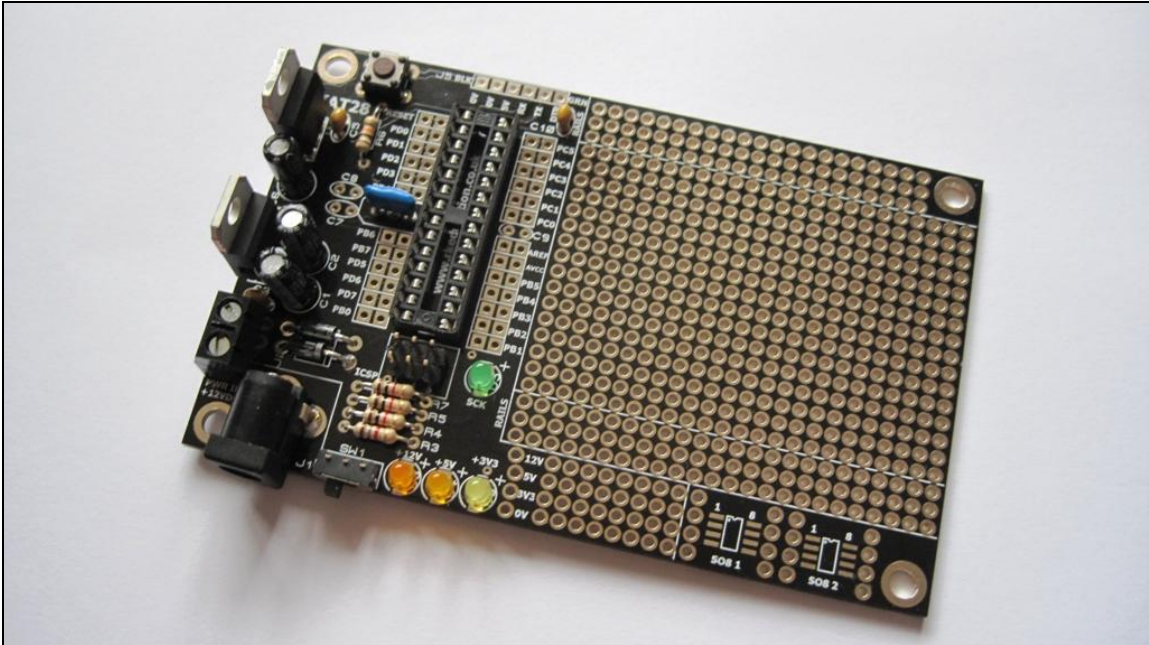
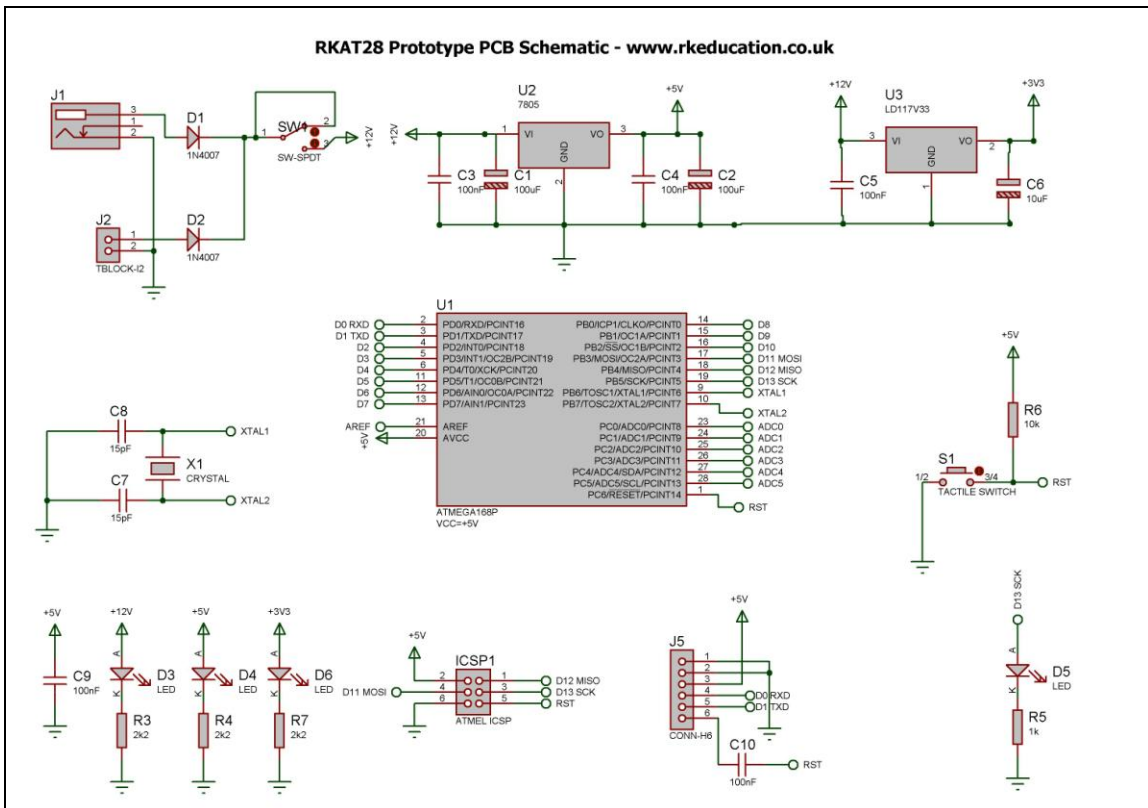


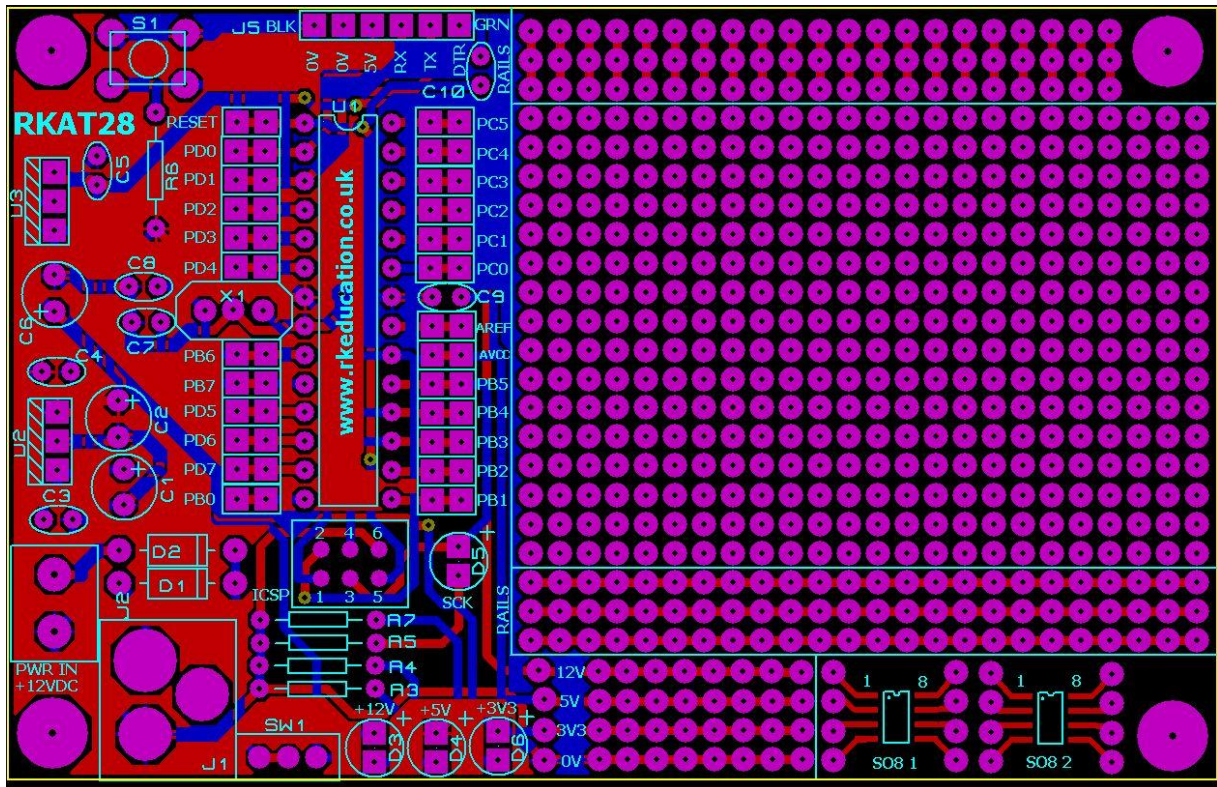
## RKAT28 Component List and Instructions



Constructed PCB



Schematic



PCB layout

## Description

The RKAT28 prototype 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
- All input and output pins have a PTH
- A large prototyping area with power rails
- 2x SO8 footprints with breakout pins
- Power rails on the prototyping area
- Powered by a terminal block or DC power socket
- +12VDC input and +5VDC and +3.3VDC regulated outputs
- 3 LEDs used to indicate power – +12V, +5V and +3.3V
- Power switch and LED power indicators
- High quality, double sided black PCB

## Component List

J1 – 2.1mm DC socket  
J2 – 2 way 5mm pitch terminal block  
J6 – 6 way header  
C1, C2 – 100uF electrolytic capacitor 16VDC  
C3 ~ C5 – 100nF multilayer ceramic capacitor  
C6 – 10uF electrolytic capacitor 16VDC  
C7, C8 – 15pF capacitor (do not use when using ceramic resonator)  
C9, C10 – 100nF multilayer ceramic capacitor  
D1, D2 – 1N4007  
D3 ~ D6 – 3mm LEDs  
ICSP1 – 3x2 header for ICSP  
R3, R4, R7 – 2k2 ¼ watt resistor (red red red)  
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 TO220 package  
U3 – LD117V33 3V3 voltage regulator TO220 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 voltage regulators.

## Instructions

The PCB has been designed to use ATMEL and Arduino microcontrollers.

## Connecting Power

The power is connected to the terminal block marked PWR IN, the 0V input, usually black is put in the lower terminal and the +VE, usually red, is put in the upper terminal, power can also be supplied via the 2.1mm DC socket, a regulated 12VDC 1Amp power supply should be used. The circuit incorporates a 7805 and LD117V33 voltage regulators, a heat sink may need to be added to the voltage regulators if a high current is required as they will become hot, particularly if higher currents are demanded from the regulators.

## 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 either 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.

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

## Using the prototype area

Using the prototype area is simple and how it is used is dependent on what is being done. Access to all of the pins of U1 is gained by through holes near the pins of U1, simply connect using jumper wires. There are power rails at the bottom of the prototyping area and they are clearly labelled. There are 2 SO8 surface mount footprints with breakout pins to allow easy interfacing. There are 2 further sets of rails above and below the prototyping area.

