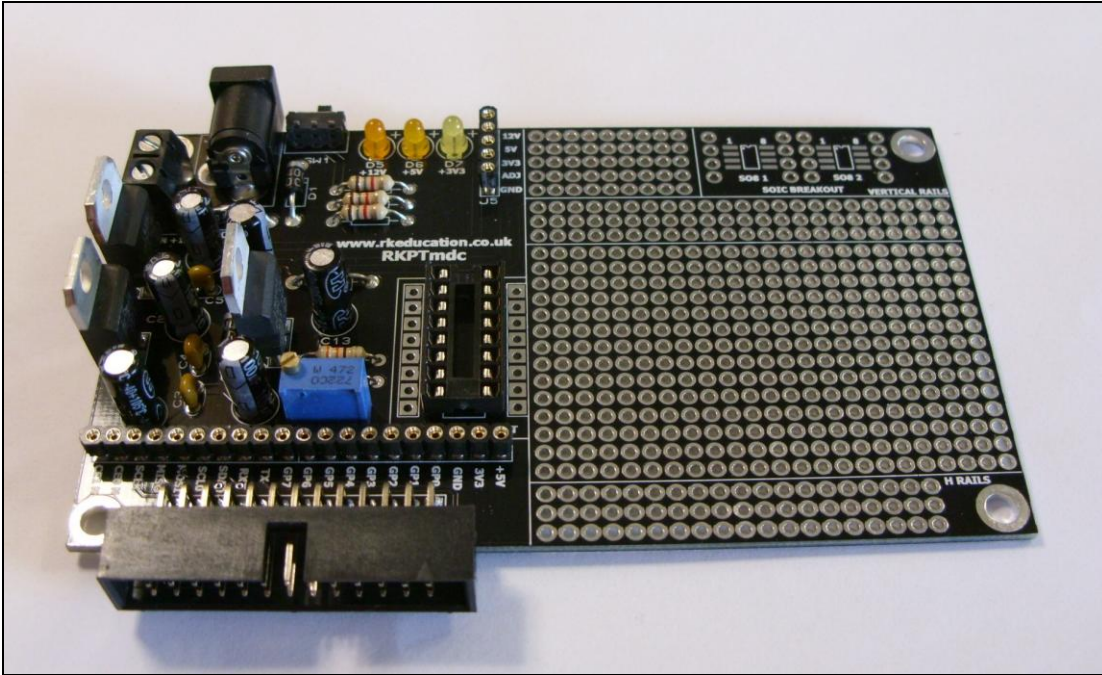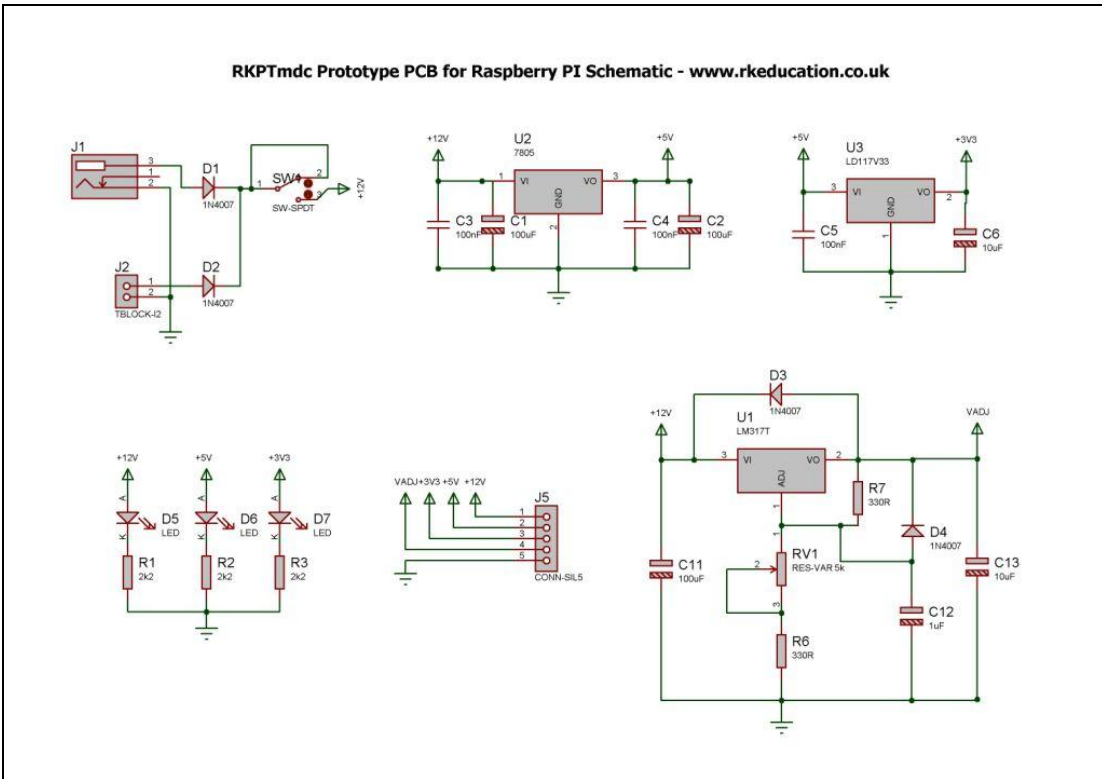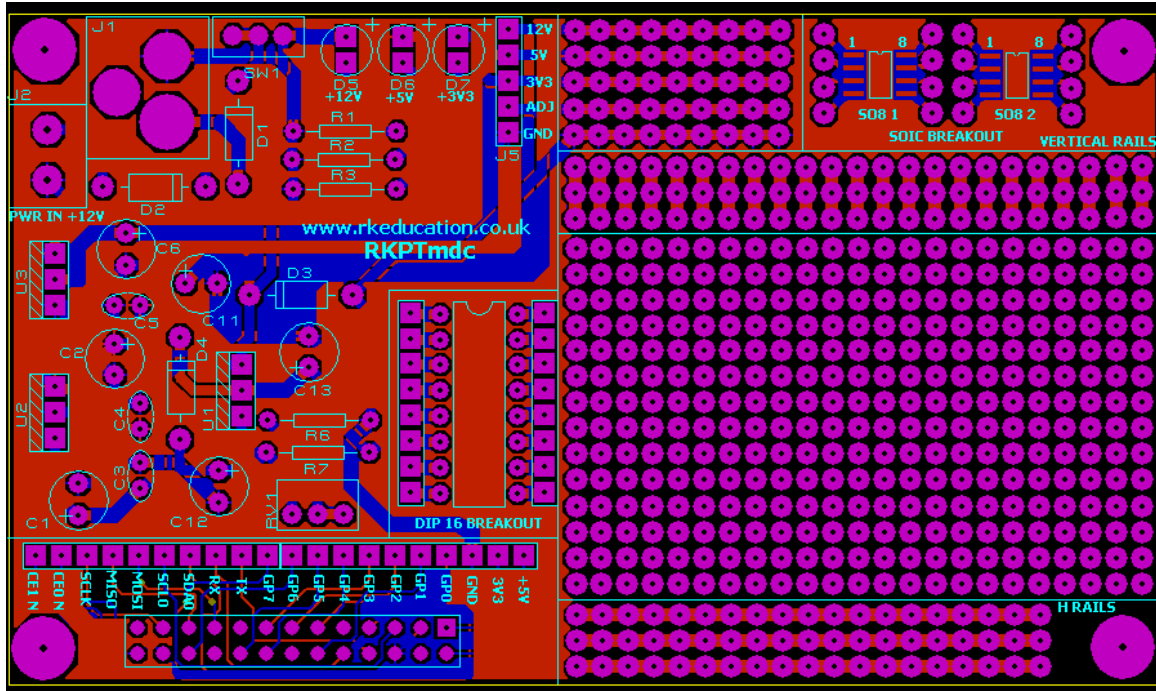# RKPT mdc Component List and Instructions

Constructed PCB

Schematic

PCB layout

Description

The RKPT mdc prototype project PCB has been designed to be interfaced to the Raspberry PI, you can of course use it without a Raspberry PI as a prototype PCB.

- The PCB has been manufactured using a high quality, double sided black PCB with plated through holes
- A clear silkscreen has been used
- Interfaces to the Raspberry PI via a 26way dual row header
- All usable pins from the Raspberry PI header are broken out
- The PCB has a DIP 16 breakout, for example to be used with a multiplexing IC such as the 4051
- There are 2x SO8 breakouts
- A large prototyping area is included
- Vertical and horizontal power rails on the prototyping area
- Power a terminal block or DC power socket
- The PCB has 3 voltage regulators, 7805, LM317T and LD117V33
- Adjustable, +12VDC input, +5VDC and +3.3VDC regulated outputs
- 3 LEDs used to indicate power – +12V, +5V and 3.3V
- Power switch
- 4x M4 mounting holes

Component List

J1 – 2.1mm DC socket
J2 – 2 way 5mm pitch terminal block
C1, C2, C11 – 100uF electrolytic capacitor 16VDC
C3 ~ C5 – 100nF multilayer ceramic capacitor
C6, C13 – 10uF electrolytic capacitor 16VDC
C12 – 1uF electrolytic capacitor 16VDC
D1 ~ D4 – 1N4007
D5 ~ D7 – 5mm LEDs (power indicators)
R1 ~ R3 – 2k2 ¼ watt resistor (red red red)
R6, R7 – 330R ¼ watt resistor (orange orange brown)
RV1 - 5k 3296 series pot
SW1 - Ultra miniature slide switch for power switch
16 way DIP socket
26 way dual row header

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 interface to the Raspberry PI in order to produce prototype circuits, for information on using the Raspberry PI please see the appropriate website and forum.

The PCB can also be used as a general prototyping PCB.

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 3 voltage regulators and regulated voltages are available at J5 and the power rails, there are 3.3V, 5V, 12V (the input voltage less the diode voltage drop) and adjustable (between approximately 2.5 and 10VDC). A heat sink may need to be added to the voltage regulators if a high current is required as the tabs may become overheated and the regulators may be damaged.

A power switch has been included and is labelled SW1.

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 from the Raspberry PI are available at the 20 way SIL socket, simply connect using jumper wires. There is a 16 DIP breakout and 2x SO8 breakouts that can be used when prototyping, for example it may be desirable to use a 4051 multiplexer/demultiplxer in the DIP 16 socket.
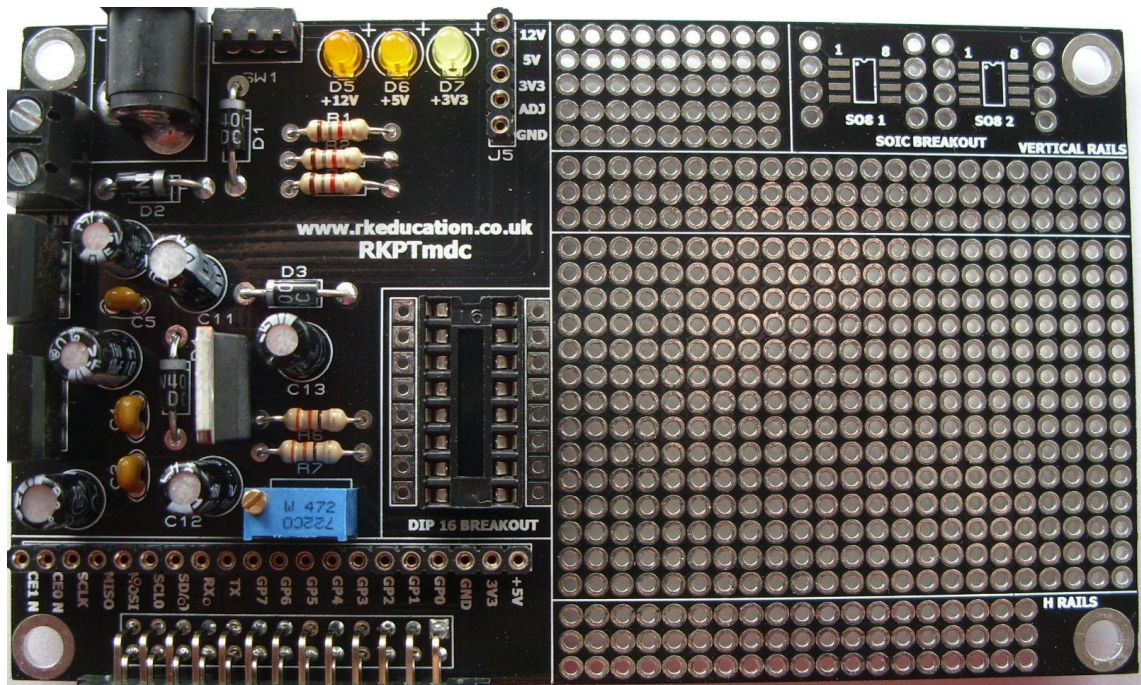
Please visit our website

www.rkeducation.co.uk

If you have any comments or queries please email us at

technical@rkeducation.co.uk

RKPTmdc Prototype PCB for Raspberry PI Schematic - www.rkeducation.co.uk