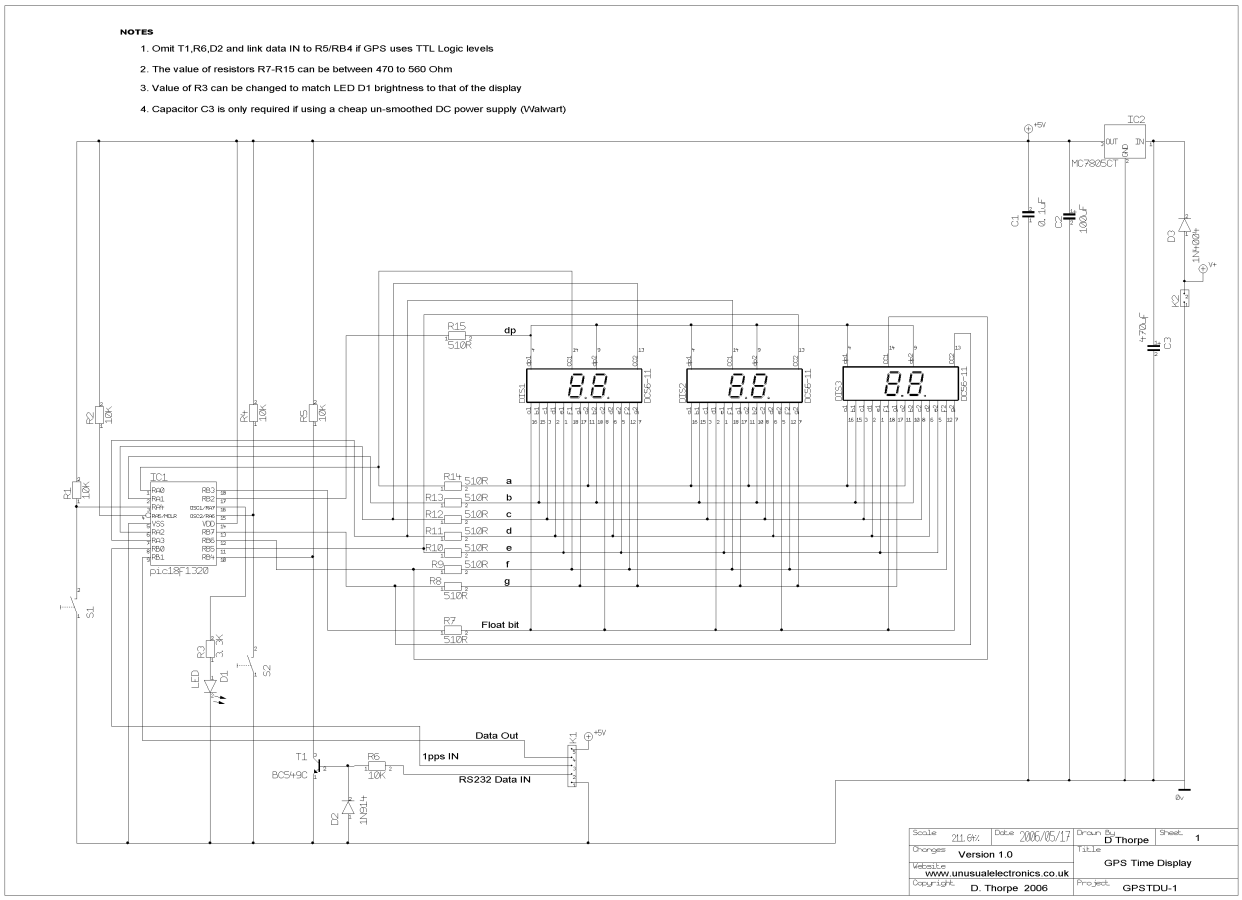
Time Display Unit for a GPS module V1.0

The circuit can either be wired-up on stripboard or you can make your own double-sided pcb as shown here.

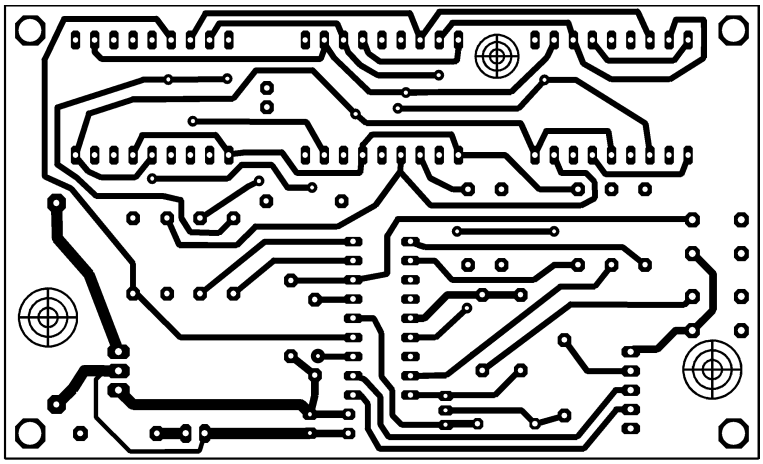
PCB design

PCB dimensions are 10cm x 6cm
It should print at the correct size if your printer is set to 100% scale. (untick any “fit to page” etc. settings)

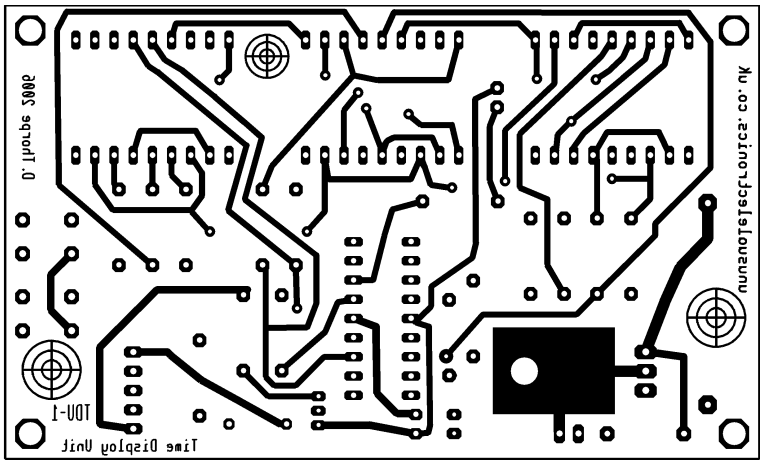
(The “target” marks on the artwork are to assist with aligning the top and underside sheets together)
Most component drill holes are 0.8mm dia.
The board can be made by printing the layouts on laser printer and using the “toner transfer” method. (many guides for doing this are found on the web).
There are about 30 vias - link the layers with short lengths of wire soldered in the via pads.



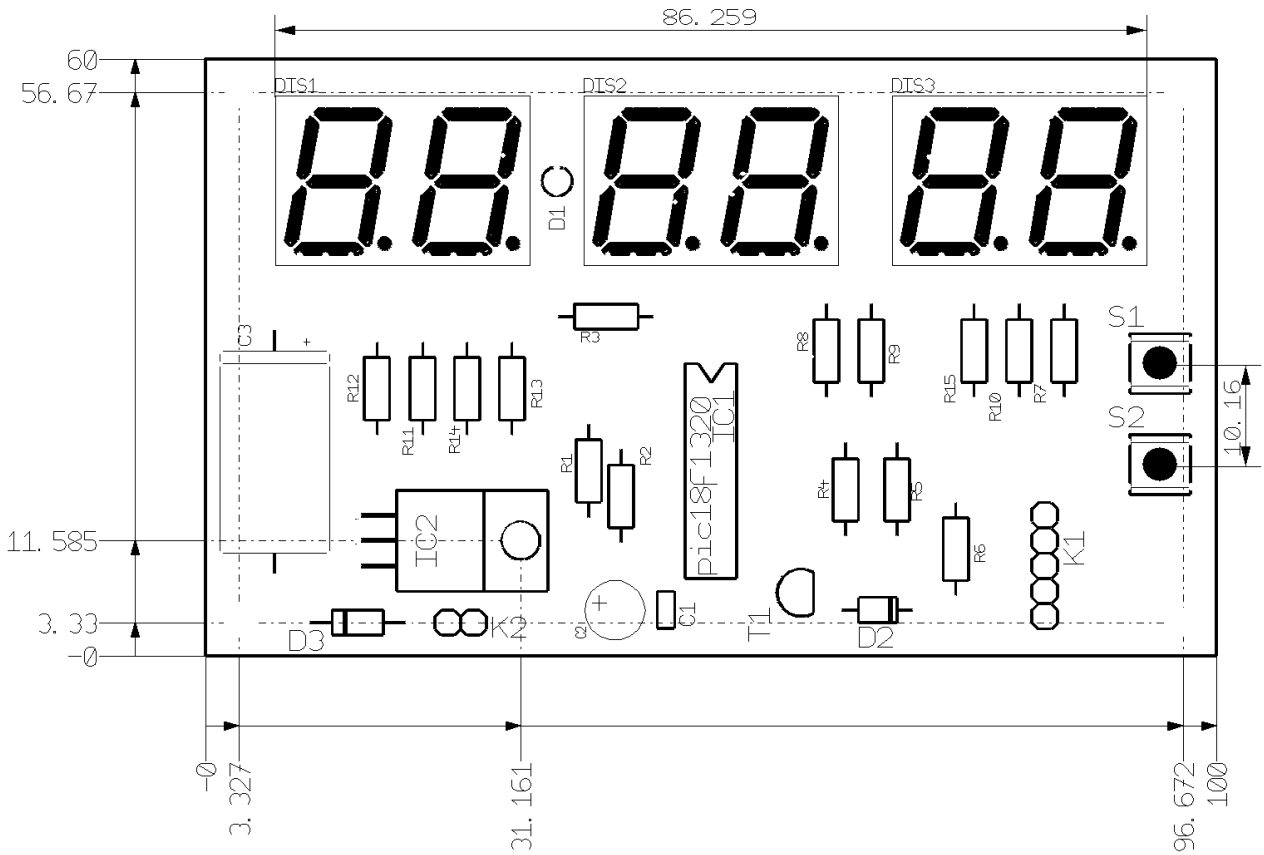
Underside (100mm X 60mm)



Topside (mirrored ready for printing)



Component Layout (dimensions are in mm)
Sockets are used for the Microcontroller and Displays.



When mounting components – note that as there is no through plating, many component leads will require soldering on both sides of the board.
The microcontroller and display sockets should be spaced about 1mm above the board to enable access to solder some pins to pads on the top side.
You should check for continuity/short circuits after soldering.

Disclaimer
This project (including software) is provided on an "AS-IS" basis for NON-COMMERCIAL, personal use only and WITHOUT WARRENTY of any kind, either express or implied. I shall NOT BE LIABLE in any way to you or to any other person, firm or corporation whatsoever for any loss, liability, damage (whether direct or consequential), personal injury or expense of any nature whatsoever arising from inaccuracies, errors in, or the use or inability to use the hardware and/or software here.

Component List

Name	Value	Notes
C1	0.1uF	50v type
C2	100uF	16v type
C3	470uf	Optional depending on power supply quality
D1	LED	Red high efficiency 3mm type
D2	1N914	
D3	1N4004	General purpose rectifier to prevent wrong polarity supply
DIS1	DC56-11	Red Kingbright Common Cathode hi efficiency 14mm.
DIS2	DC56-11	(available from Maplin stores in the UK) or elsewhere
DIS3	DC56-11	
IC1	pic18f1320	Available from www.crownhill.co.uk or elsewhere
IC2	MC7805CT	
K1		Connector or solder wires directly
K2		Connector or solder wires directly
R1	10k	
R2	10k	
R3	3.3K	
R4	10k	
R5	10k	
R6	10K	
R7	510R	R7-R15 may be between 470R and 560R
R8	510R	
R9	510R	
R10	510R	
R11	510R	
R12	510R	
R13	510R	
R14	510R	
R15	510R	
S1		Small Tactile pushbutton 6x6mm eg. MULTICOMP MCDTS6-1N or similar
S2		Small Tactile pushbutton
T1	BC549C	Or any similar general purpose NPN type
		18 pin IC socket for IC1
		SIL socket strips cut to size for LED displays

Notes.
If your GPS module outputs data at TTL logic levels (0-5v) then you do not need components D2,R6,T1 which are used to convert from RS232 (+/-12v levels).

C3 can be omitted if the power supply already has good smoothing.
Power consumption is low and a supply of about 9Vdc rated at 300mA would be ample.