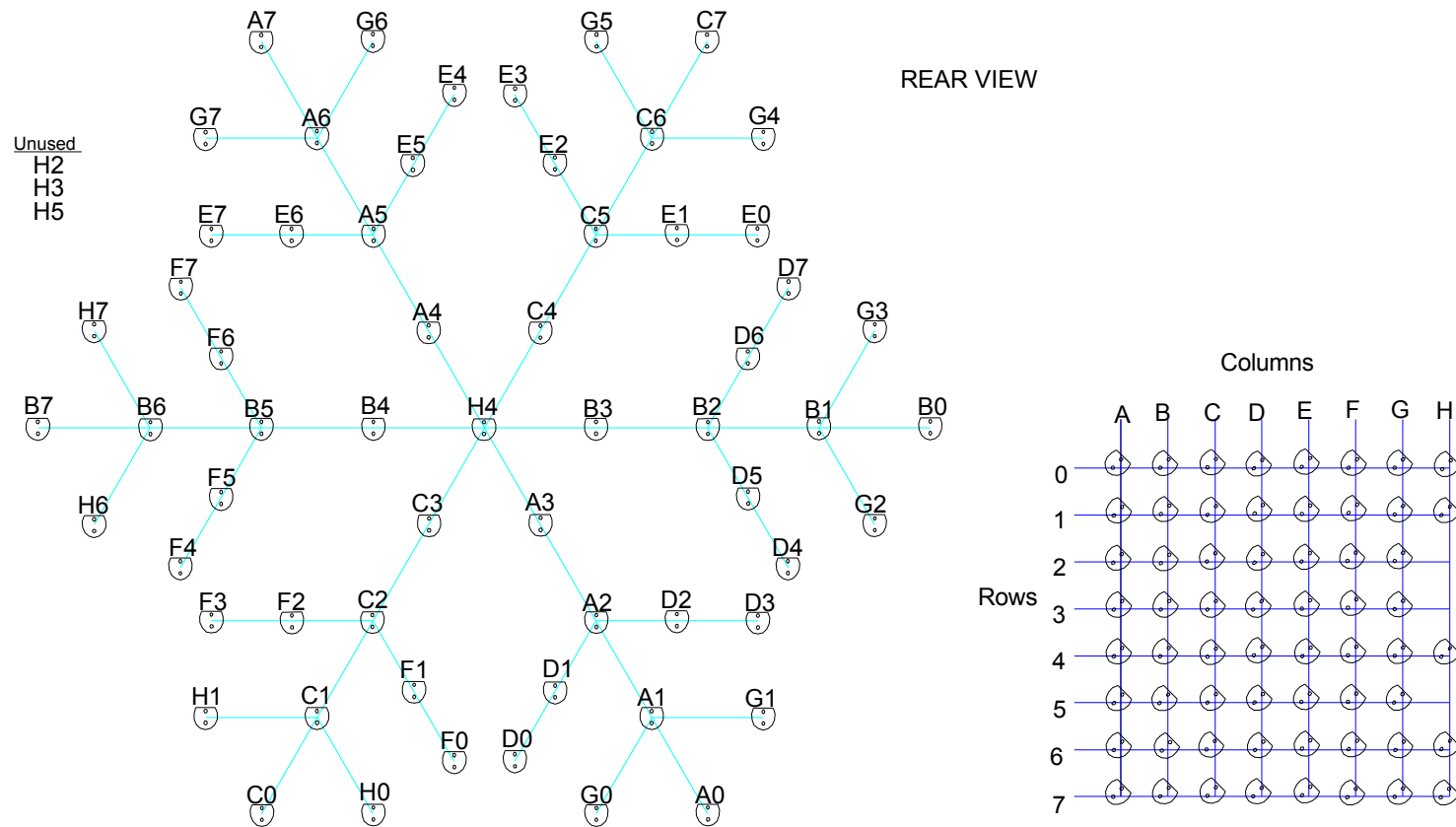


Matrix Diagram

This diagram identifies each LED in the matrix – useful for locating any wiring errors or faults.

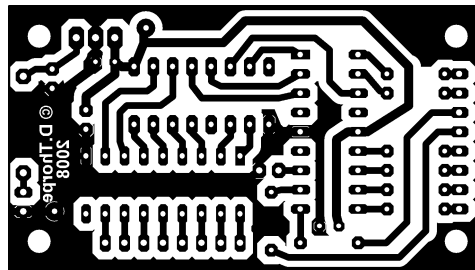


PCB Track Layout

The circuit can either be built on stripboard or use this single sided pcb layout.

PCB is shown actual size: 6.3 x 3.5 cm (2.5 x 1.38 inches) and is ready for printing, using the toner transfer method.

Print this page actual size (ensure that print option for "Page Scaling" is set to "None")

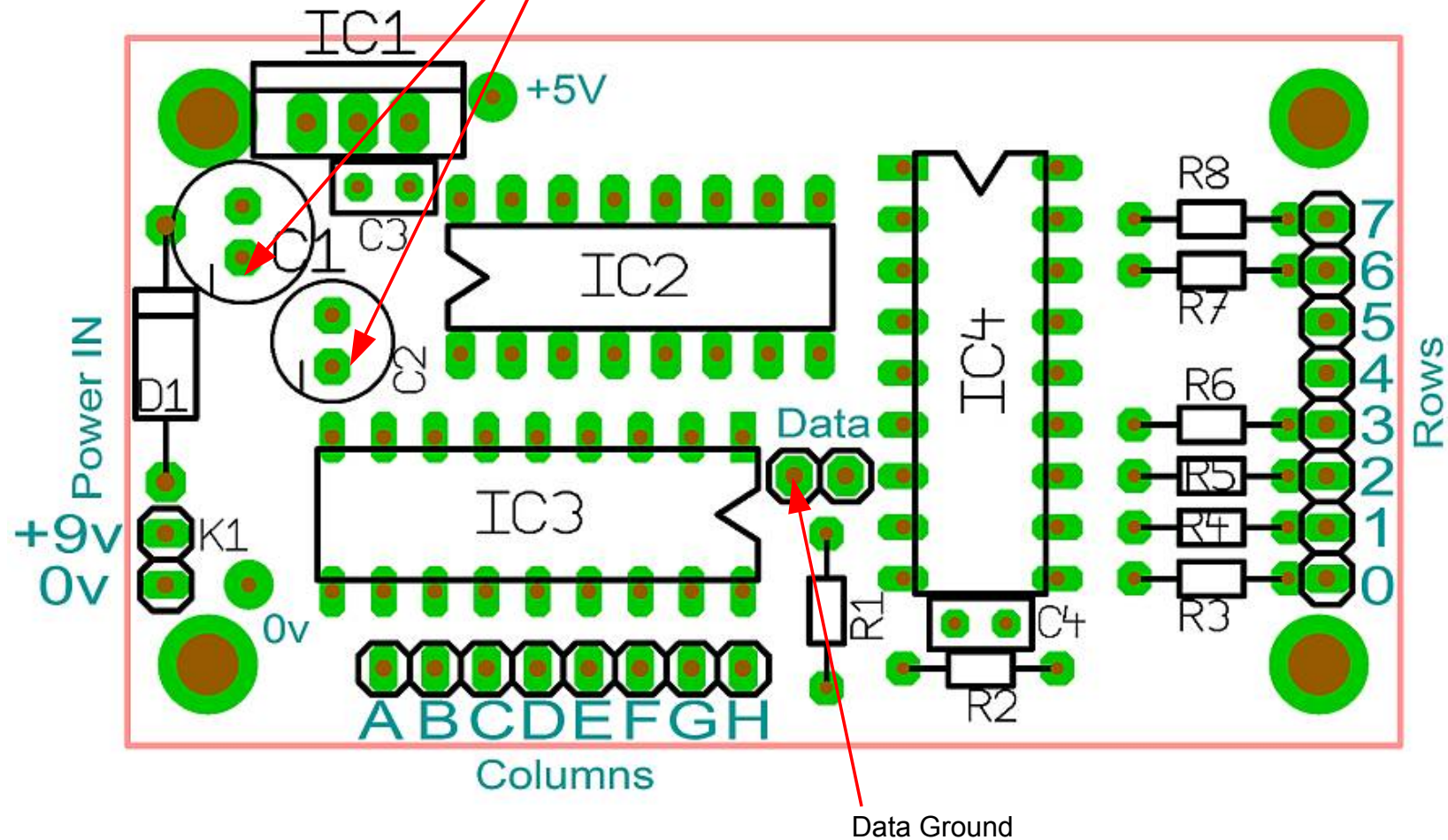


Component Layout (top view)

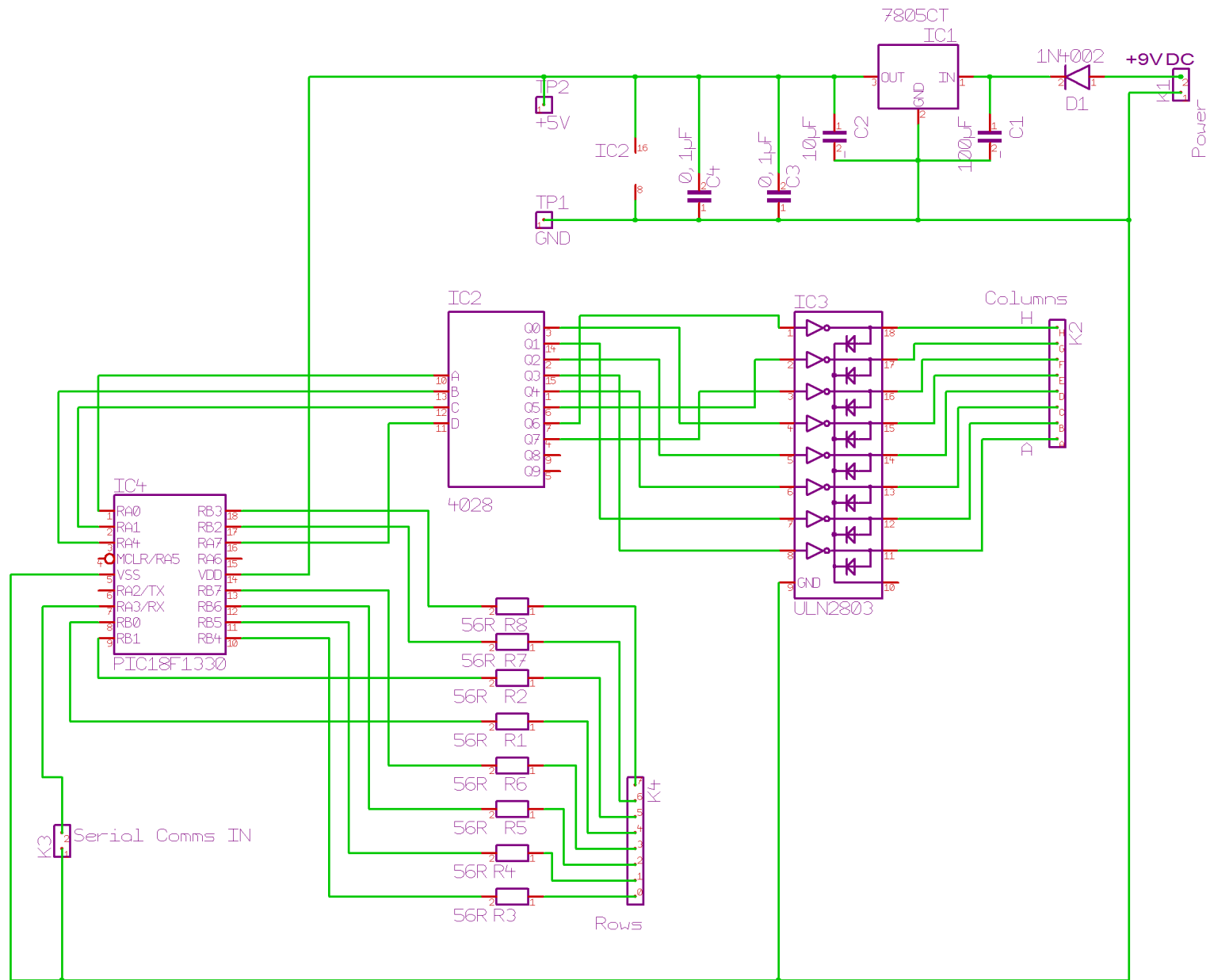
Note capacitors polarity for C1 & C2 (-ve side is marked)

Use a socket for the microcontroller chip IC4.

Double check the orientation of each chip as you fit it. (they all face in different directions to greatly simplify the pcb layout)



Circuit Diagram



Parts List

Component	Value	Notes
C1	100 μ F	25v working electrolytic
C2	10 μ F	16 or 25v working electrolytic
C3	0,1 μ F	Small 50v type
C4	0,1 μ F	Small 50v type
D1	1N4002	Or 1N4001
IC1	7805CT	Standard 5V regulator
IC2	CD4028BE	Or equiv. (BCD to decimal decoder)
IC3	ULN2803	Or ULN2803A (Darlington Transistor array)
IC4	PIC18F1330-I/P	Microchip PIC microcontroller (use an IC socket)
R1	56R	All resistors are 0.25W carbon
R2	56R	
R3	56R	
R4	56R	
R5	56R	
R6	56R	
R7	56R	
R8	56R	
LEDS		61 White LEDS (5mm) High brightness.