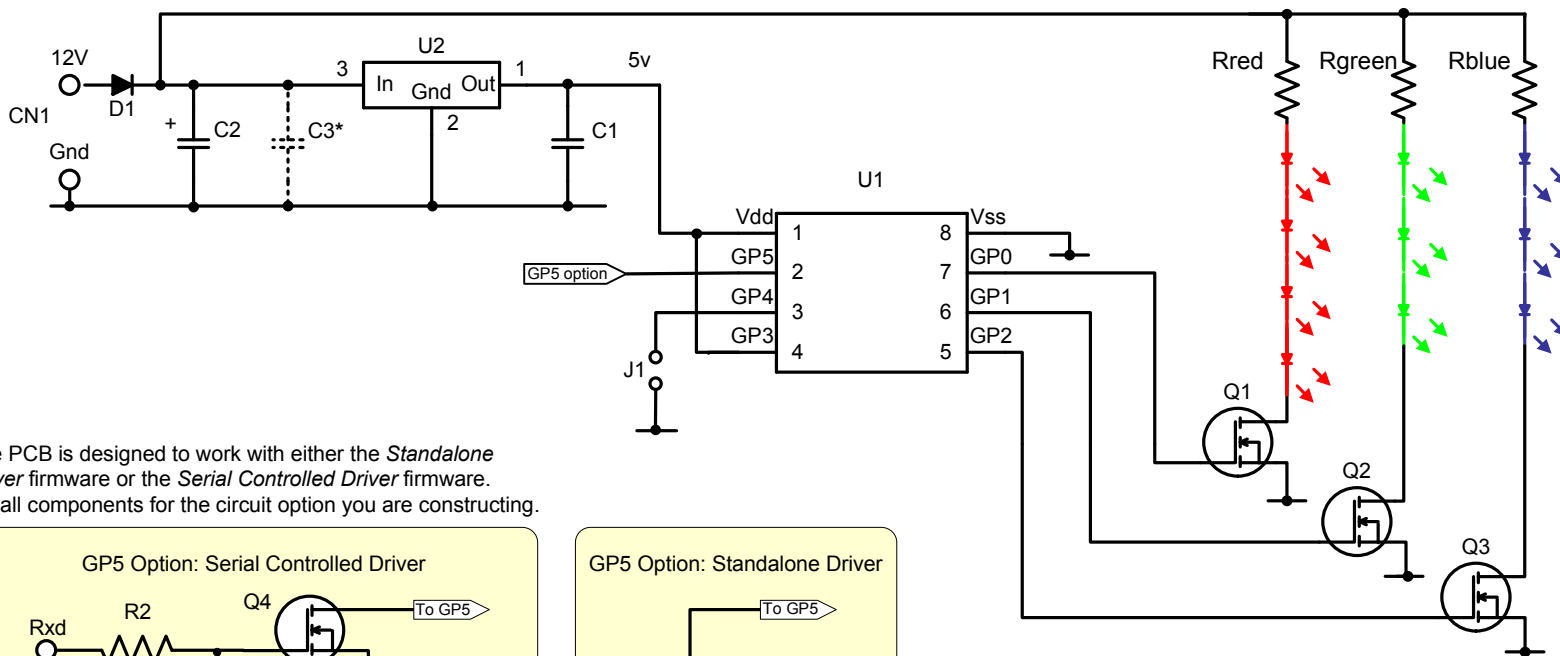


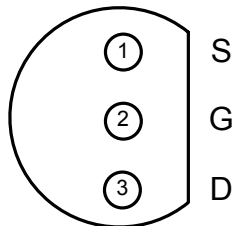
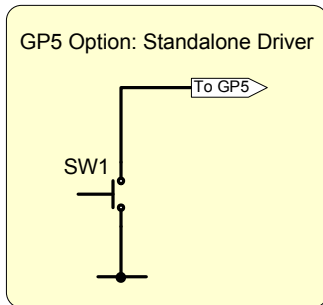
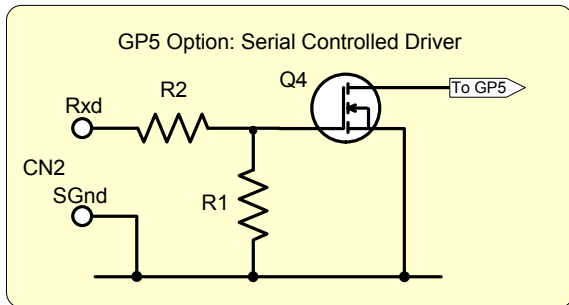
RGB LED PWM Driver

for use with Serial Controlled Driver or Standalone Driver firmware

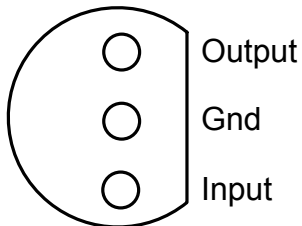
Note:
12V supply must be regulated DC



The PCB is designed to work with either the *Standalone Driver* firmware or the *Serial Controlled Driver* firmware. Install components for the circuit option you are constructing.



Bottom view
2N7000



Bottom view
78L05

LEDs and Resistors

R_{led} , G_{led} and B_{led} are the LED current limiting resistors. You will need to calculate the correct values for these based on the Forward Voltage (V_f) and Forward Current (I_f) parameters of the specific LED's used.

$$R(\text{ohms}) = \frac{11.3 - (V_f \times n)}{I_f}$$

V_f is the LED forward voltage in Volts and I_f is the LED forward current in Amps.

n = number of LEDs in series. For this application $n = 3$ for blue and green and $n = 4$ for the red LED current limiting resistor.

e.g.
 $V_f = 3.2$, $I_f = 20\text{mA}$ (0.02A)

$$\frac{11.3 - (3.2 \times 3)}{0.02} = 85 \text{ ohms}$$

Nearest E12 series resistor values are:
100 ohms for $I_f = 18\text{mA}$
82 ohms for $I_f = 22\text{mA}$

Use 82 ohms.

This calculation needs to be repeated for each colour LED

Components

R1	100K	1/4w 5%
R2	4K7	1/4w 5%
Rred, Rgreen, Rblue	selected to suit LEDs used	
C1	100nF	ceramic
C2	47 μ F	16V electrolytic
C3*	220nF	ceramic
		C3 is optional
LEDs	Red, Green & Blue 5mm High Brightness LEDs non-specific type	
D1	1N4148	
Q1,2,3,4	2N7000	
U2	78L05	
U1	PIC12F627 / 675 / 683 (requires programming with firmware)	
SW1	6mm x 6mm tactile pcb switch e.g. Omron B3F series or similar	