PCB-DESIGN

1. It is advised to by a component package and not a single component as it is better insulated and it will have reduced transition time compared to a single component.

* Rule of thumbs single component will only be resistor, capacitor and coil.

1. You calculate the PCB wire width with online calculator:

[http://www.4pcb.com/trace-width-calculator.html](http://www.4pcb.com/trace-width-calculator.html%20)

where you take the cupper thickness in a wire as 1 OZ and the begin temperature of 25°C and the max temperature of 50°C.



As you can see from the picture the 0.1uF should be before the VCC input and before the VDDA input.



As you can see from this picture the 10uF capacitor and the 0.1uF is used before and after the DC-DC converter. The 10uF capacitor is used in order to stabilize the sudden voltage spike. The coil in the DC-DC will define the output current (check the datasheet for the equations).

The voltage will be regulated by the R1 and R2 in the output (feedback) of the DC-DC:

The full-bridge will output the voltage and current from the Enable pin according to the voltage input in the Vin pin. (The full-bridge does not care about the current in the Vin pin).

No engine will receive reverse voltage all engines receive the forward voltage as follow:

1. The linear motor will change its direction according to the Vcc and ground pins.
2. The PWM (piezo) will always receive PWM wave on one leg and the mirror wave on the other leg (NOT gate). The directions will be dependent on the duty cycle less than 50% one direction more than 50% other direction.

The screw hole in the PCB board is usually 3.5mm in diameter and the protection diameter is usually 7mm. (no wires go in the protection diameters).

The high and low voltage lines can only interchange (pass through) in the outer lanes (Top and Bottom). Not in the inner lanes and not inner lanes with the outer lanes.

You should always divide large capacitor to smaller capacitors (even if the data sheet does not say so) because it takes a lot of time for the large capacitor to charge itself.



For the external oscillator you will always use the following scheme where the value of Cx is computed by:

Where CL is the crystal capacitance and the CS is the board capacitance usually 10pF.