YwRobot Power Module

Overview

This device allows you to supply power to your breadboard projects from a variety of sources through its barrel jack. The module down-steps the voltage to 5V or 3.3V (selectable with jumpers).

The power module comes with an on/off switch, and a set of header pins that can be used to wire power to other places.

The module is made to fit on a standard breadboard, where the output pins align directly onto the power rails of the breadboard.

Be sure to align the positive and negative markings on the module with their matching power rails!

Variations

- On some boards the USB jack can be used as an power input, and on some it is a power output only

- The "on" indicator LED comes in a variety of colors

Pin Configuration

The power module connects directly to your breadboard. Each side can be independently selected for 3.3V or 5V power via jumpers.

In the middle is a set of male headers for 3.3V, 5V, and ground.

Specifications

- Minimum input voltage: 6.5V (DC)

- Maximum input voltage: 12V (DC)

- Output voltage: 3.3/5V (selectable)

- Maximum output current: 700 mA

- Barrel jack plug size: 5.5mm x 2.1mm

555 Timer

Overview

The 555 timer is a collection of components that can be configured to provide timings and oscillations.

It uses two voltage levels—one-third supply voltage and two-thirds supply voltage. Internally, it consists of:

- Two comparators (one for each voltage level)
- A flip-flop (single bit storage) to know what state it is in and to switch states at the appropriate time
- An output driver
- A reset button

The timer relies on external circuitry (such as an RC time circuit) to supply timings.

The timer effectively has two states. In the "charging" state, when the **Discharge** pin is disconnected, and the **Threshold** pin is waiting for a high (2/3) voltage. In the "discharging" state, the **Discharge** pin is connected to ground, and the **Trigger** pin is waiting for a low (1/3) voltage. The typical usage is to provide an oscillating circuit.

Variations

- Can be implemented using CMOS/FETs or BJTs. FET implementation consumes less power, but can source less output

- Many variations in maximum oscillation frequency

Pin 1

Ground	VCC
$\overline{\text{Trigger}}$	Disch
Output	Thresh
$\overline{\text{Reset}}$	Control
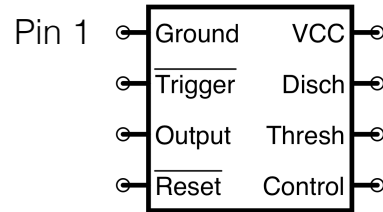
Pin Configuration

- **Trigger** and **Threshold** detect going below 1/3 and above 2/3 voltage, respectively
- **Discharge** provides a ground that is only attached when the chip is in the discharging state.
- **Output** supplies a high voltage when the chip is in the charging state, and a low voltage when it is in the discharging state.
- **Reset** should be normally tied to a positive supply - it resets the circuit when it goes low.
- **Control** is normally connected to ground with a capacitor (10 μF recommended).

Specifications

- Supply Voltage: Usually 2V to 15V
- Output current: 100mA—200mA

Example Circuit