Mobile Controlled LED Cube

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Product Overview

A LED cube is like a LED screen, but it is special in the case that it gives output in a 3D space, making it more realistic. 3D LED Cube is a really cool device that enables you to see in three dimensions and get a depth perception. It has 512 LED's and is based on a microcontroller with some standard interfacing pinouts that allow you to quickly assemble prototypes.

Specifications:

➔ This LED cube has 512 LEDs.
➔ Instead, our LED cube rely on an optical phenomenon called **Persistence of Vision**(POV).
➔ If you flash a LED really fast, the image will stay on your retina for a little while after the led turns off.
➔ With this setup, we only need 64 (for the anodes) + 8 (for each layer) IO ports to control the LED cube.
➔ Output of the transistor is given to the LED's. Which controls the shifting of LED layer.

Key Components:

- ★ Soldering Kit, Jumper Wires, Resistors(10K)
- ★ 512 Blue LED's
- ★ Microcontroller board (Arduino UNO R3)
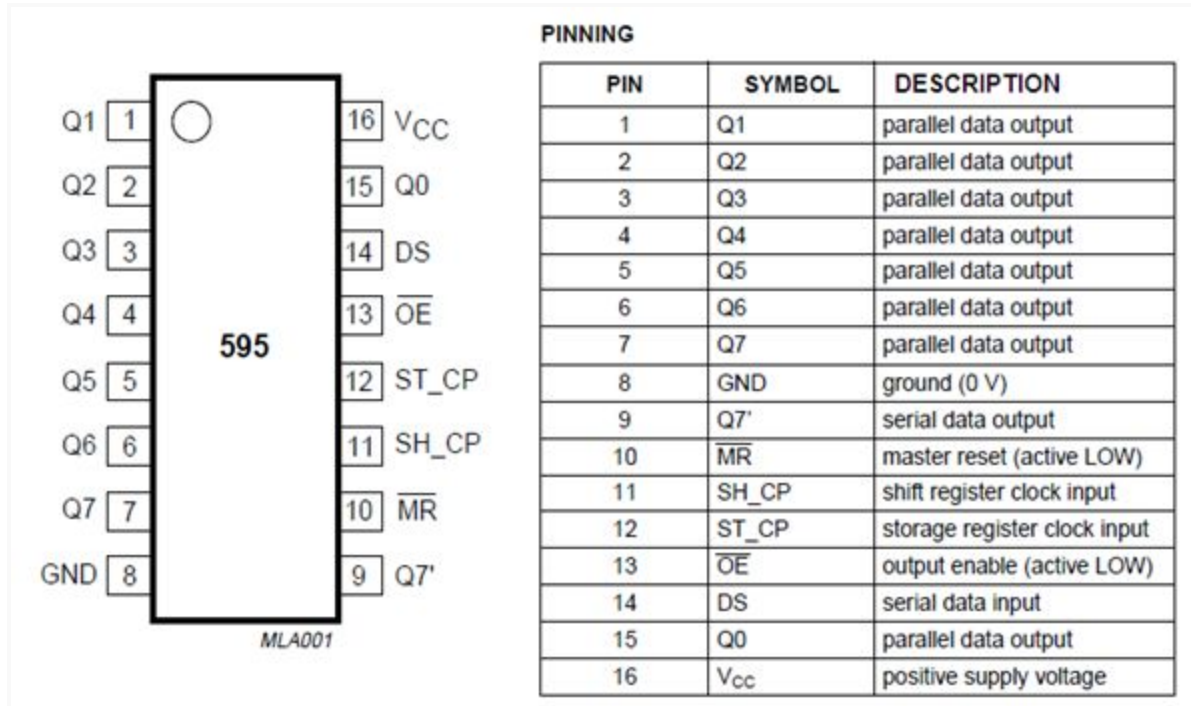- ★ 74HC595 IC
- ★ Transistor

Technical Requirements:

ARDUINO UNO:

The microcontroller on the board is programmed using the **Arduino programming language** and the **Arduino development environment.** Arduino projects can be stand-alone or they can communicate with the applications running on a computer.

74HC595 IC

74HC595 is a Universal Shift Register. The basic working principle of a shift register is that the user enters data into it sequentially and the data moves from the beginning to the end of the shift register.

PINNING

PIN	SYMBOL	DESCRIPTION
1	Q1	parallel data output
2	Q2	parallel data output
3	Q3	parallel data output
4	Q4	parallel data output
5	Q5	parallel data output
6	Q6	parallel data output
7	Q7	parallel data output
8	GND	ground (0 V)
9	Q7'	serial data output
10	$\overline{MR}$	master reset (active LOW)
11	SH_CP	shift register clock input
12	ST_CP	storage register clock input
13	$\overline{OE}$	output enable (active LOW)
14	DS	serial data input
15	Q0	parallel data output
16	V_{CC}	positive supply voltage

Transistors:

They are used to main the voltage given to the LED's. Every transistor output is given to one of the rows of LED cube which helps in shifting of the pattern from one LED Cube layer to another.

Applications:

1. It can be used in home systems as a fancy lighting system.

2. It can be used for security purposes. Instead of keeping a pin security or pattern one can use a 3D led pattern.

3. It can be used in place of many 2D lightning systems as this product offers an extra dimension over the 2D lightning systems.