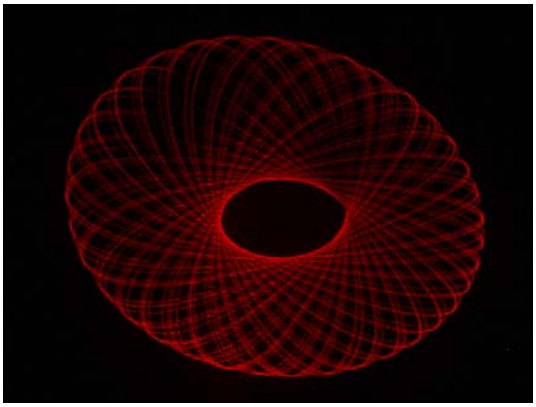
Laser Spirograph Toy



Introduction

Many laser show gizmos have been created over the years that project “spirograph like” patterns. Most of these devices are either, very crude and inefficient or require significant electronic circuitry. The basic design involves a HeNe laser projected onto two offset mirrors mounted on motors with variable speed controls.

This is where the 68HC908QT4 becomes the most efficient way to ever spin the mirrors. By using this part we will take advantage of its minimalist design. This project will use every leg of the chip fully, and to significantly reduce the parts required to implement the two PWM motor control circuits and the analog / digital user inputs.

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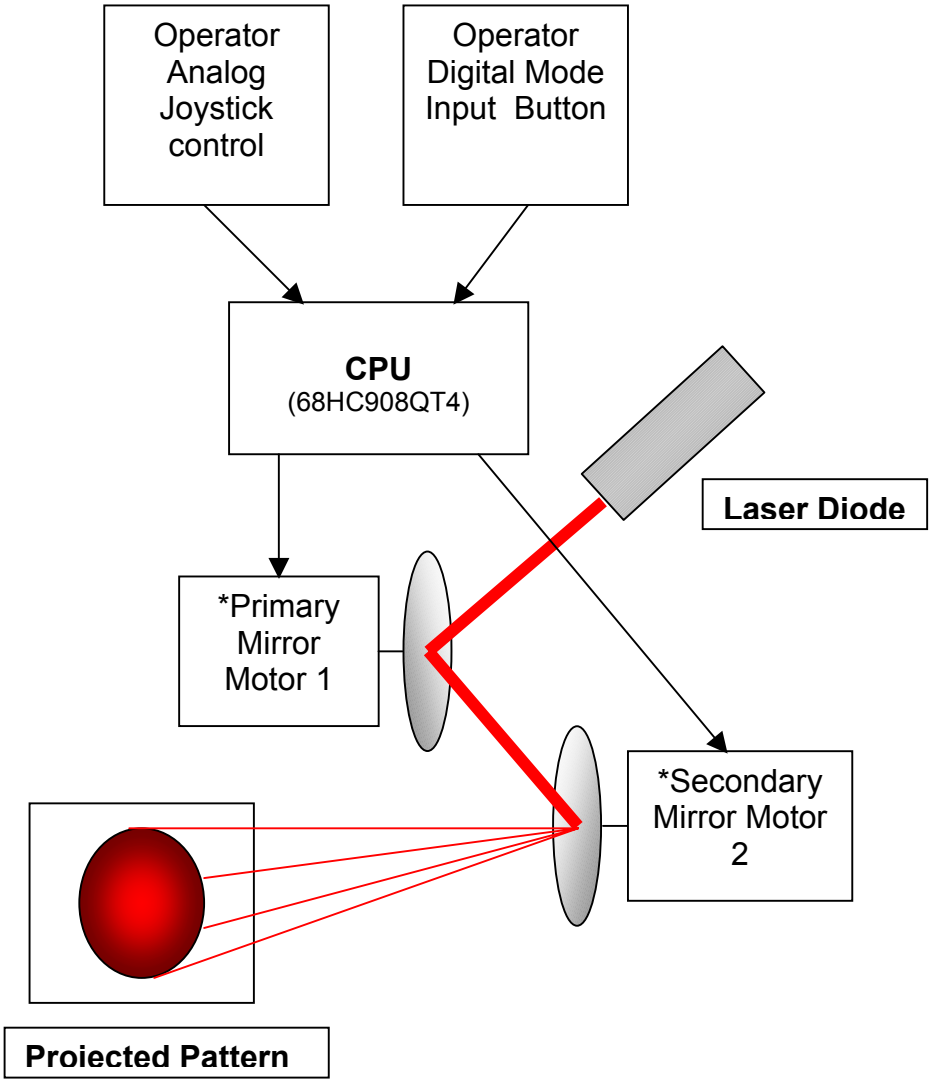
Block Diagram:



Operation

The laser projects onto the primary offset mirror. The primary mirror spins a circular image onto the secondary mirror, which is also spinning. The secondary mirror then projects the first pattern onto a wall or screen. The difference in mirror speeds of the two motors creates the spirograph like images. In this design both mirrors spin in opposite directions. Opposite spinning mirrors create the greatest diversity of interesting patterns.

* Note: Both of the mirrors are mounted to the motors at a slight angle (approximately 1 to 2 degrees).

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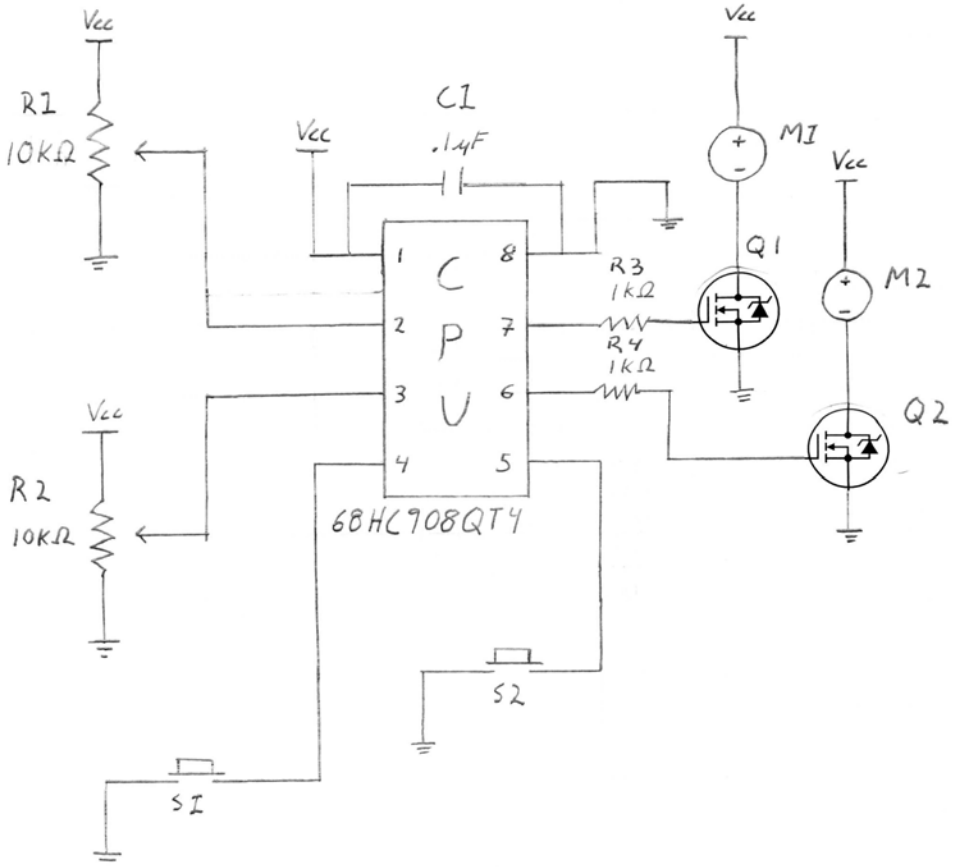
Electrical Schematic



Parts List

R1, R2	10kΩ potentiometer
R3, R4	1 kΩ resistor
C1	.1 μF capacitor
Q1, Q2	3055 high power MosFET
S1, S2	SPST momentary switches
M1, M2	3v-5v DC hobby motors