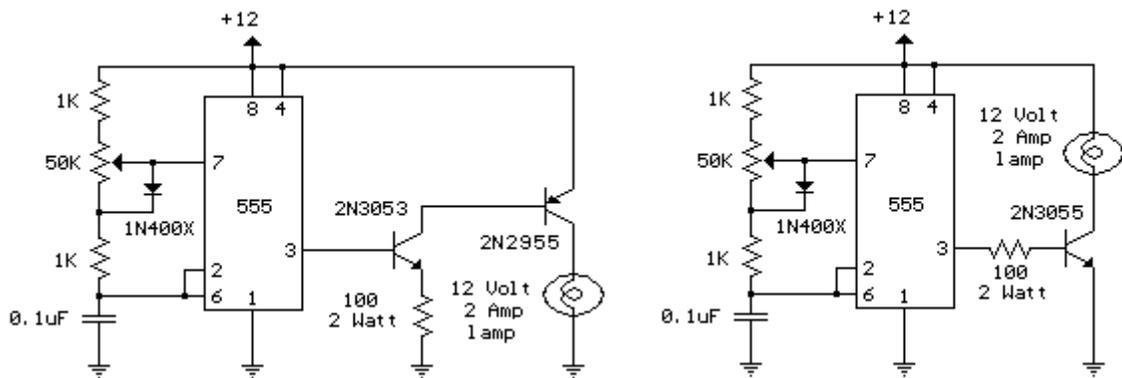


12 Volt Lamp Dimmer

Here is a 12 volt / 2 amp lamp dimmer that can be used to dim a standard 25 watt automobile brake or backup bulb by controlling the duty cycle of a stable 555 timer oscillator. When the wiper of the potentiometer is at the uppermost position, the capacitor will charge quickly through both 1K resistors and the diode, producing a short positive interval and long negative interval which dims the lamp to near darkness. When the potentiometer wiper is at the lowermost position, the capacitor will charge through both 1K resistors and the 50K potentiometer and discharge through the lower 1K resistor, producing a long positive interval and short negative interval which brightens the lamp to near full intensity. The duty cycle of the 200 Hz square wave can be varied from approximately 5% to 95%. The two circuits below illustrate connecting the lamp to either the positive or negative side of the supply.

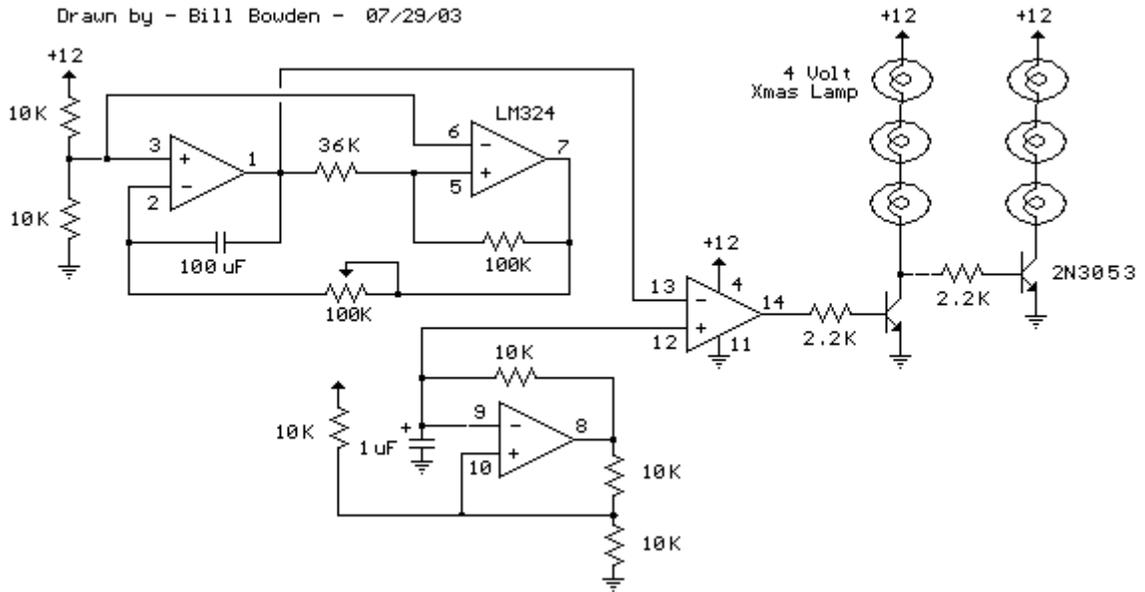


[Menu](#)

Automatic 12 Volt Lamp Fader

This circuit is similar to the "Fading Red Eyes" circuit (in the LED section) used to fade a pair of red LEDs. In this version, the lamps are faded by varying the duty cycle so that higher power incandescent lamps can be used without much power loss. The switching waveform is generated by comparing two linear ramps of different frequencies. The higher frequency ramp waveform (about 75 Hz.) is produced from one section of the LM324 quad op-amp wired as a Schmitt trigger oscillator. The lower frequency ramp controls the fading rate and is generated from the upper two op-amps similar to the "fading eyes" circuit. The two ramp waveforms at pins 9 and 1 are compared by the 4th op-amp which

generates a varying duty cycle rectangular waveform to drive the output transistor. A second transistor is used to invert the waveform so that one group of lamps will fade as the other group brightens. The 2N3053 will handle up to 500 milliamps so you could connect 12 strings of 4 LEDs each (48 LEDs) with a 220 ohm resistor in series with each group of 4 LEDs. This would total about 250 milliamps. Or you can use three 4 volt, 200 mA Xmas tree bulbs in series. For higher power 12 volt automobile lamps, the transistor will need to be replaced with a MOSFET that can handle several amps of current. See the drawing below the schematic for possible hookups.



Other possible hookups

