Lantern Flasher/Dimmer

The electronic lantern control circuit (fig. 1) adds high-efficiency dimming and flashing to an existing battery-powered lantern or flashlight or to a custom design. For the car it makes a great lamp for changing a flat tire, back seat reading or emergency engine work. The flasher mode is useful for warning other drivers of your troubles and it may be adjusted to have a very short flash duration for long-term use as when the car must be left on the shoulder overnight. When camping it is great as a low-power night light for the tent or the portable potty - you may select only as much light as you need! The flasher mode is useful for finding a boat dock in the dark or even attracting fish. At home, the flasher is a great way to tell guests when they have found the right house or to “jazz up” battery-powered holiday decorations. The circuit is intended for 6 or 12 volt lantern batteries but it should work will with supplies from 4.5 to 15 volts without modification.

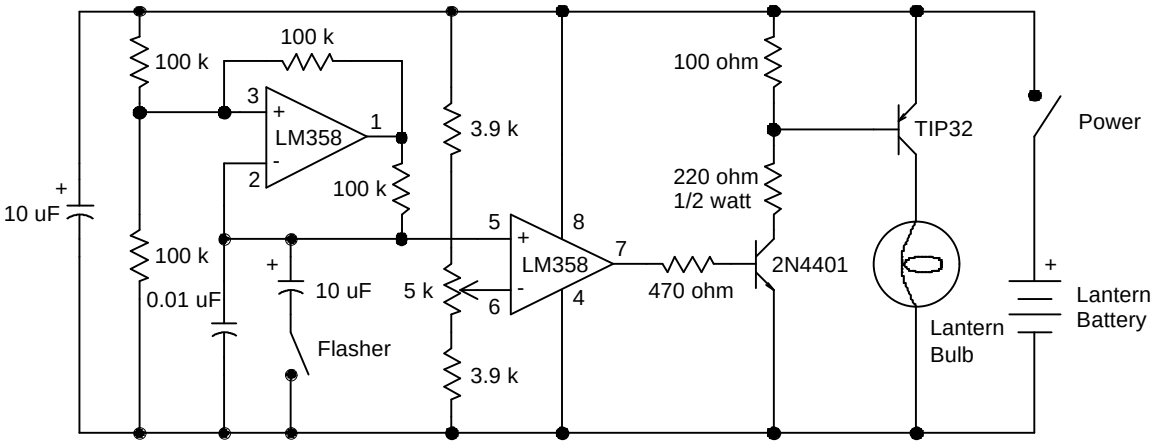

Figure 1: High-efficiency lantern with flasher and dimmer.

In dimmer mode (switch open), the circuit sends rapid variable-width pulses to the bulb to control the brightness and in flasher mode (switch closed) the pulse rate is about one per second. Adjusting the brightness control in flasher mode adjusts the length of the flash. Very short flashes will give a greatly extended battery life. The TIP32 remains cool since it switches on and off instead of simply dropping the voltage like a power rheostat.

The components are not critical and substitutions are fine. Almost any general-purpose op-amps or comparators will work in place of the LM358. The two transistors may be replaced by a power FET if desired simply by connecting the gate to pin 7 of the op-amp, the source to ground, and the drain to the bulb. The other end of the bulb connects to the positive terminal of the battery in this case. There is nothing particularly critical about the resistor and capacitor values and the experimenter may change them, if desired. For example, a 10k pot may be substituted for the 5k by increasing the 3.9k resistors by 2 also (8.2k would be fine). The 100ks in the flash circuit may be a different value if the capacitors are also scaled (inversely - if the resistors are doubled, the 0.1 and 10uF are halved). Try experimenting with whatever is at hand.

Construction is not critical - the entire circuit may be built on a piece of perf-board and wrapped with electrical tape. An old gas-mantle lantern could be converted over to battery power by placing a bulb socket in place of the mantle and building a battery compartment in the fuel tank.