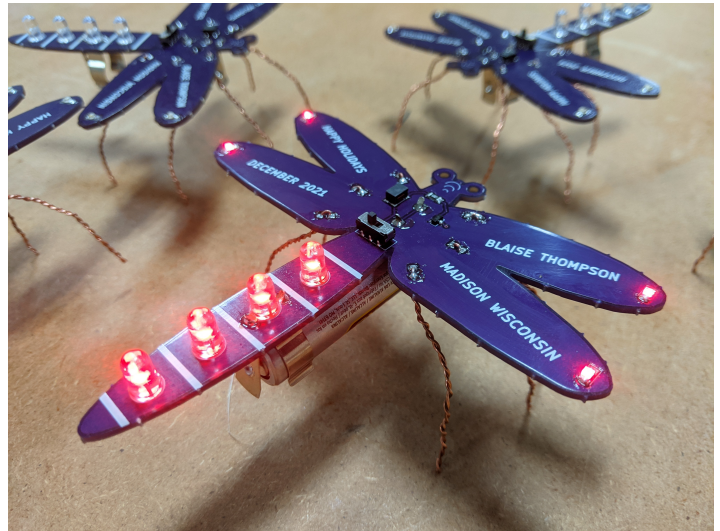


Happy Holidays Ornament

2021

This year I decided to design and construct a special ornament in celebration of the holiday season. I was inspired by the trip I took to the Porcupine Mountains in northern Michigan with my friends Claire and Ralph Till. While camping on the shores of Lake Superior we enjoyed a wonderful sunset spoiled by just one negative: mosquitoes.

We rooted for the dragonflies that evening. We saw dragonflies flying in “jetstream” patterns high above the tree line. We saw them swoop down to the shore and engage in aerial combat with fast, intricate maneuvers. We saw them perch, at times, so beautiful when still enough to see.



My ornament is constructed very simply, mainly from one dragonfly-shaped circuit board printed by OSH Park. The circuit is my version of the “Joule Thief”, a self-oscillating voltage booster which is capable of continuing to drain a battery even as the voltage drops. In this way, the ornament will stay lit as long as possible. You may find that you get light even out of “dead” batteries.

Briefly, a transformer (small black box) is used to store energy from the battery until there is enough to light the LEDs. The transistor (very small component with three legs) then shunts the energy through the LEDs, and the process begins again. Although they appear to be continuously lit, the eight LEDs are actually blinking thousands of times per second. As the AA battery discharges, the LEDs will gradually dim. However they will stay lit much longer due to the voltage boosting nature of the oscillator. Read more on Wikipedia: search “Joule thief”.

Please use the ornament in whatever way you wish. I included “eye holes” which could be used to hang the ornament with a piece of string. The legs can be bent into any shape to “grab” or simply sit on a horizontal surface. In celebration of the dragonfly, happy holidays.

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