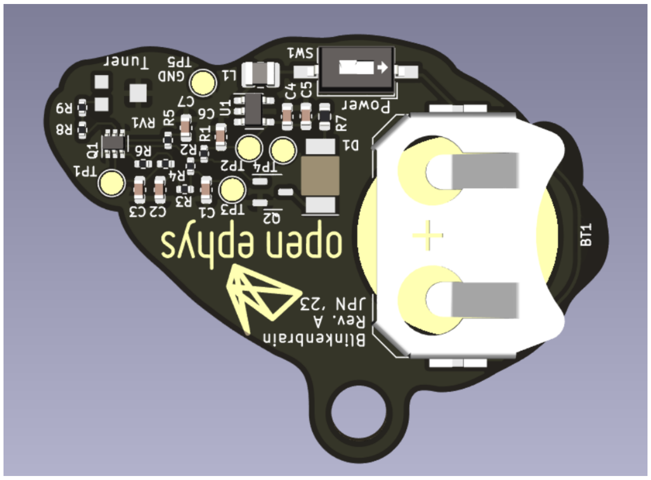
Blinkenbrain!



Feeling mellow? Add a little **chaos** to your day. This smooth little pendant contains a two-transistor chaotic oscillator that drives a blinky. It'll never ever repeat itself (unlike neuroscientific trends..cough..uh hum.. attractors, cough :). And, it's open-source: github.com/open-ephys/blinkenbrain.

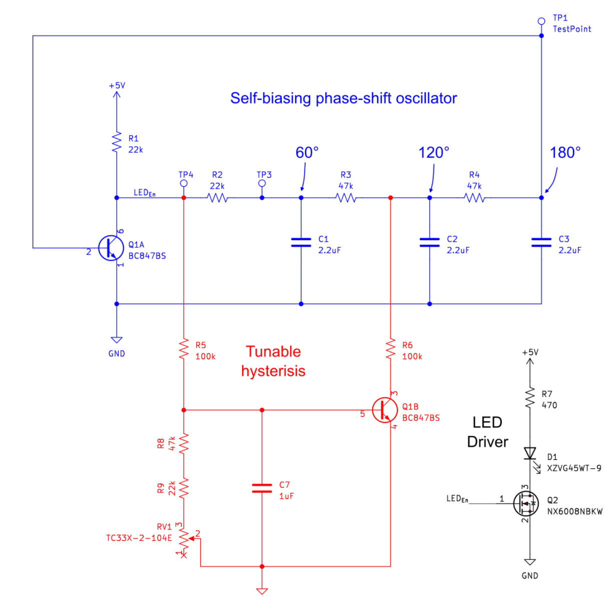
www.open-ephys.org

Designed in Atlanta - Made in Lisbon

open ephys

How does it blink?

The circuit[1] consists of a RC phase shift oscillator (blue) combined with what amounts to a tunable Schmitt trigger (red). The position of the trimpot (RV1) determines if the effect of the Schmitt trigger on the oscillator.



1. Simple Two-Transistor Single-Supply Resistor–Capacitor Chaotic Oscillator Lars Keuninckx, Guy Van der Sande, and Jan Danckaert IEEE TRANS. ON CIRCUITS AND SYSTEMS II: VOL. 62, NO. 9, 2015

• When the wiper of RV1 is tuned to 0Ω, Q1B does not conduct, and the Schmitt trigger is effectively removed from the circuit.

• When the wiper of RV1 is tuned to 100kΩ, Q1B acts as trigger without hysteresis, and therefore conducts in synchrony with the RC oscillator.

• When the wiper of RV1 is turned in between these two extremes, a hysteretic path is formed between Q1B's conducting and non-conducting states, which results in the emergence of two interacting unstable equilibria and, for some values of RV1, chaotic dynamics.

The gate of an N-channel MOSFET is tied to the collector of Q1A to drive the LED without influencing the circuit's dynamics. The following image shows V_{TP4} vs.V_{TP3} when RV1 is tuned to ~70kΩ.