

Re: Weekend one-shot timer design

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- *From:* "Deefoo" <nonono@xxxxxxxxxxxxx>
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"Tim Williams" <tmoranwms@xxxxxxxxxxxxx> wrote in message
[news:4%g1g.73\\$2J1.36@xxxxxxxxxxxxx](mailto:news:4%g1g.73$2J1.36@xxxxxxxxxxxxx)

While idly contemplating oscillators, I thought I might want to try a controlled delay oscillator. That is to say, one thing runs this much

time,

then another, then another, then another, then back to the first. My thought was to have two long "ON" delays spaced with short delays for

MOSFET

switching/"OFF" time. One way to do this would be a chain of one-shot timers.

I like discrete, and I like short circuits. I figured, hmm, this is going to need a flip-flop, because it is a state machine after all, and I'll

need

a capacitor charger, discharger, and a comparator of some sort. The

charge

can come from a resistor or CCS, simple enough. The discharge could be turning off the CCS, and, uh, well hell let's just clamp CCS and cap together, that'll save a pair of resistors.

For comparator I could wire up a seven transistor op-amp, and more than double my parts count, but hell, there's gotta be an easier way. Ya know, isn't it nice that a transistor only conducts when the base is forward biased? Fair enough! Now I just need some way to make that work, hmm a zener on the emitter will set trigger voltage solidly, I could use a collector resistor to drive the next transistor but saturation is slow, especially for low drive currents, ah let's throw in two base diodes and

an

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emitter resistor. Now it switches over 0.8V or so, much slower, but

output

current is far more consistent. Now I can drive a base directly.

Since this NPN is already a few volts above ground, and it doesn't work terribly fast in absolute terms, I'll toss on a PNP to drive the

flip-flop.

Ah, that crisps things up nicely