Simple PWM Power Supply

	LM555	
1	Ground	+Vcc	8
2	Trigger	Discharge	7
3	Output	Threshold	6
4	Reset	Control Volt	5

Utimer

R1
33k

Ct
100nF

RV1
10k

Ucomp

D1   D2   D2

Q1

Rload

V1
12
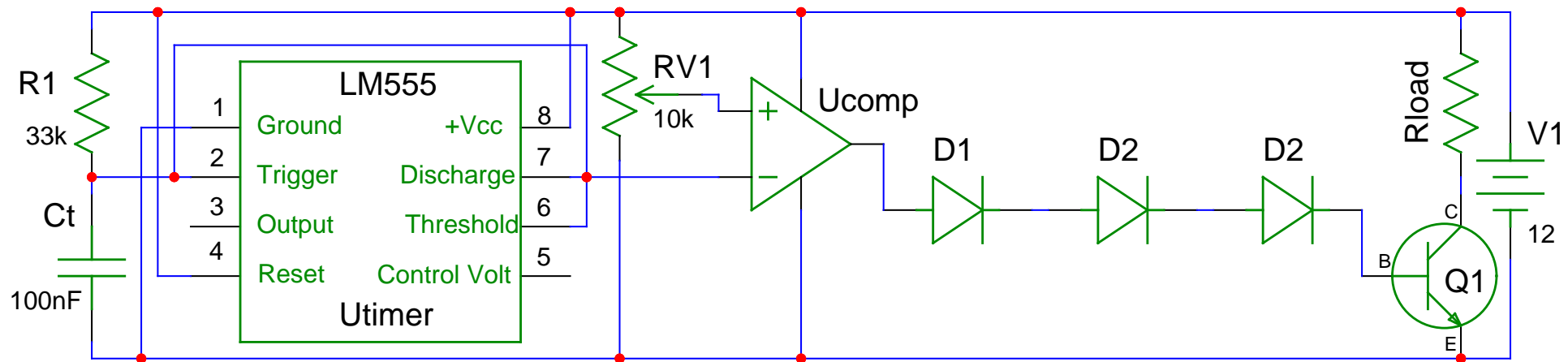
The LM555 produces a sawtooth waveform that gets sent to the op-amp.

The op-amp is wired as a comparator and will produce a square wave out.

RV1 adjusts the output pulse width thus controlling the voltage through Q1.

Rload is whatever device that needs to be running.

D1+D2+D3 do a 3x 0.7v drop from the op-amp to Q1's base.

Most op-amps cannot go rail to rail, so when the op-amp swings low, the diodes drop the voltage to below Q1's turn off point.

The op-amp should be strong enough to drive Q1's base.

Q1 is a power transistor with a fast enough switching time to keep up.

Since Q1 is either full on or full off, very little power is wasted.

Ct controls the oscillation frequency. Larger is slower, smaller is faster.

There should probably be a current limiting resistor to the base of Q1.

Other: ways to dynamically change VR1's pulse width instead of manually???

Way of changing oscillator frequency dynamically??? (within a given range)

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