Power

+12V

Reverse voltage protection, status LED, decoupling.

D2 1N5817

Decoupling capacitors physically close to corresponding chip's +12V pin

D1 LED

R3 6K8

Adjust status LED resistor to taste

GND

C1 10uF

C2 100nF

U2C LM358 (V+ = 8, V− = 4)

C4 100nF

U4E 4070 (VDD = 14, VSS = 7)

C5 100nF

U3G 40106 (VDD = 14, VSS = 7)

C7 100nF

Decoupling of 4051

Switching Sequencer

Using only 2 inputs and 4 outputs.
Based on https://hackaday.com/2015/02/23/logic-noise-the-switching-sequencer/

+12V

RV1 100K OUT1 → IN3

RV2 100K OUT2 → IN4

RV3 100K OUT3 → IN5

RV4 100K OUT4 → IN6

Contiguous pins, can use jumper

U1 4051 (X0 X1 X2 X3 X4 X5 X6 X7, Inh, A, B, C, VDD, VSS, VEE, X)

IN1 R1 100K

IN2 R2 100K

R4 1M R5 1M

U3D → R7 1K → OUT6

RV5 100K

C3 0.47 uF

U3C 40106 → OUT5 → IN7

D3 1N4148

R6 10K

C6 0.15 uF

Test 40106 capacitor values before committing, they influence pitch and depend on input voltage.

Can use any two pairs of inverters. Tie unused inputs to GND.

U3A U3B U3E U3F

GND GND GND

Daisy-Chainable XOR

Physically arrange header pins "IIOIIOIIOIIO" where I = input and O = Output, color-coding each group, so performer can use jumpers to daisy chain XOR channels.

IN8 R16 100K, IN9 R17 100K → U4A 4070 → R24 1K → OUT7

R8 1M R12 1M

IN10 R18 100K, IN11 R19 100K → U4B 4070 → R25 1K → OUT8

R9 1M R13 1M

IN12 R20 100K, IN13 R21 100K → U4C 4070 → R26 1K → OUT9

R10 1M R14 1M

IN14 R22 100K, IN15 R23 100K → U4D 4070 → R27 1K → OUT10

R11 1M R15 1M

GND

Using diodes or a transistor on the output doesn't work. I dunno why.

Hi-Hat "Envelope" With "Choke"

Derivative of Elliot Williams' Logic Noise series.
Dirty way to go about it that sounds good in a dirty way.
I dunno why it works. Has not exploded yet.
https://hackaday.com/2015/04/10/logic-noise-more-cmos-cowbell/

Audio IN IN16 → D8 1N4148 → D10 1N4148 → Audio OUT OUT11

R31 1K

+12V

R30 10K

Q1 PN2222A

D9 LED

D4 1N4148 R28 10K D6 1N4148

IN17 → J1

D5 1N4148 R29 10K D7 1N4148

IN18 → J2

GND

Performer adds a capacitor into the header pins.
Good values: 100nF to 470nF
(Need 2uF or more if skipping the transistor)

Meant for my custom protoboard Rev 1.

Aria Salvatrice

Sheet:
File: Percussions.kicad_sch

Title: Percussions & Switching Sequencer

Size: A4	Date: 2022-09-26	Rev: 1E
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