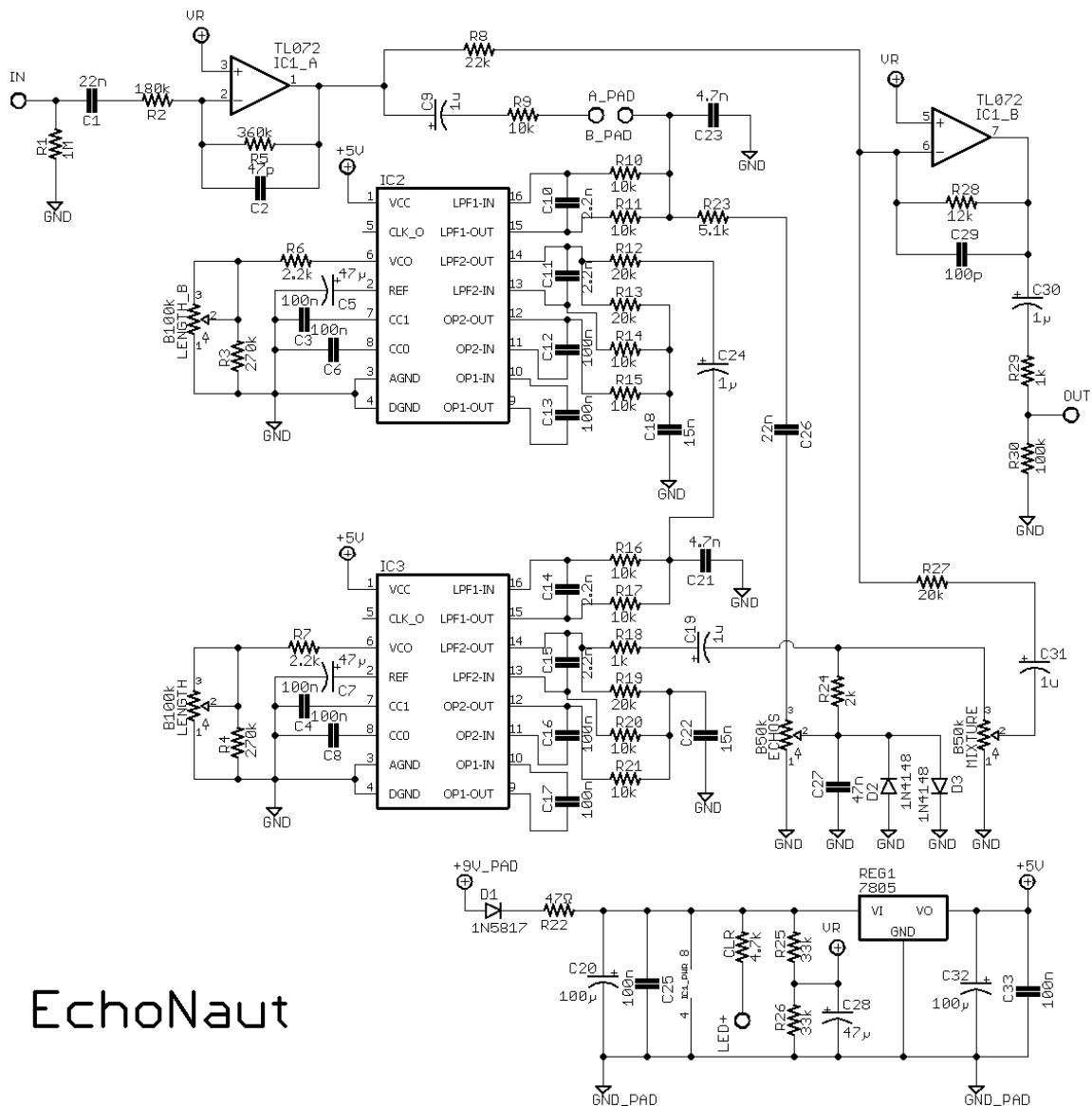


ECHONAUT

DESCRIPTION

The ECHONAUT is a dual PT2399 delay based on a few other well-known single PT2399 circuits (DBD, ReBote, etc.). Having an extra delay chip (in series) allows for longer delay times without things getting too lo-fi (about 700ms). It still gets fairly lo-fi at longer delay times, but those delay times are pretty dang long (I haven't measured it, but I'm guessing around 2500ms). The Length pot is a dual-gang pot, with each gang in parallel with a 270k resistor. This makes this pot effectively a 73k pot, which adds a few extra milliseconds of delay. The ECHONAUT can be wired for true-bypass or for tails with buffered-bypass.

SCHEMATIC



EchoNaut

BILL OF MATERIALS

Resistors

R1	1M
R2	180k
R3	270k
R4	270k
R5	360k
R6	2.2k
R7	2.2k
R8	20k
R9	10k
R10	10k
R11	10k
R12	20k
R13	20k
R14	10k
R15	10k
R16	10k
R17	10k
R18	1k
R19	20k
R20	10k
R21	10k
R22	47Ω
R23	5.1k
R24	2.2k
R25	33k
R26	33k
R27	20k
R28	12k
R29	1k
R30	100k
CLR	4.7k

Capacitors

C1	22n
C2	47p
C3	100n
C4	100n
C5	47μ
C6	100n
C7	47μ
C8	100n
C9	1μ
C10	2.2n

C11	2.2n
C12	100n
C13	100n
C14	2.2n
C15	2.2n
C16	100n
C17	100n
C18	15n
C19	1μ
C20	100μ
C21	4.7n
C22	15n
C23	4.7n
C24	1μ
C25	100n
C26	22n
C27	47n
C28	47μ
C29	100p
C30	1μ
C31	1μ
C32	100μ
C33	100n

Semiconductors

D1	1N5817
D2	1N4148
D3	1N4148
IC1	TL072
IC2	PT2399
IC3	PT2399
REG1	78L05

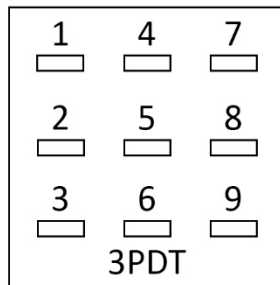
Electromechanical

Echos	B50k
Length	B100k dual-gang
Mixture	B50k

Notes

If wiring for tails, wire the In and Out pads directly to the In and Out jacks. Use a DPDT footswitch and wire lugs 1 and 2 to the 1 and 2 pads on the PCB. Then use the other pole/side (lugs 4-6) to wire the on/off indicator LED. Wire the L+ pad to the anode (+) of the LED, and the cathode (-) to lug 4. Wire lug 5 to ground. If wiring for true-bypass, wire as you would normally, but jumper pads 1 and 2 on the PCB.

Footswitch lug numbering:

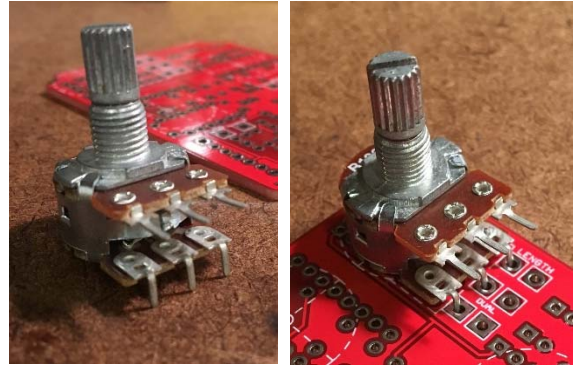


For DPDT ignore the 3rd column (lugs 7-9)

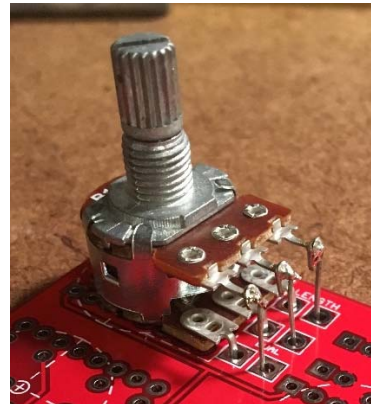
The dual-gang Length pot fits best if you use a pot like this:



Bend the bottom lugs downwards at 90° and place them in the left-side group of pads.



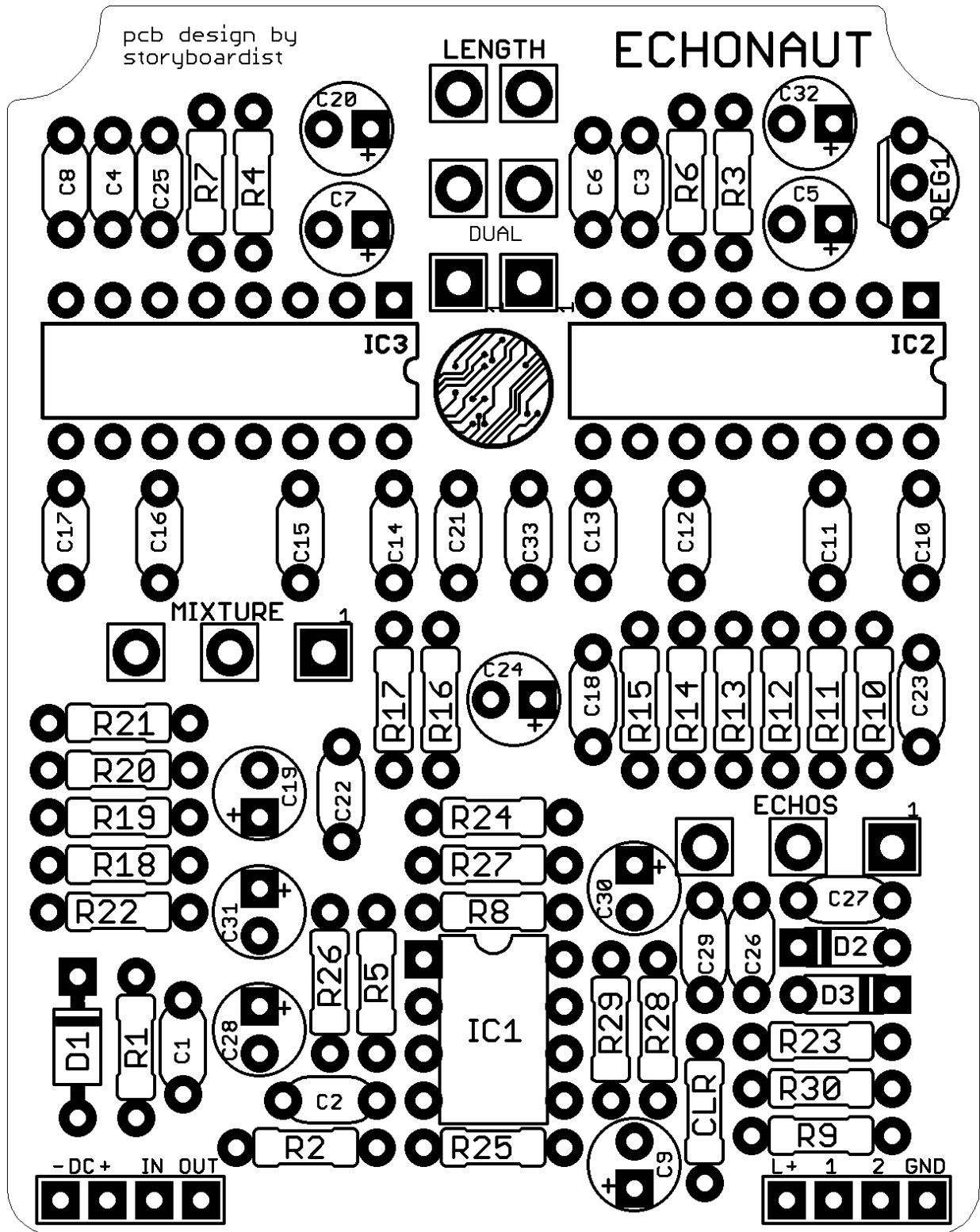
Then use 3 short pieces of wire or some thicker component cut offs (I like to use cut offs from diodes or large film caps), solder them to the top lugs pointing directly down into the right-side group of pads:



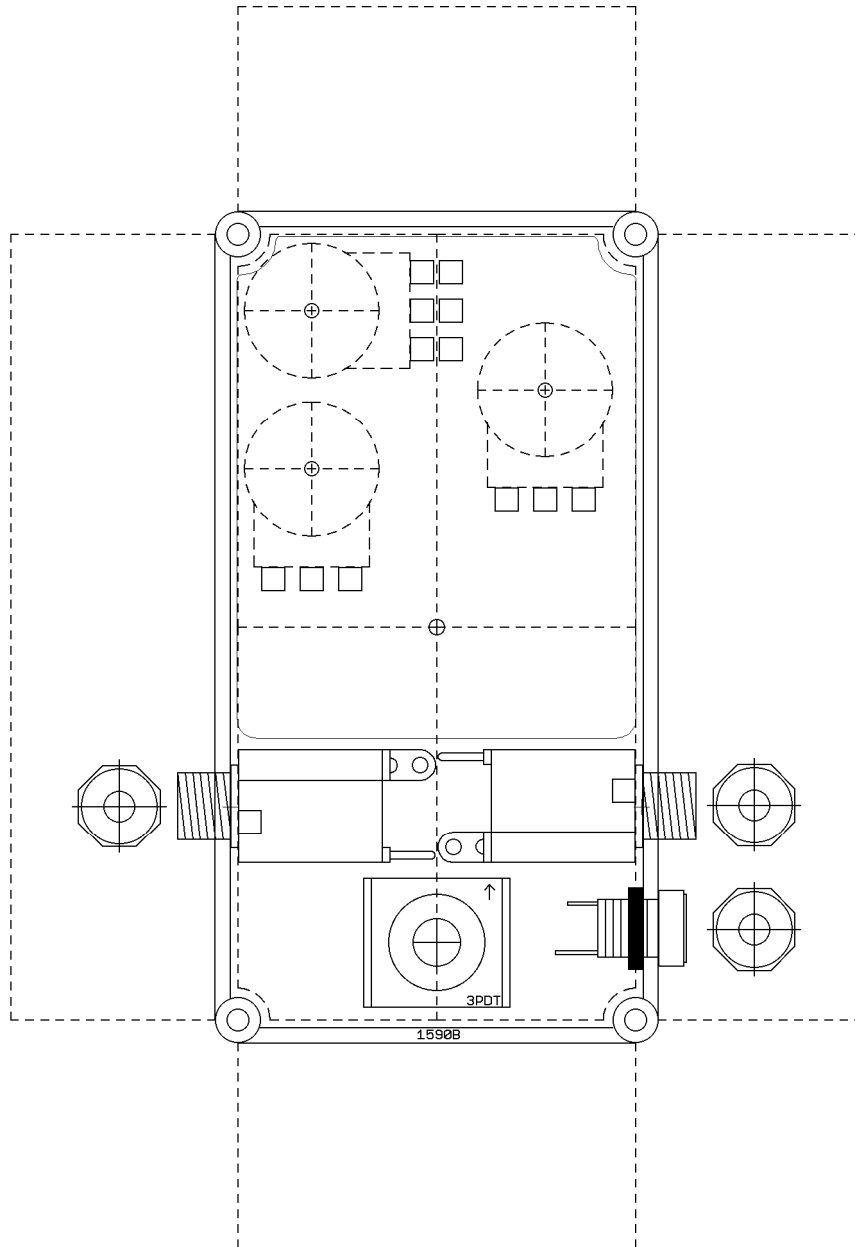
SHOPPING LIST

Value	Type (suggested)	Quantity
47Ω	¼ watt metal or carbon film	1
1k	¼ watt metal or carbon film	2
2.2k	¼ watt metal or carbon film	3
4.7k	¼ watt metal or carbon film	1
5.1k	¼ watt metal or carbon film	1
10k	¼ watt metal or carbon film	9
12k	¼ watt metal or carbon film	1
20k	¼ watt metal or carbon film	5
33k	¼ watt metal or carbon film	2
100k	¼ watt metal or carbon film	1
180k	¼ watt metal or carbon film	1
270k	¼ watt metal or carbon film	2
360k	¼ watt metal or carbon film	1
1M	¼ watt metal or carbon film	1
47p	Ceramic (63v or higher)	1
100p	Ceramic (63v or higher)	1
2.2n	Film (63v or higher)	4
4.7n	Film (63v or higher)	2
15n	Film (63v or higher)	2
22n	Film (63v or higher)	2
47n	Film (63v or higher)	1
100n	Film (63v or higher)	10
1μ	Electrolytic (35v or higher)	5
47μ	Electrolytic (35v or higher)	3
100μ	Electrolytic (35v or higher)	2
1N4148		2
1N5817		1
78L05	5v Regulator	1
PT2399	Echo processor	2
TL072	Dual opamp	1
B50k	16mm right angle PC mount	2
B100k dual-gang	16mm dual-gang	1
DPDT or 3PDT	Footswitch	1

LAYOUT



DRILL TEMPLATE



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Not for non-peer to peer resale.