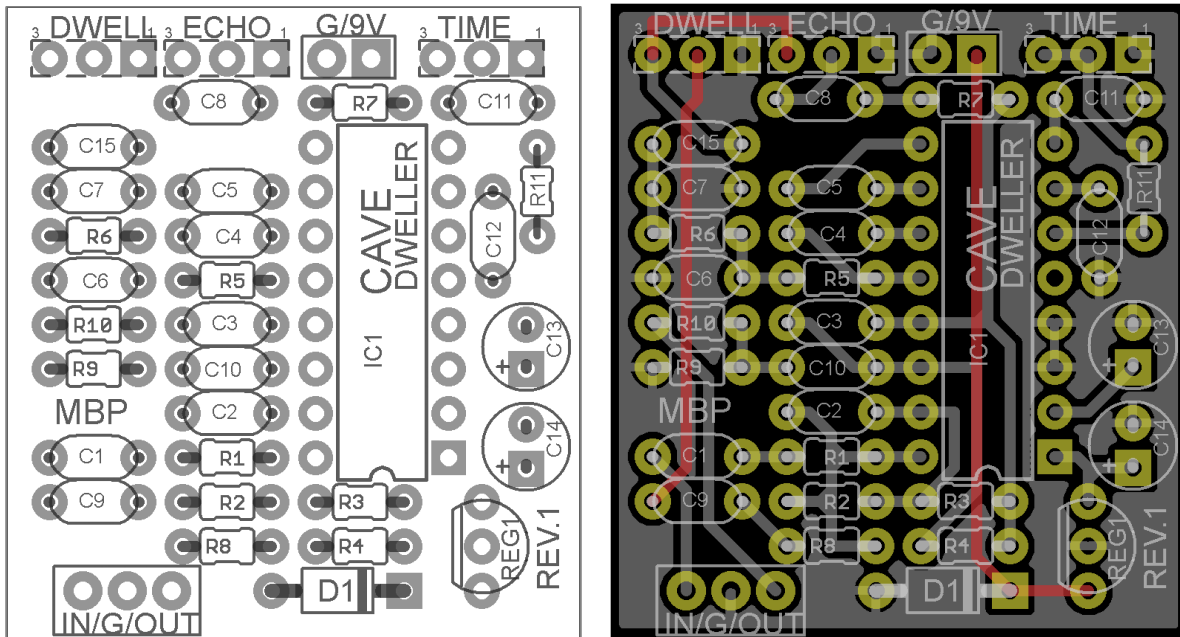


CAVE DWELLER DELAY

Baby Board / 1590A project

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1.29"W x 1.42"H – Rev.1 PCB



07.23 – Rev.1 of the Cave Dweller is a slight modification to the first version. The board width has been reduced by 1mm to make it fit more easily in the 1590A. Also, the 9v/G pads were relocated to the top of the PCB, closer to the DC jack. No changes have been made to the circuit. Layout image for ver.1 is at the end of this document.

Cave Dweller					
Resistors		Caps		Diodes	
R1	750k	C1	100n	D1	1N4001
R2	1M	C2	100pF	ICs	
R3	10k	C3	4n7	IC1	PT2399
R4	10k	C4	100n	REG1	LM78L05
R5	1k	C5	100n	Pots	
R6	2k	C6	47n	DWELL	50kB
R7	10k	C7	10n	ECHO	50kB
R8	470k	C8	100n	TIME	50KB
R9	100k	C9	22n		
R10	1k	C10	1uF		
R11	5k1	C11	100n		
		C12	100n		
		C13	47uF		
		C14	10uF Tant		
		C15	100n		

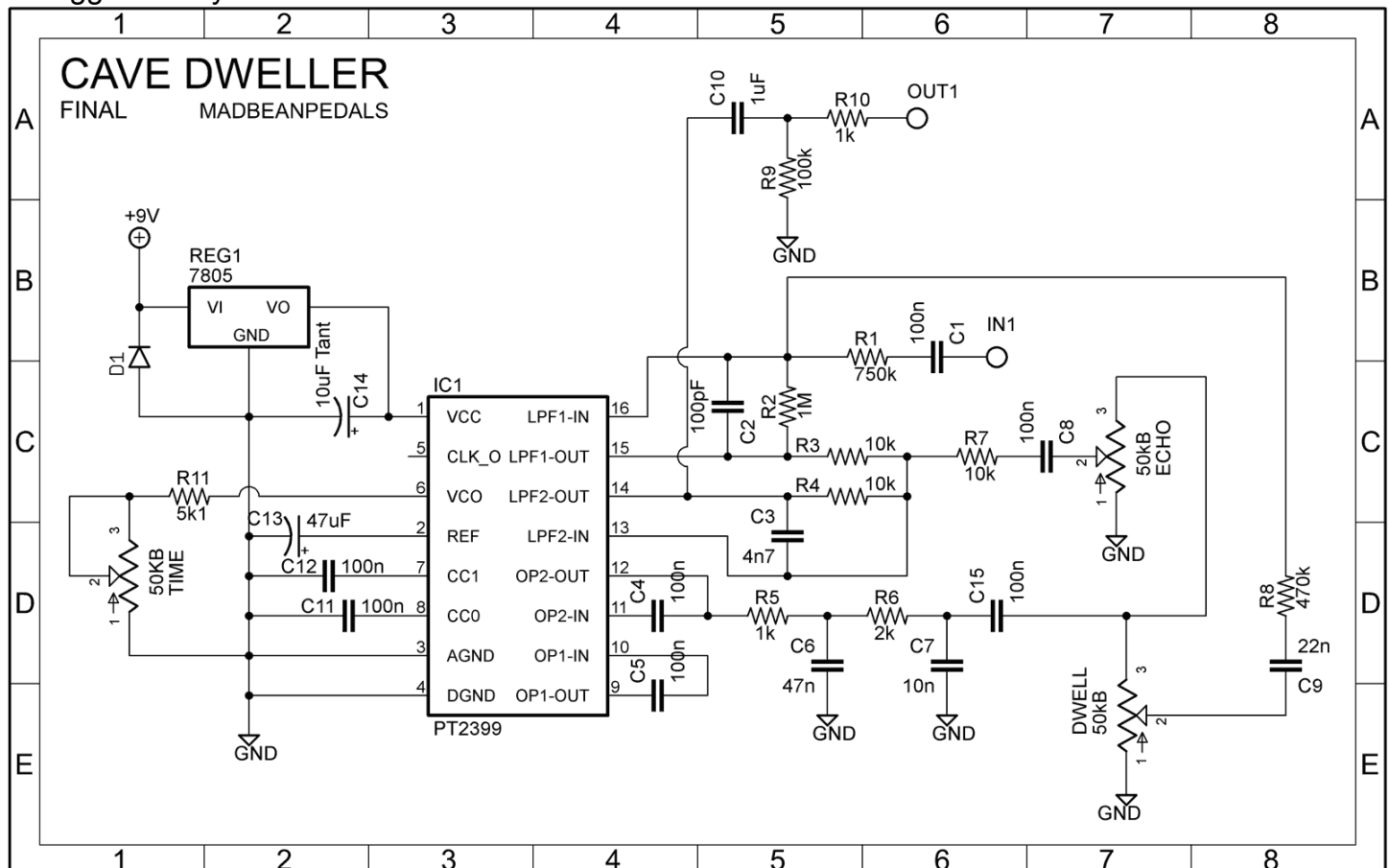
The **Cave Dweller I** is a low parts count delay comprised of a single PT2399 chip and fitted for a 1590A enclosure. This ranks as a “medium-fi” type circuit, meaning that filtering of the PT2399 is kept at a minimum in favor of a small footprint. While you won’t get quite the fidelity of the Echo Base, for example, it still sounds very, very good and offers a somewhat unique flavor of delay.

The effect takes advantage of the two on-board amps of the PT2399 for use as input and output mixers. The feedback and filtering are combined in a unique way which produces a slightly different set of controls than the typical PT2399 delay. This leads to some really “haunting” and musical repeats at long delay times.

Dwell – This control sends heavily filtered repeats to the input mixing stage.

The **Echo** and **Dwell** controls are meant to be interactive. With **Dwell** at zero and **Echo** all the way up, you get clean repeats which are ideal for slapback settings. With the **Echo** at zero and the **Dwell** up, filtered repeats are continuously sent back to the input of the circuit. With **Dwell** and **Time** set to their respective mid-points the effect yields very ambient and dark repeats. This provides a nice contrast to the input signal and it is part of the unique character of the Cave Dweller – *the ambient repeats fit “underneath” the guitar signal*. This keeps the overall mixing of guitar and delay very musical and responsive to dynamics and pick swells.

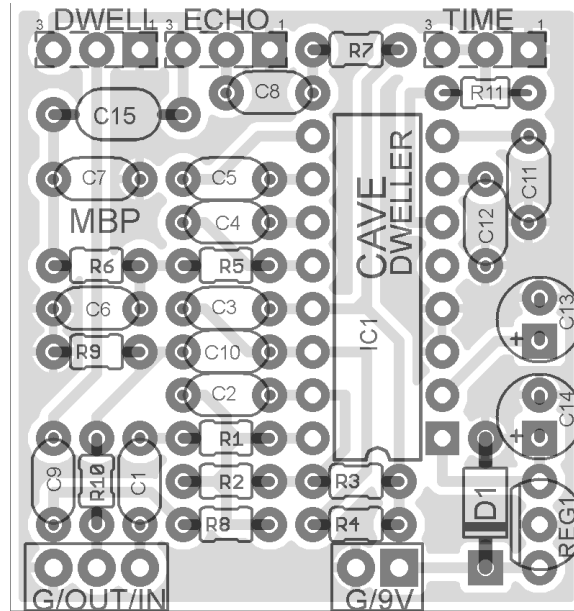
Mod tip: Socket **C3**! Some builders prefer a smaller value here to brighten up the delay. A 3n3 or 2n2 is suggested if you want to make this modification.



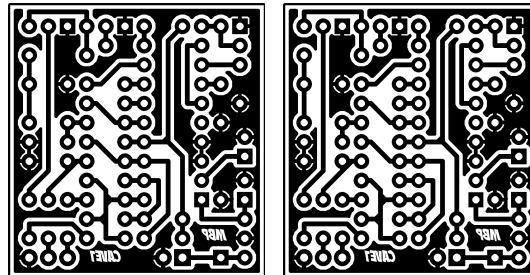
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PCB Artwork for etching



PCB 1.33" W x 1.43" H (inc. borders)



Bonus! Cave Dweller II – Dual Delay

Cave Dweller II (“Dub Ed.”) expands upon the underlying design of **CDI**, but adds an additional PT2399 for roughly twice the delay time. It also combines the two feedback controls into one. An additional mod has been included if you wish to add a true Mix control to Cave Dweller II.

Cave Dweller II Controls

Time – This sets the delay time.

Dwell – This control is a combined version of the Dwell and Echo controls of CD1 (thanks, Alex!)

Notes

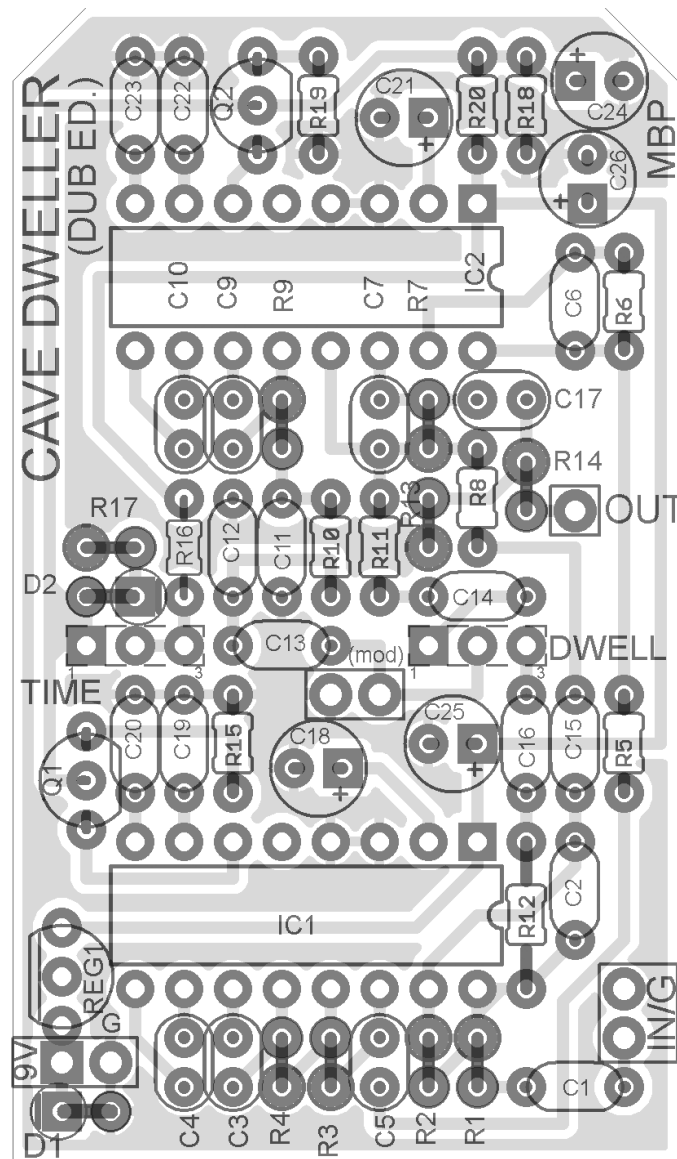
Cave Dweller II - Dub. Edition - is for those really cavernous delay needs. It utilizes the current mirror set-up of the “DM-5” delay project to achieve roughly twice the delay time of CD1. The max delay time should yield about 1 sec, although a mod has been included to artificially reduce this, if desired.

In this version, **Dwell** and **Echo** are combined into one. The control works slightly differently than CD1. At minimum, the repeats are filtered on the opposite end of the spectrum, meaning they are more “telephonic”. This setting sounds very similar to the Deep Blue Delay. At max, the repeats are dark and ambient similar to the CD1.

One caveat with the combined control is that there is minimal influence on the number of repeats produced by the effect. For those builders who wish to add an additional **Mix** control to limit the number of repeats, a simple mod has been included. Please see the illustration below on how to implement the **Mix** control mod.

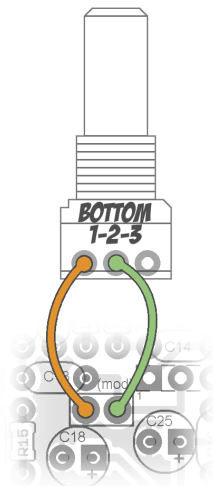
Additionally, the dark repeats have been limited to non-oscillating by using a larger value for **R12**. If you do implement the **Mix** mod, you can lower the value of this resistor from 750k to a value between 470k and 560k to re-introduce oscillation. This is not recommended when not using the **Mix** mod.

One other mod has been included with **R20**. This resistor resides in parallel with the **Time** control and allows you to reduce the max delay time of effect. This mod was included for those who prefer a cleaner delay (max delay times with PT2399s tend to introduce some digital artifacts and noise). The value can be selected to taste, and a 200k is suggested. This results in roughly 20% less delay. A 150k resistor yields approximately 25% less delay.



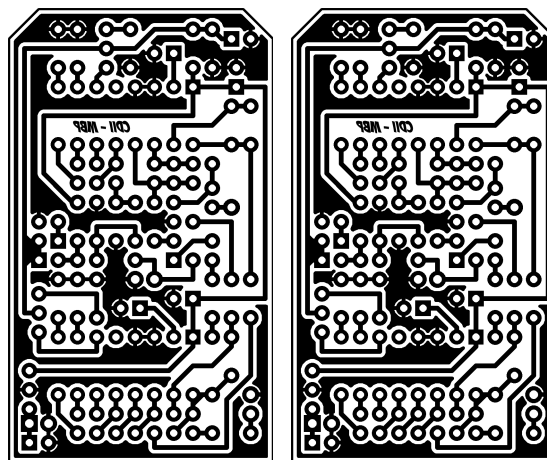
Note: pots are oriented 1-2-3 on this layout!

Implement the Mix mod on Cave Dweller II by using a 50kB pot wired to the “MOD” pads as illustrated.



Cave Dweller II (Dub Edition)					
Resistors		Caps		Diodes	
R1	750k	C1	100n	D1	1N4001
R2	1M	C2	100pF	D2	1N914
R3	10k	C3	100n	Transistors	
R4	10k	C4	100n	Q1, Q2	BC550
R5	100K	C5	22n	ICs	
R6	100K	C6	22pF	IC1	PT2399
R7	10k	C7	4n7	REG1	LM78L05
R8	10k	C9	100n	Pots	
R9	1k	C10	100n	DWELL	50kA
R10	2k	C11	47n	TIME	50KB
R11	4k7	C12	10n		
R12	750k	C13	100n		
R13	100k	C14	100n		
R14	1k	C15	22n		
R15	560R	C16	22n		
R16	5k1	C17	1uF		
R17	1k2	C18	10uF		
R18	1M	C19	100n		
R19	620R	C20	100n		
R20	200k	C21	10uF		
		C22	100n		
		C23	100n		
		C24	1uF		
		C25	10uF Tant		
		C26	10uF Tant		

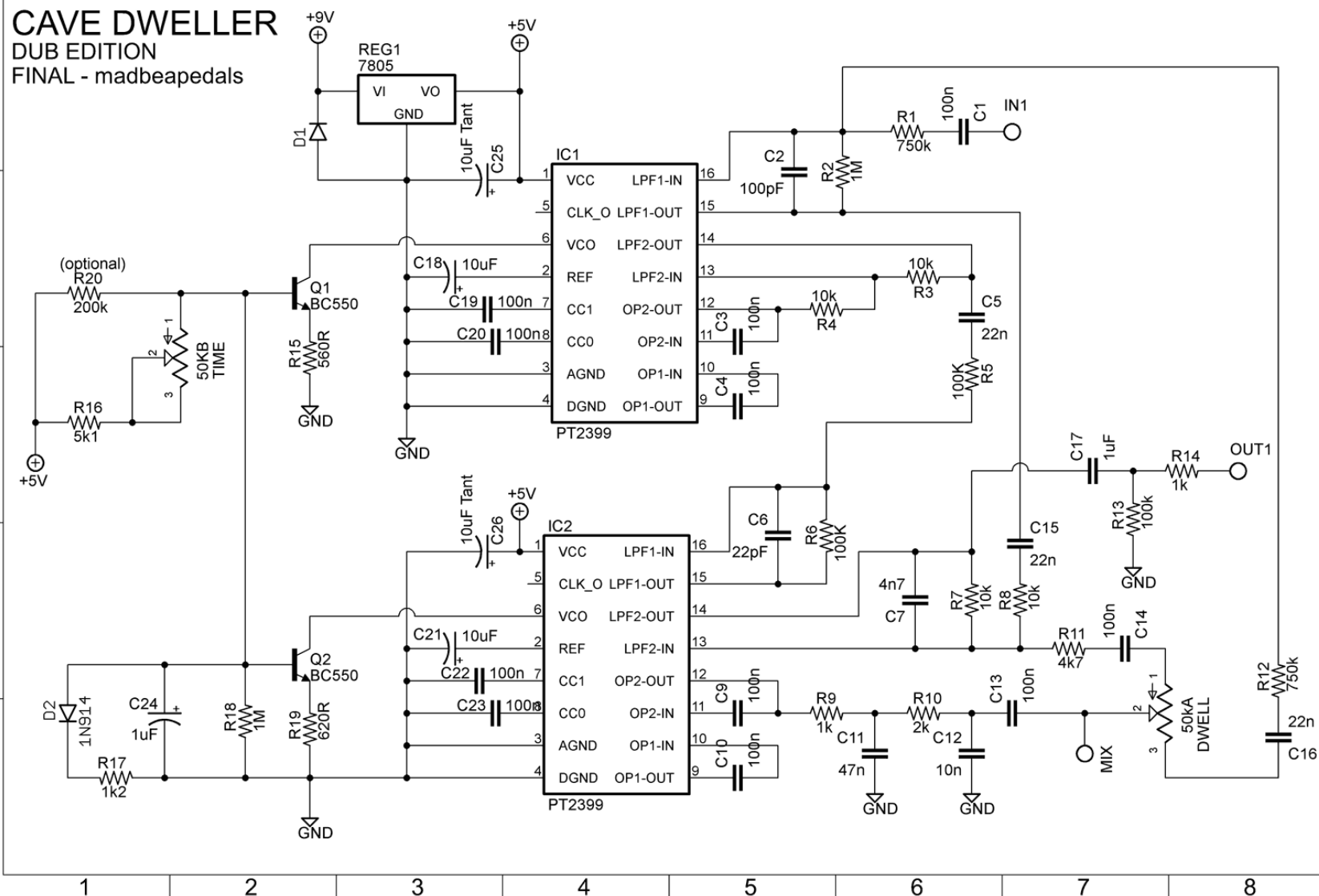
PCB 1.38" W x 2.38" H (inc. borders)



CAVE DWELLER

DUB EDITION

FINAL - madbeapedals



Version 1 (before 07.23.12)

