



SHEcho Project

Version 2006March31

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This project is a hybrid of Scott Swartz's excellent PT-80 delay (Princeton Technologies PT2399 based - 300mS) and Dean Hazelwenter's previous HEcho delay based on the Holtek HT8955A (800mS). It came about due to requests to marry Scott's well thought out and designed project with a longer delay time. Please see Scott's detailed technical description of the PT-80 for design notes.

- Layout fits Hammond 1590C case.
- 1uF cap layout fits 1uF 63v box type metalized film caps. 1uF electrolytic can also be used; the + terminal pad is square, the - terminal pad is round.
- Note that the value of R22 can be reduced from 150K to as low as 68K to reduce the minimum delay time available. Reducing R22 also lowers the maximum available delay time. If there is distortion and general mayhem with R22=68K and the delay pot turned down, increase R22 to 82K.
- C21 is mounted on the back of the PCB under U3. Care must be taken to avoid the cap leads from shorting to other traces. Electrical tape can be placed across the tracks for insulation before C21 is installed.
- Current draw is 27.5 mA.

Bill of Materials

Resistors (1/4 watt rating)

1- 4.7 ohm
3- 1k
1- 5k6 (5.6k)
12- 10k
3- 22k
2- 36k
1- 100k
1- 150k
1- 560k
2 - 1M

Pots (1/4 watt or higher rating)

2 - 50k linear
1 - 500k linear

ICs

1 - HT8955A
1 - 41256 (DRAM)

1 - SA571

1 - TL072

Capacitors (minimum 16 volt rating)

1 -47pF film or ceramic
2 -100pF film or ceramic
1 -470pF film or ceramic
1 - 0.001uF film
2 - 0.0022uF film
1 - 0.01uF film
2 - 0.015uF film
1 - 0.033uF film
1 - 0.047uF film
3 - 0.1uF film
2 - 0.47uF film
10- 1uF aluminum electrolytic or film
4 - 100uF aluminum electrolytic

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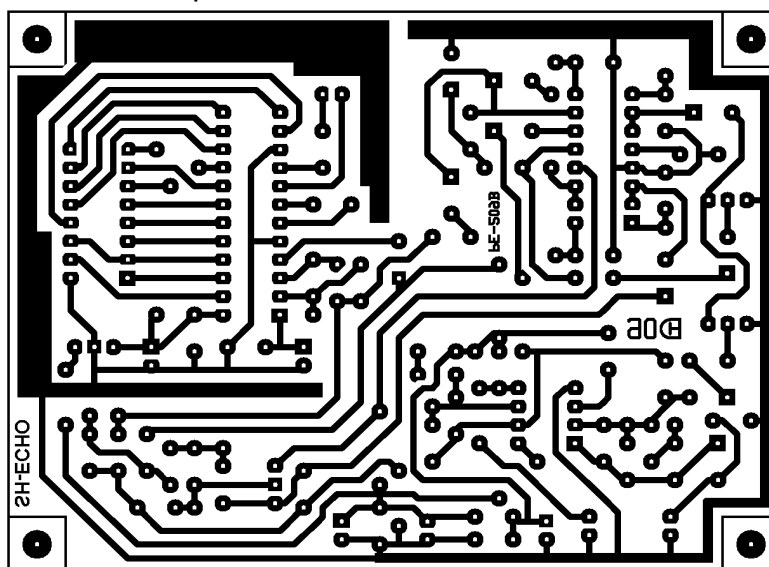
Other Parts

- 1- 78L05 - 5 volt regulator
- 1 – 3PDT or DPDT heavy duty foot switch (bypass)
- 1 – mono quarter inch jack
- 1 – stereo quarter inch jack

- 9v battery snaps & holder and/or DC jack
- knobs, Copper-clad board, etchant, or perfboard
- 24 gauge stranded wire
- Enclosure

Parts ordered by Name

- | | | | |
|-----------|------------------|----------------|-----------------|
| R1 - 1k | R18 - 1k | C7 - 1uF | C24 - 100uF |
| R2 - 1M | R19 - 1M | C8 - 1uF | C25 - 100uF |
| R3 - 10k | R20 - 10k | C9 - 1uF | C26 - 0.1uF |
| R4 - 22k | R21 - 22k | C10 - 0.0022uF | C27 - 100uF |
| R5 - 36k | R22 - 150k | C11 - 0.033uF | C28 - 100uF |
| R6 - 36k | R23 - 5k6 (5.6k) | C12 - 0.001uF | C29 - 0.01uF |
| R7 - 22k | R24 - 5600k | C13 - 1uF | C30 - 1uF |
| R8 - 100k | R25 - 10k | C14 - 0.47uF | C31 - 1uF |
| R9 - 10k | R26 - 10k | C15 - 100pF | |
| R10 - 10k | R27 - 4.7 ohm | C16 - 1uF | U1 - TL072 |
| R11 - 10k | | C17 - 1uF | U2 - SA571N |
| R12 - 10k | C1 - 0.015uF | C18 - 0.015uF | U3 - 41256 DRAM |
| R13 - 10k | C2 - 0.047uF | C19 - 47pF | U4 - HT8955A |
| R14 - 10k | C3 - 470pF | C20 - 1uF | U5 - 78L05 |
| R15 - 10k | C4 - 1uF | C21 - 0.1uF | |
| R16 - 10k | C5 - 0.47uF | C22 - 0.1uF | Q1 - 2N5088 |
| R17 - 1k | C6 - 100pF | C23 - 0.0022uF | |



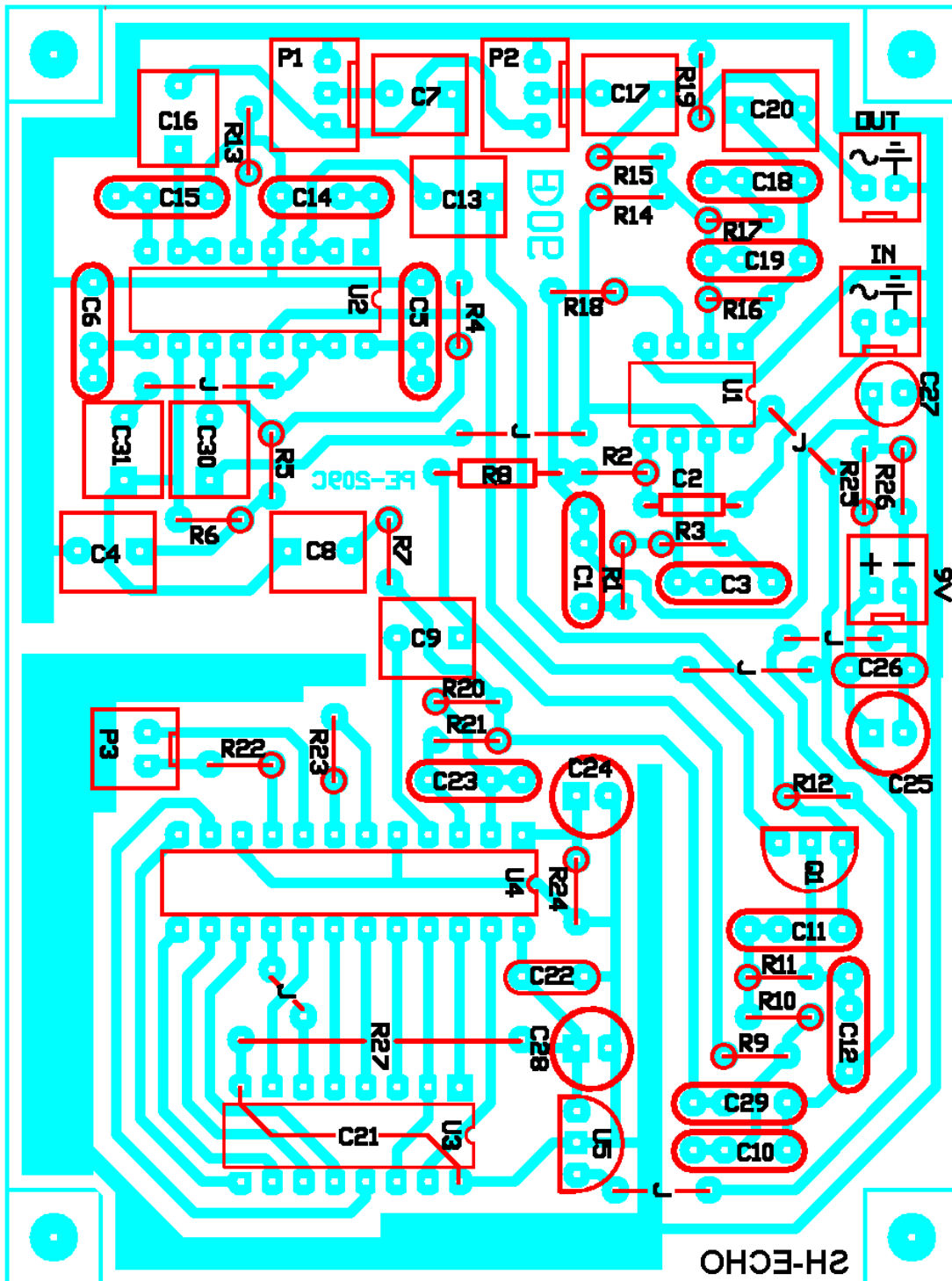
10.4cm x 7.8cm

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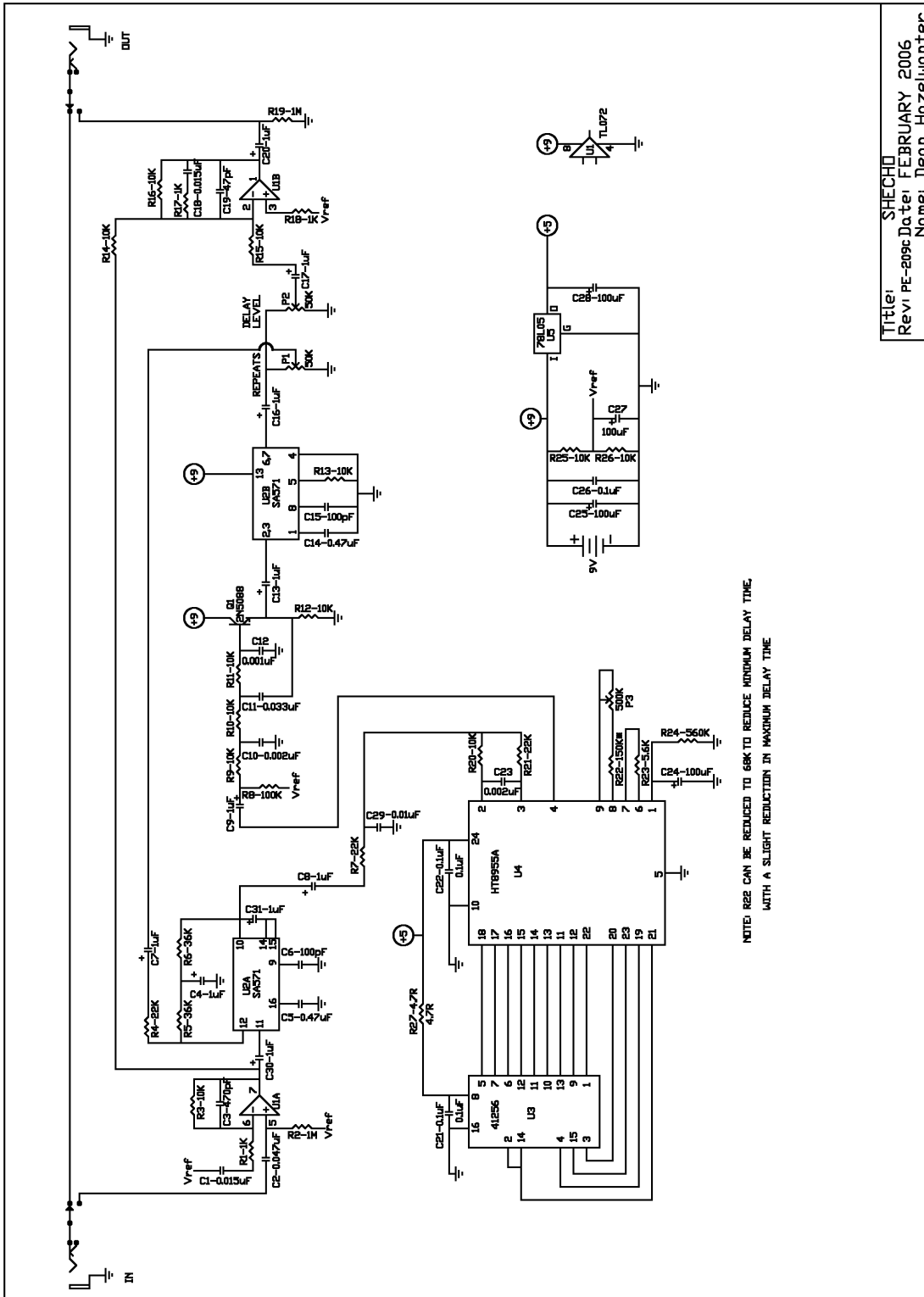


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Title: SHECHO
 Rev: PE-209c Date: FEBRUARY 2006
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