

The Tiny-TS

A DIY Touch Synthesizer



Instruction Manual v1.0

The Tiny-TS Touch Synthesizer

The Tiny TS is a credit card sized (100x65mm) fully open-sourced synthesizer with a 1-octave capacitive touch keyboard. It has Audio/CV/Gate outputs and 6 synth parameter dials.

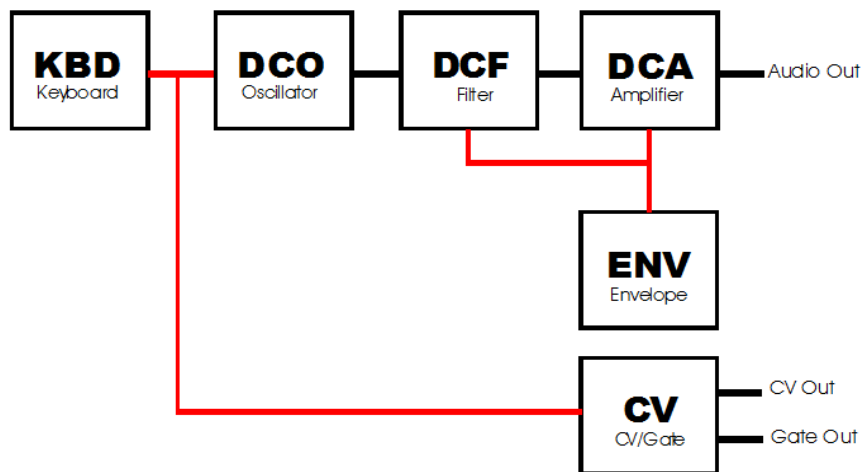
The synthesizer parameter includes:

DCO: Coarse pitch and Double. The CV out follows the keyboard and coarse pitch.

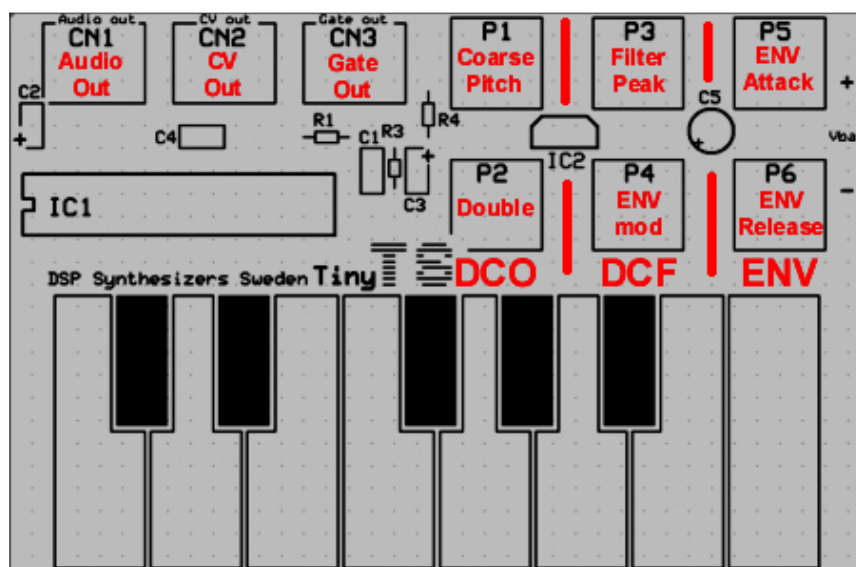
DCF: Filter peak and ENV modulation.

ENV: Attack and Release envelope affecting amplitude.

The CV's output 1V/oct and Gate from the keyboard.

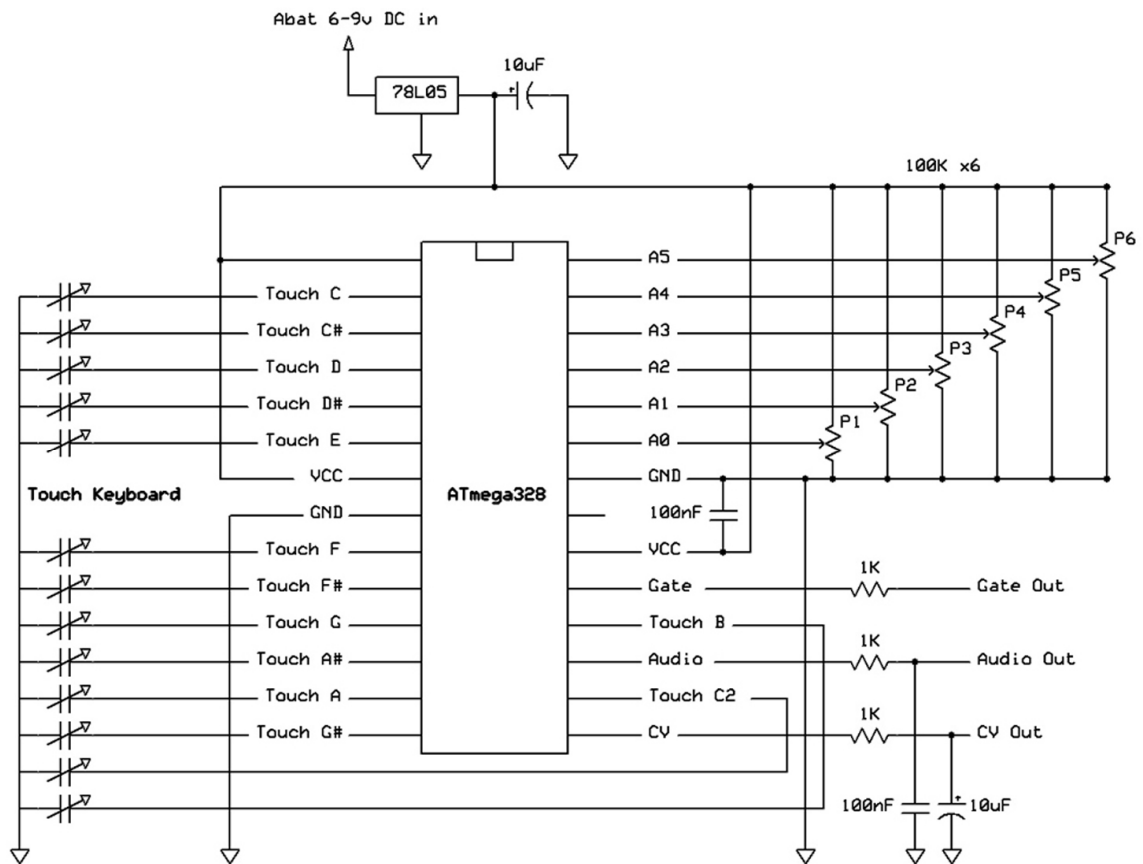


Block diagram of the Tiny-TS



Component layout

Schematic diagram



Part list

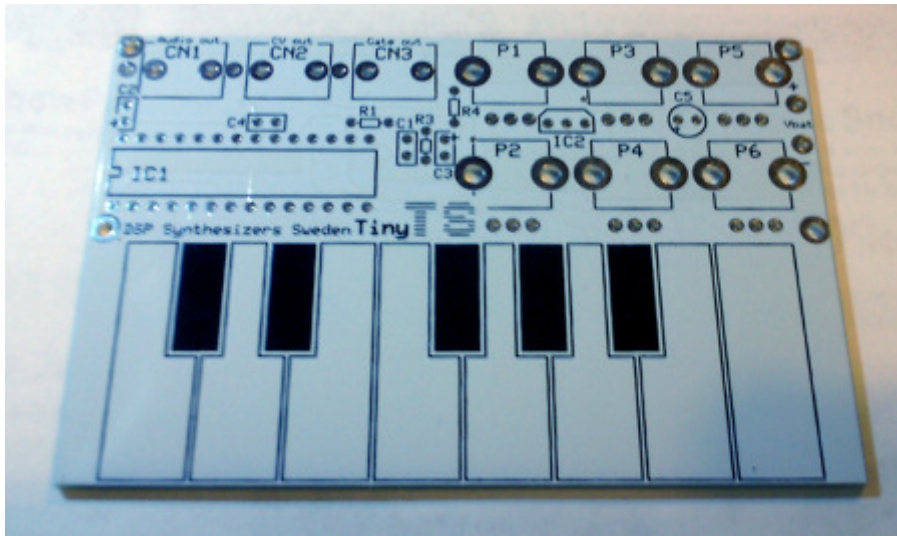
IC1 – Preprogrammed ATmega328
IC2 – 78L05 TO-92 5v linear regulator
C1 – 100nF capacitor
C2 – 10uF capacitor
C3 – 10uF capacitor
C4 – 100nF capacitor
C5 – 10uF capacitor
R1 – 1Kohm resistor
R3 – 1Kohm resistor
R4 – 1Kohm resistor
CN1-CN3 – 1/8" Thonkiconn Jacks
P1-P6 – 100K lin Alpha 9mm potentiometers
The PCB

The code is open-source and can be downloaded here:

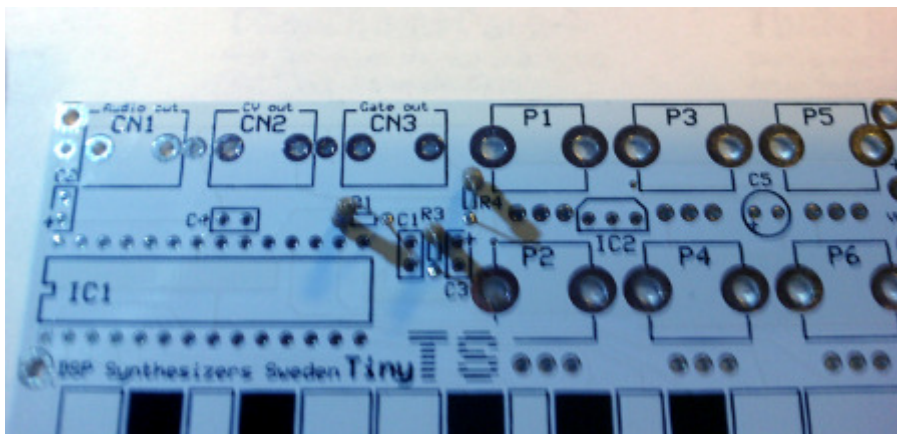
<https://janostman.wordpress.com/the-tiny-ts-diy-touch-synthesizer/>

Building Instructions

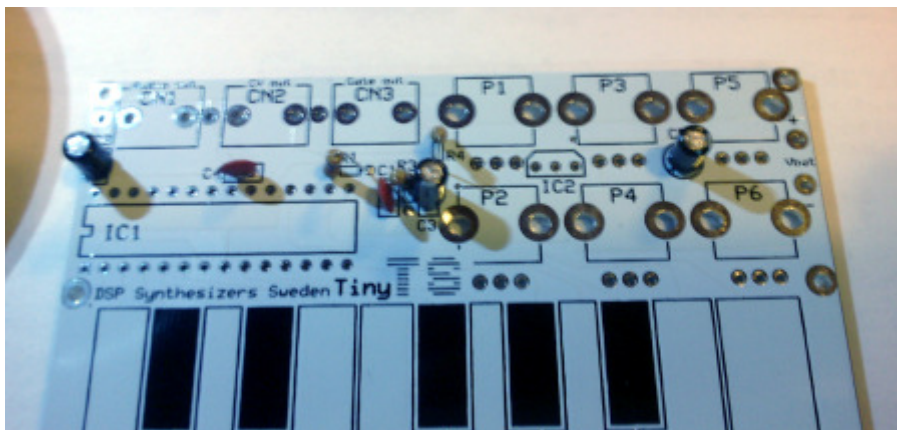
1. Get the PCB and all the parts out.



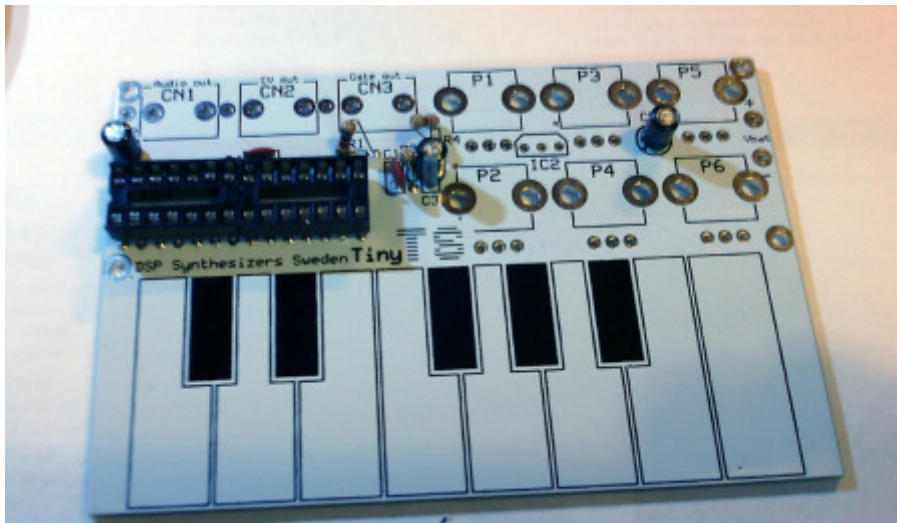
2. Solder the 3pcs 1Kohm resistors.



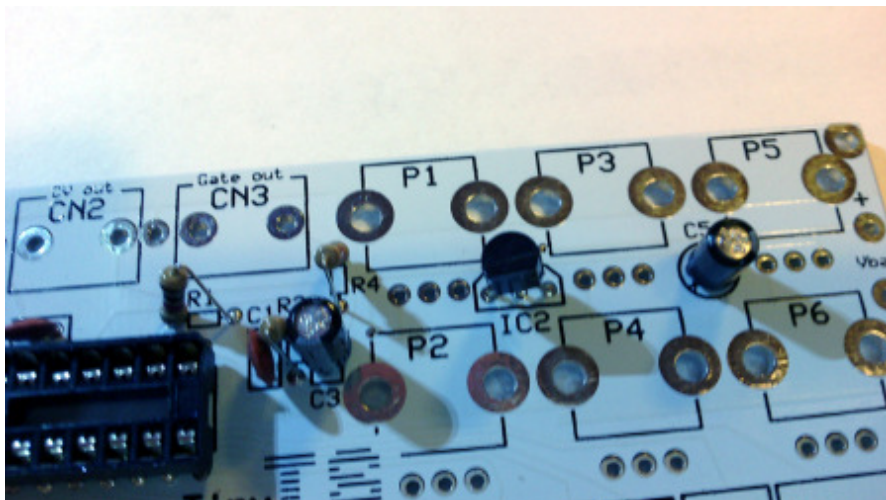
3. Solder the capacitors as shown in the picture. Mind the polarity of the black 10uF caps.



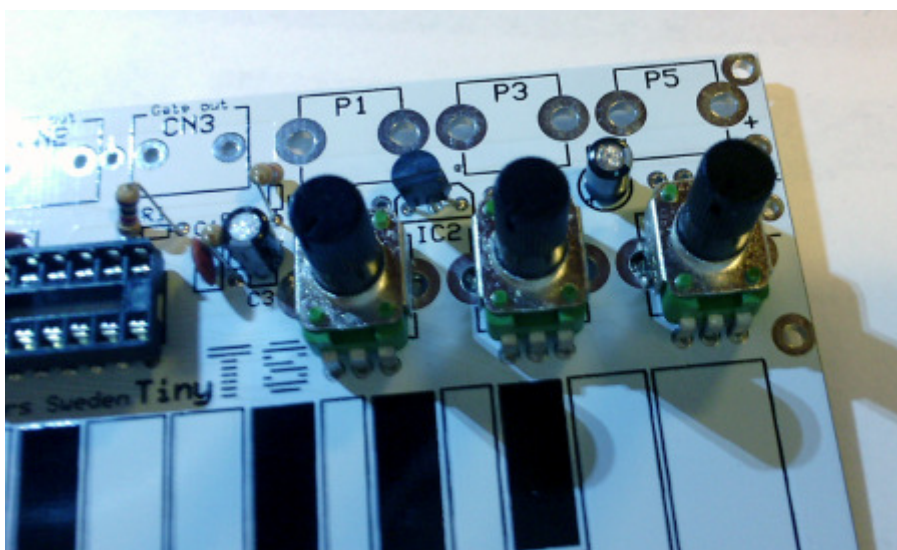
4. Solder the IC1 ATmega328 MCU (or a socket if you want to reprogram it).



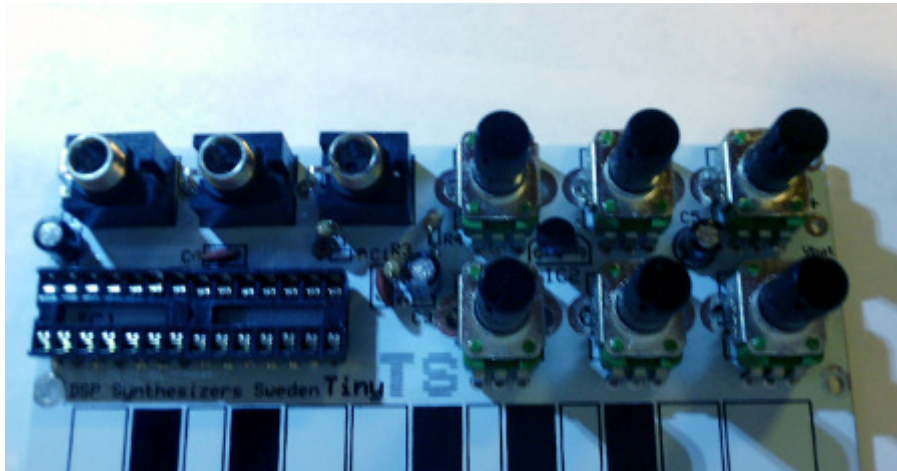
5. Solder the IC2 linear regulator.



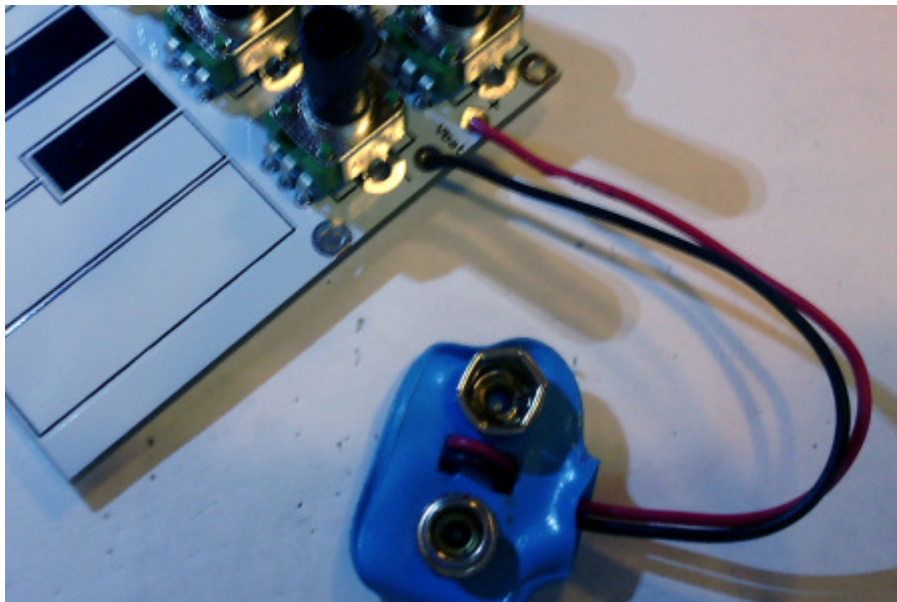
6. Solder the P2, P4 and P6 potentiometers.



7. Solder the P1, P3, P5 potentiometers and the Thonkiconn 3.5mm jacks.



8. Finally solder the 9v battery clip.



Done!

Get a 9v battery and plug some headphones in the Audio Out jack to check if it works.

Technical Specifications

DSP platform	AVR ATmega 20 DMIPS
Supply power	3 – 12 volt
Supply current	~2.9mA
Audio output	33.5 KHz PCM, 8-bit PWM DAC, 1 channel mono audio
Synthesis method	Virtual Analog Modeling
Control method	13 capacitive keys, 6 analog parameter knobs

Contact & Support

For support and questions please use these contact addresses:

Website: <http://www.dspsynth.eu>

Email: contact@dspsynth.eu