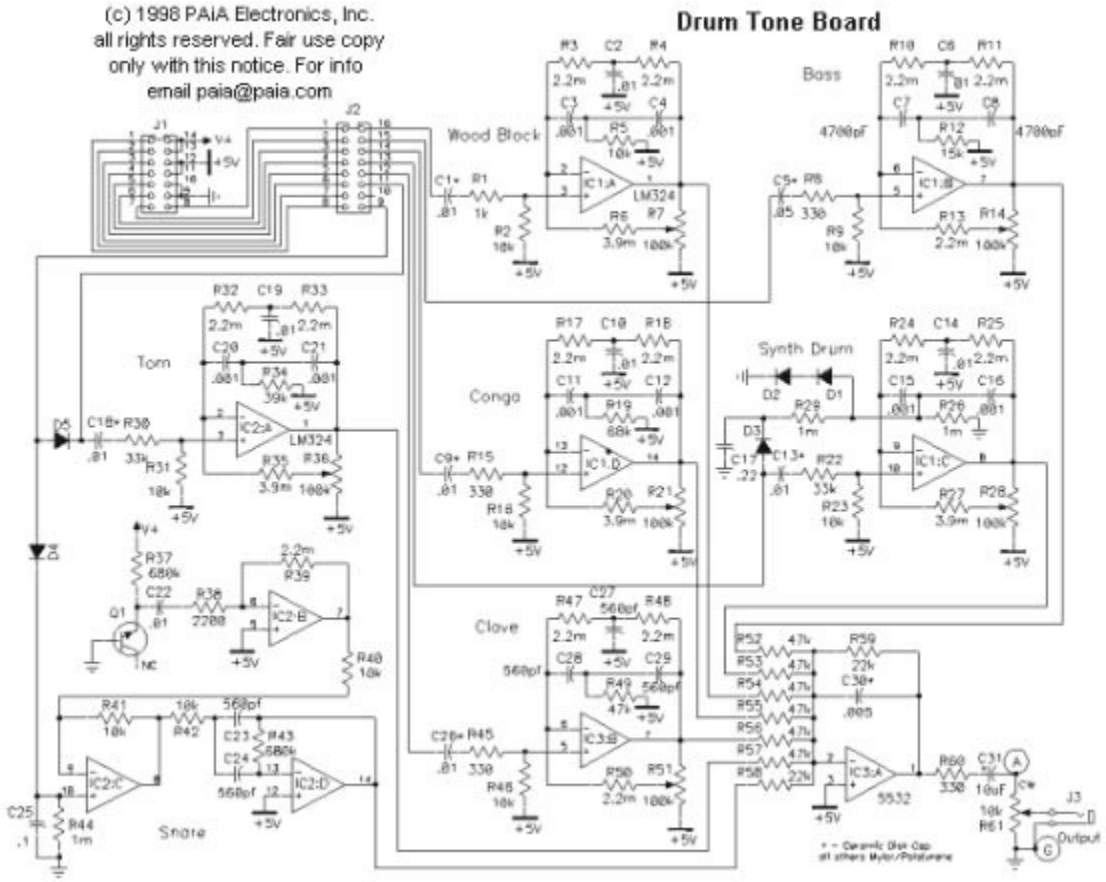
PAiA 9302K Drum Tone Board.

This circuit-board kit was once a part of a more complete product, the 9300A Audio ThumDrum kit that was discontinued due to expensive/unusual parts and low sales. In the 9300A, the 9302 mounted below a sensor board kit which had the piezo sensors, conditioning circuits, and the power supply for the two boards. A DIP connector cable joined the two boards and a 1/4" connector made the audio, w/level control, available for connection to an amp, mixer, etc. The two boards went in metal case with wood ends and pads for finger and thumb strikes were on top of the case.

It is a simple kit with IC and resistor/capacitor and trimpots for the drum tones. A dc pulse applied to the input causes the drum tone to sound. The trimpot is used to set the tone generator damped-oscillator circuits just below the oscillation state. The drum tone is the pulse creating a momentary, percussive oscillation. It is a sound similar to the old PAiA Programmable Drum Set or EK2, or, like the old '70s style simulated drum sounds.



We kept the 9302 just because it can be useful as a building-block for a unit with external triggers or incorporated with the the 9700K MIDI2CV8 as a MIDI-controlled drum tone generator. Also, since the 9301 Sensor Board kit went by the wayside too, we have re-introduced another 'board' kit, the 9212 ProcAmp Board, which used to be a part of the MIDI Brain project which never made it into production (a box with the 9201dk MIDI Drum Computer board) for converting external sensors to MIDI Drum control messages. The 9700K can go in a FR-7 FracRak with the 9700FRM option. One of the FRB blank panels could be used as a Front for the 9302 Drum Tone Board in the FR7 too. The 9212K would jumper over to the 9202K for sensor control just like the 9301 is shown doing in the 9302 manual.

FR7

http://www.paia.com/proddetail.asp?prod=FR%2D7&cat=12

Otherwise, check Mouser, Jameco, or DigiKey online to see the electronics enclosures they have. A plastic or aluminum box is likely available that would hold the 9302 and connectors for the input pulses.

9700K MIDI2CV8

http://www.paia.com/midi2cv.asp

This page on our website illustrates the way power can be tapped from the 9700K MIDI2CV8 for the Drum Tone Board. A 9v or 12v dc adapter can be sub'ed for the V+ circuit in this application. The dc voltage is divided and this 'half' voltage is used as the "+5" circuit to the DTB. Regulating the V+, positive dc supply would be a plus.

With the board powered, it is just a matter of momentarily connecting the drum tone inputs with voltage for a pulse to sound the drum tone.

In this example dc pulses ranging from 0-10v in amplitude from the MIDI2CV8 in response to MIDI note messages input to it (note number selects the output and velocity sets the amplitude), are the trigger signals for the DTB. A push-button-switch could be used too and the voltage can be in the range of 0-10v but a resistor (100k or so) should be connected to the DTB side of the switch to ground so that when the switch is open, charge on the capacitor at the input of the DTB is removed (the output of the MIDI2CV8 or a Sensor conditioning circuit (op-amp) returns to zero dc potential when the pulse ends, serving to remove charge on the input side of the capacitor).

9700K and the 9302K

http://www.paia.com/ProdArticles/md2drumt.htm

This next page is an example of the sensor conditioning circuitry for getting piezo, electret mic, force-sensing-resistor, or other ac signals to be dc percussive envelopes for triggering the DTB. The 9212K works as a power source for the DTB with V+ and +5v circuits linked via a DIP connector cable (along with the 'triggers' or conditioned sensor signals).

9212K

http://www.paia.com/proddetail.asp?prod=9212K

Modifications

The gain on the noise amp is rather high, probably to get boost for weaker noise transistors, but if you have a strong one, it could be making the noise to the following amps too hot. Try touching a resistor in parallel with R29 a 2.2M red-red-green-gold to reduce the gain to see if this does the trick. Another 2.2M would effectively make the combination about 1.1M and the gain about 500x instead of 1000x. A 2200ohm, would make it about 1x. A pot could be clipped in to find just the right size if you have a high valued one and a couple of alligator clip test leads.

And, while the lower value at R29 decreases the strength of the noise, there's an additional measure that can be taken to cut noise that could leak through to the output. Lift the end of the resistor R58 (not the end that joins with all the others in the bank, but the end that runs back to IC2, pin 14, and use two parallel/forward/backward connected diodes, 1N4148, to make the link from the hole to the lifted end of the resistor. It works like a gate of sorts--only the noise burst exceeding +and- 0.6v gets on through.

Also another change that improves the Snare action (a pulse to the snare input goes to noise and tom) is to connect the pulse for Tom through a diode forward into the Tom input and add a 100k resistor or so from the cathode of this diode and D5/C18. The added diode works to block the path to the 'low' tom pulse and the

resistor works to dump charge off the C18 capacitor that develops with continued Snare pulsing.

sl, 12/18/2008