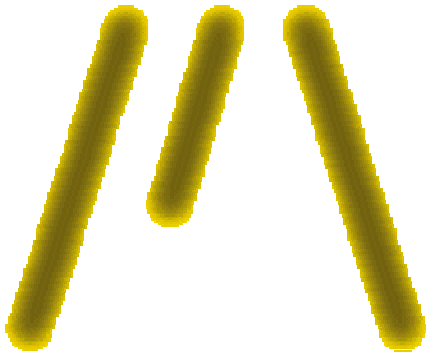
Issue 6
November 98



Modulus DIY

Well folks its back, sorry for the delay they were unavoidable I'm afraid, anyway, on with the show…

In this edition we have two circuits for you to peruse. Firstly we have the wave table which will run from my DCO I have designed or from a high speed VCO. If you can find a good reliable high speed VCO let me know. I didn't manage to find a good reliable circuit that had commonly available parts, so I've gone for a DCO route around the problem. Oh no! I hear you scream, well fear not I intend to try and develop a Midi->DCO module and maybe later a CV->DCO module, kinda backwards I know, but.

Secondly we have an eprom playback module that can playback sounds stored on eproms, such as Simmon's and Linn.

I would like to take this chance to thank my friends on the net for there support and help through my troubled year and you, the readers, for your continued patience during this, thanks.

Eprom Player

This is a little unit I designed for playing the eproms you can get/find for the Simmons SDS machines. It will play ANY eprom that is on either a 2764 or 27128.

A quick description of the circuit;

Assuming that the circuit has been on and is its resting state then following happens. The 555 sits there merrily oscillating to itself and is gated by a NAND gate the gate is driven by a latch and this is clocked by the last step of the counters. The counters are driven by the gated 555. So when the latch is reset (and the counters) the 555 clock is passed through to the counter and this increments and selects the address on the eprom. Data is fed from the eprom outputs to the DAC and the output in-turn to a 741 (I know its old and rubbish but it provides a bit of anti-aliasing filtering). When the counters reach their maximum count the latch is clocked and the output goes high and therefore inhibits the 555 and the playback ceases.

A PCB is available for this, but it needs a 5v rail, so be warned, other than that it should run from either +/-12v or +/-15v. This should be available from Chris Crosskey as before. I have included the schematic here, the PCB foil and the component layout too.

Wave Table

The following circuit enables its user to playback samples, which have been extracted and modified from the PPG wave 2.3. You should note that the wave used some interpolation of its own so the waves are NOT stored in a logical manner. What it does mean is that you have access to 128 different waveforms (ok, the last one is noise, but still useful). These waveforms are selectable from a CV input aswell as a dial on the front panel. We also have a Hard sync input, just for the hell of it (it was only an extra 2 components). Dual 7 segment displays show the wave form currently selected, these arranged as 2 banks of 8by8, i.e. 128 waveforms. I used the DP on the display for bank display, you could use an LED or If you really wanna mess around with it why not go the whole way and do a 3 segment BCD display.

Operation of the circuit is straightforward. The highs speed clock is fed into a 4024 divider, this drives the first 6 bytes of the address bus on the eprom. The rest of the bus (7 bits) is driven by the output of the A-D converter, this has a scalable input so you can set your CV voltage range to suit your own synth (I set my so that 10v gives wave 128 (or on my module 8.8.). The output of the eprom is fed into a DAC and into a 741, again the reasons for this choice is the anti-aliasing effects.

Now a little word about driving this beasty. I tried for about 6 months to find a good VCO which was stable and had a good range (8 octaves) and would run at speeds of up to 600Khz, and I simply couldn't find one. Conventional VCO's are no good as they tend to be saw/square and changing the integrating cap works but then you hit problems with the discharge time and you get unpredictable scaling. So I chose to make a DCO, ok I know it's a cop out but if someone out there has a VCO that will fulfil this job then please email it me. The DCO is based on a 555 and is basically just 12 pots for fine tuning the top octave and then a divider chain, so its just fast organ. I looked at several TOG's but they are all designed to run at audio frequencies so would not be suitable.

Anyway a PCB for this is a way off yet, its so complex, when I get a moment I'll take a picture of my prototype and put it on the web page and/or include it in the next issue. For now the Schematic is here and the chips can be bought from Chris Crosskey again, handy chap to know you know. I have a few of the eproms (8) so I may sell a few of them.

Well that's it for the moment, if anyone has any suggestions or articles they would like to contribute please feel free to email me.

Ta ta

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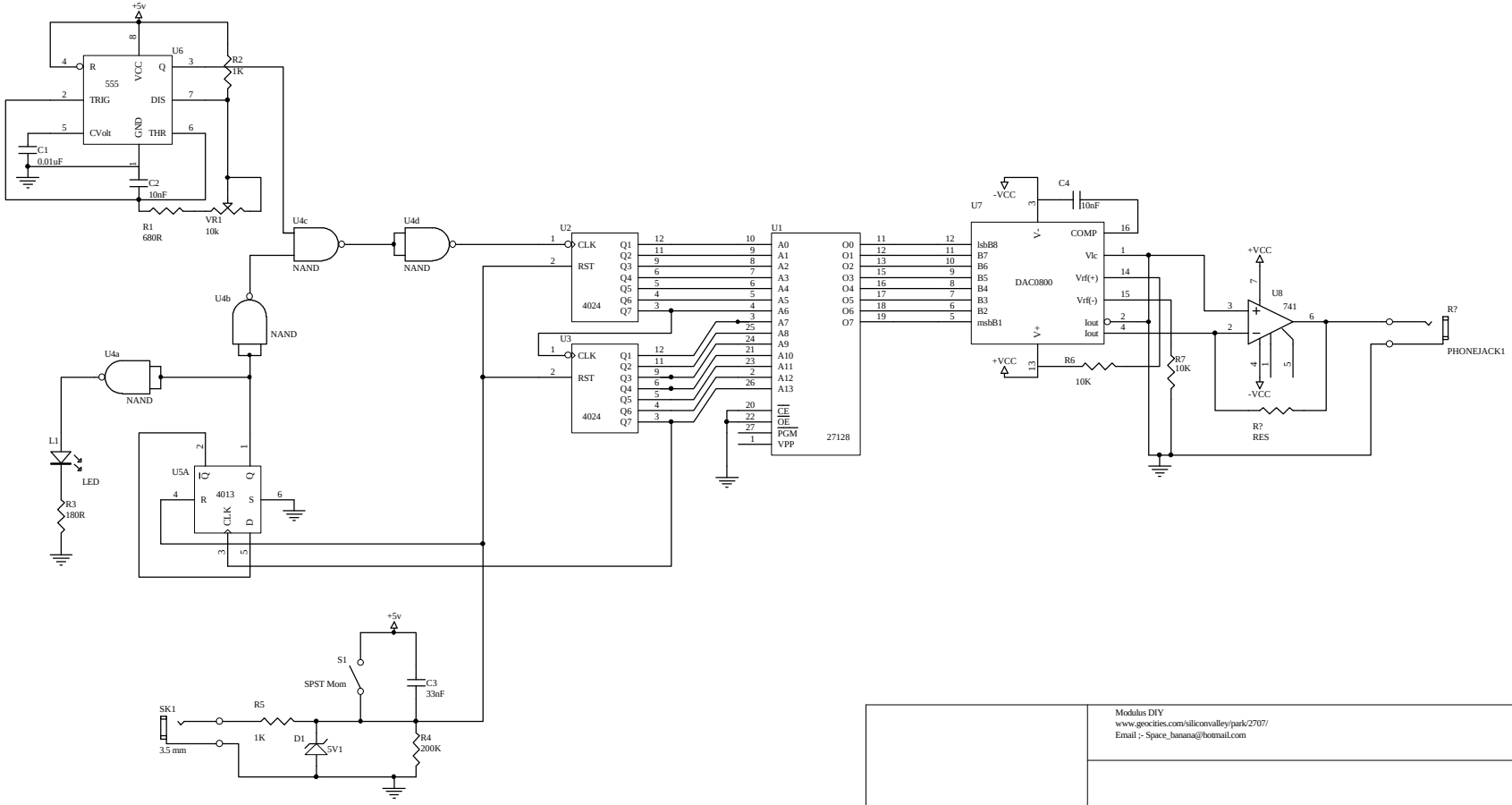

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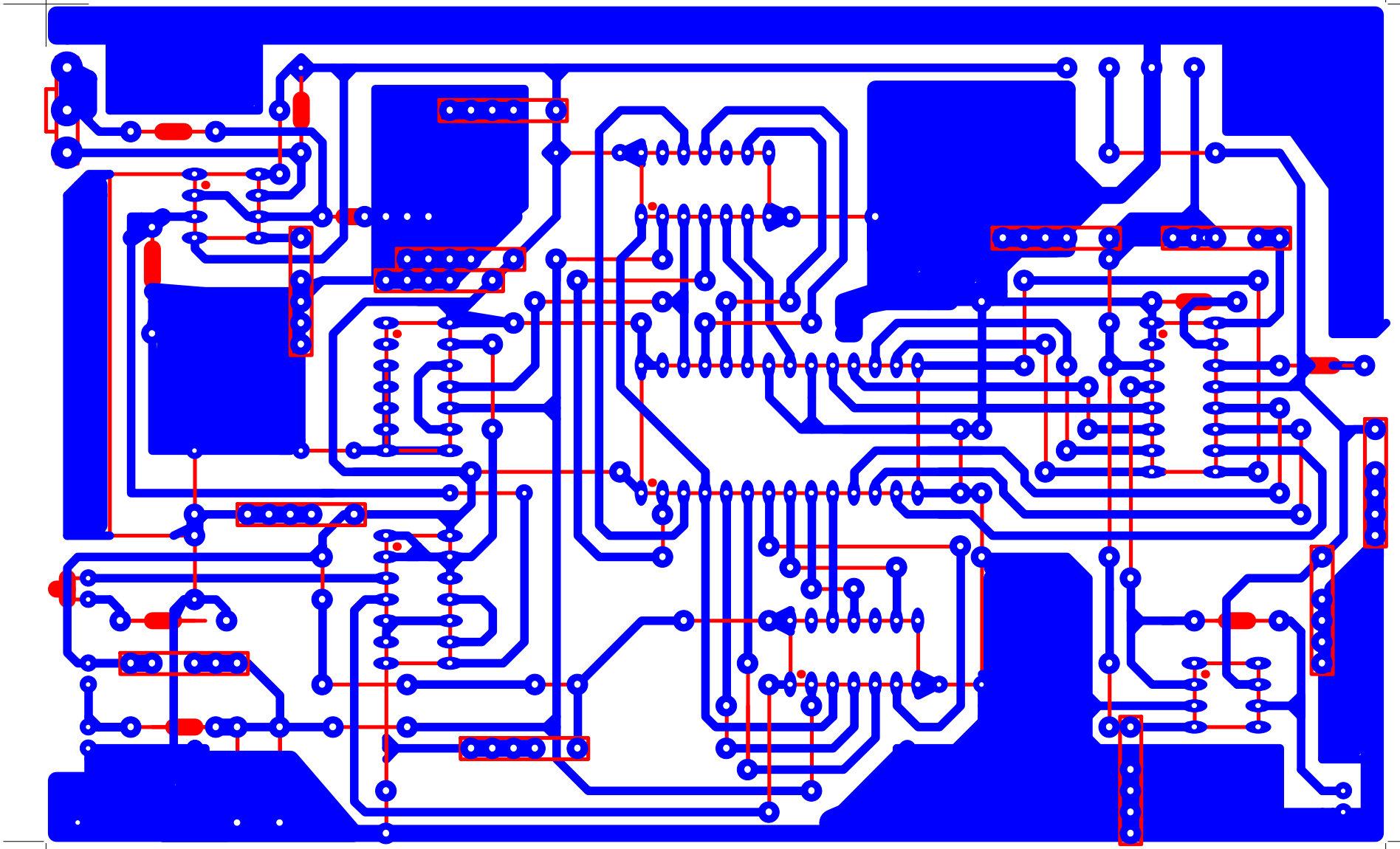

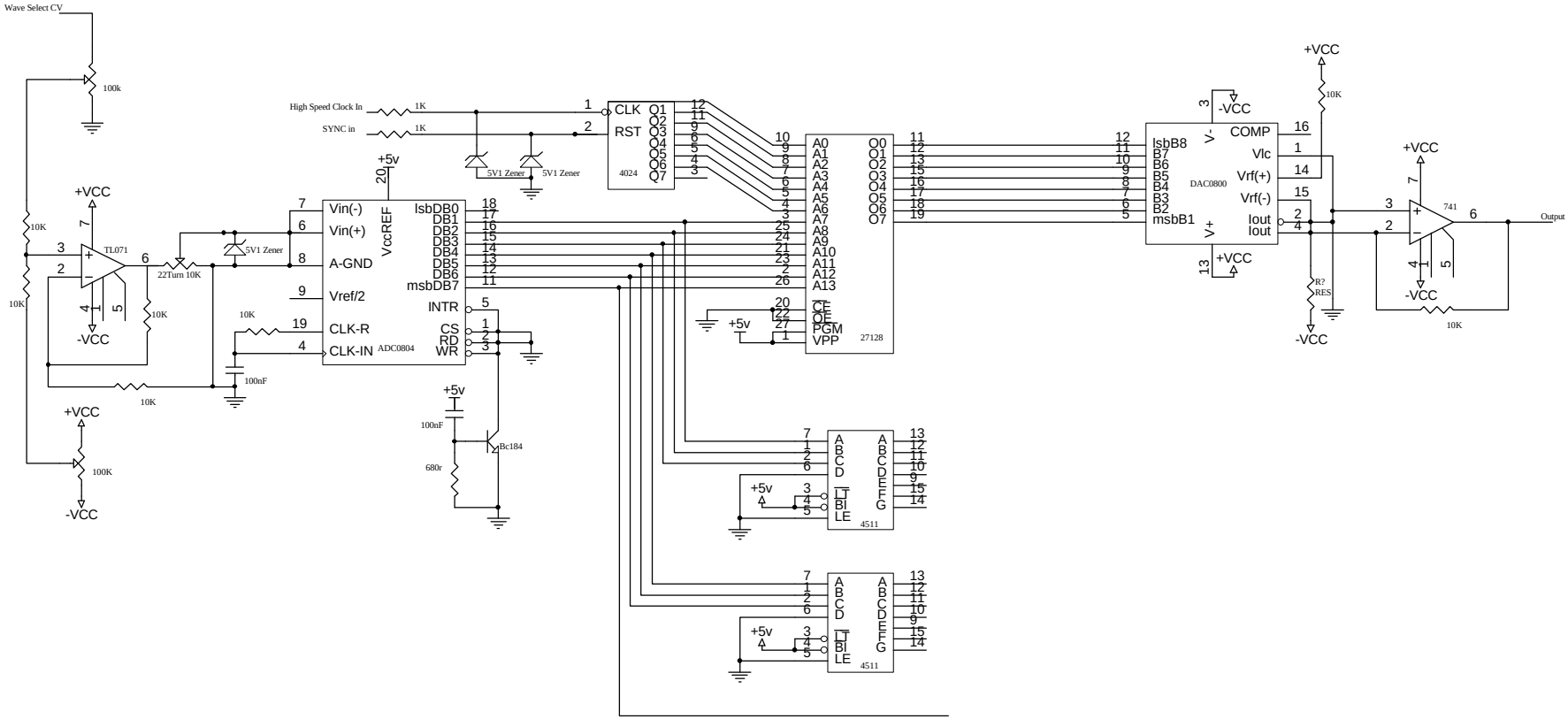

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	Wave Table Generator			
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	Scale		Sheet 1 of 1	