

Modulus

The Newsletter for Synth DIY Enthusiasts

This Quarterly Newsletter is intended for those of use who strive for bigger and better things in life, Those who want a hernia when it comes to moving a synth in your home studio. Not some digital namby-pamby five thousand note polyphonic multitimbral sixty-four bit oversampling wavetable synth with everything including a reverb that sounds like the kitchen sink.

It is also intended that people who receive this newsletter will help with its existence and upkeep, with a steady flow of suggestions for modules, diagrams and even help with things that go 'buzz' in the night.

I hope that everyone who reads this will be able to contribute in some way, be it with designing circuits or simply saying 'Yeah, great it worked, but...' In short I'm trying to help people like myself who wish to build these 3 ton monsters , or even if you just want to be the next RA Moog, to build their dream machine and maybe help others to do the same.

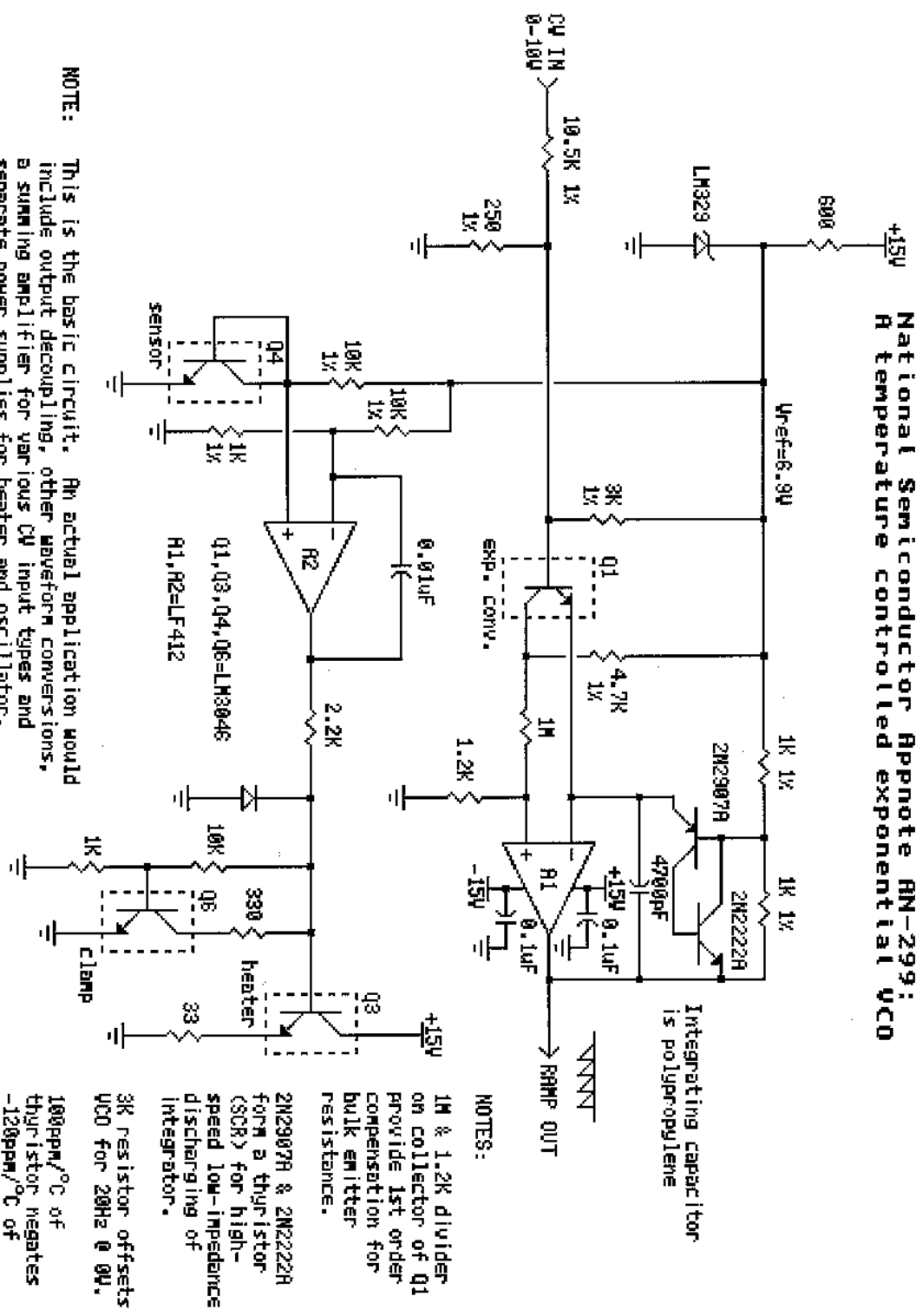
Please, please send any circuits/articles you have to me, and I will endeavour to use them. If you have any funny stories or any self written articles about "Me and My Synth" I will try and fit them all in. I wish this to be a kind of forum for people to exchange ideas and circuits and even their experiences in building these monsters.

At this stage I'm gonna stick my neck out with a VCO design that I got working, Its an old one from Practical Electronics, The parts are still available and it even seems to work fairly well, My intention is to try and make it more stable using temperate stabilization, from the National Semiconductor application note AN-299.

I wish it to be known that I've never got the circuit in AN-299 to work, and if anyone reads this has, please post me HOW you did it, and ill stick it on here.

Paul Maddox (editor)

National Semiconductor Appnote RN-299: A temperature controlled exponential VCO



Well, There you have it, AN-299, Well part of it. The rest of AN-299 doesn't seem to have much bearing on anything else that may even be considered vaguely useful.

The next diagram is that of the PE Vco for the Minisonic battery operated synth. This was kindly sent to me by Peter Swarbrick of London. I've got this one working on Vero board. It sounds ok and does indeed respond exponentially, It will run from 200mV per oct to 1.2V per oct Ive got mine set at 600mV. Using a variable 10k pot to get 1v/oct. This gives me the ability to include an octave select function where VR2 is (ie a 5 way switch with 5 pots on).

The plan, although not tested is to replace TR1 (BC184) with one of the transistors from a CA3046 (probably using the one pins 12,13 and 14. thus ensuring the substrate is the most -ve part) and then using the sensor/heater side of AN-299 to stabilise the substrate temperature to something above ambient and thus make the vco much more stable. Ive not tried this yet.

I'm also trying (when I get my scope working) to get a sync out from the output of IC3 and a sync in to Base of TR2, again, its only a thought at the moment.

A warning though, The CV Input is -ve Ie to increase the frequency by 1 octave you must from 0v to -0.6v (assuming 600mV/Oct).

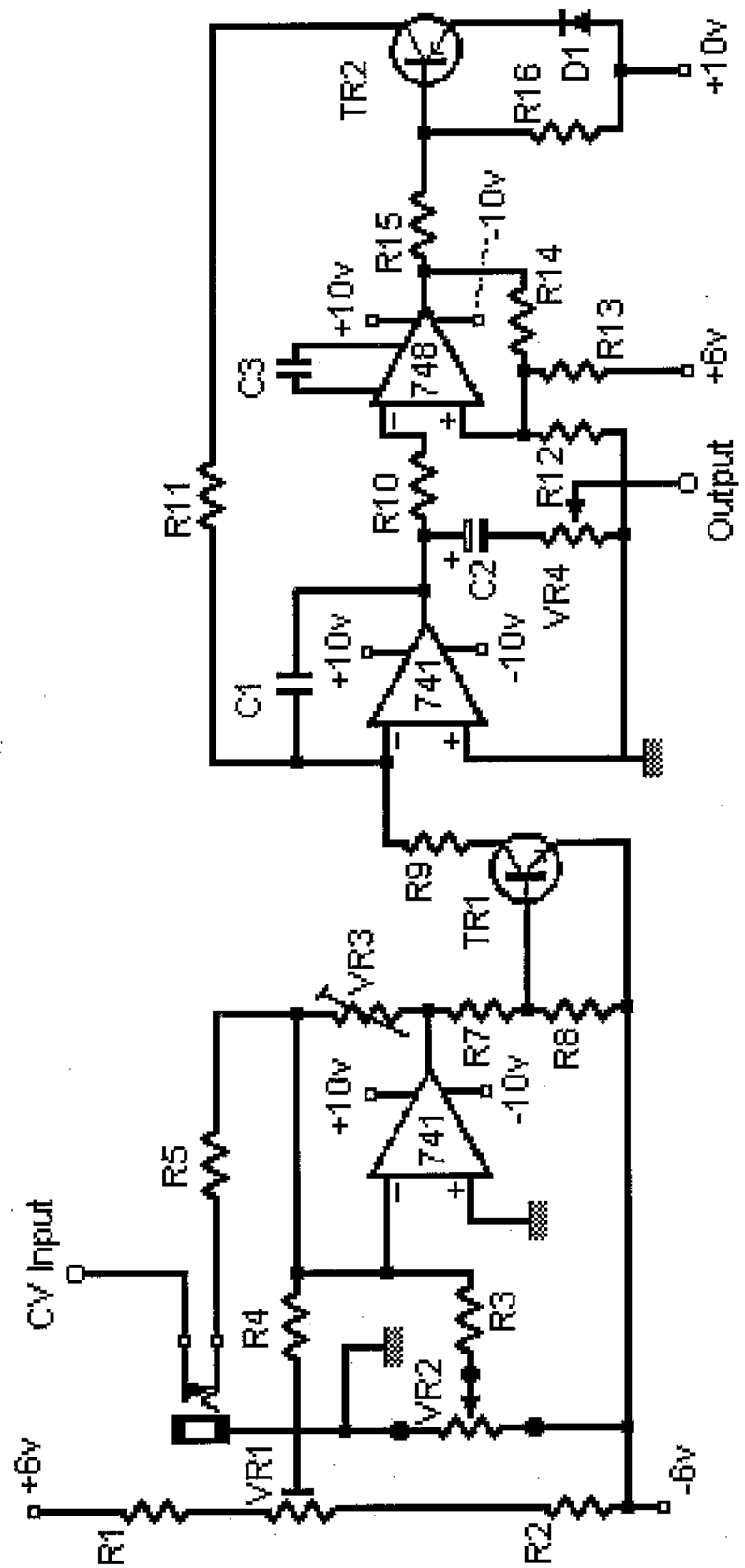
This can easily be corrected by using an opamp to invert the incoming signal and also to scale the incoming signal to 1V/Oct.

VR2 is the octave select, I suggest using a 6 way switch with a resistor divider chain to give a six range select, Using a trimmer on the -ve end to set the width of the octave select (Ive done this and it does work).

VR4 is the Output level, you could just replace this with a 10k resistor and take the output from the junction of C2 and this resistor.

I also am running my VCO at 10v, using a 317 and 337 regulator taking the +/- 18V down to 10V, It says in the article that it should work at up to +/- 12V, makeing life easier.

I would also put a couple of caps across the supply rail (on the 10v side) and possibly a couple on the 6v rails aswell, just to keep things nice and smooth.



Component List

R1 6k8
R2 6k8
R3 47k
R4 47k
R5 47k
R7 22k
R8 1k2
R9 1k
R10 2k7
R11 1k
R12 750R
R13 22k
R14 82k
R15 10k
R16 10k
R20 680R (2w)
R21 180R (2w)

TR1 BC184
TR2 BC213

IC1 741
IC2 741
IC3 748

D1 1N4148
Zd BZX62V (2of 6.2v)

C1 0.1uF
C2 22uF
C3 3.3pF

All resistors are 1% MF (except R20 and R21)

Well, That about concludes this first issue except to say if you would like to contribute any diagram or articles then please either e-mail me or snail mail me at the addresses below. I hope this is of use, and if anyone wishes to distribute this then feel free, But PLEASE leave the pages un-altered.