ICL8038 and batteries ... what can I do?! :)

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Author	Message

KK303

Posted: Tue May 01, 2012 3:05 am Post subject: ICL8038 and batteries ... what can I do?! :)

Joined: Feb 13, 2012
Posts: 11
Location: UK

A month or so back I bought a bulk of 8038's, and I can't remember why now, I found a schematic or two but have never been able to find the same one again so i am stuck with these but feel, for the price I paid for them, I should be putting them to some use!

My experience does not go much further than 555 and 40106 oscillators, I've had fun with these and intermodulating them to various degrees but am not able to produce the sort of sounds I am wanting (square waves don't do it for me!)

I am not bothered about anything particular stable or able to track pitch to voltage accurately, I just want to be able to make an oscillator which can be modulated by another oscillator using different wave forms. Are there any simple diagrams for getting sound out of the 8038? The datasheet doesn't really mean anything to me, I have found a schematic for a function generator but it relies on +/-15v and Im not ready to start using line level (batteries only!!) I know the Thomas Henry cookbook probably has what i need but I have not for the life of me been able to find where to buy this, and all links seem to be dead Can anyone show me how to get even just a primitive square wave or triangle wave out this thing without it boggling my mind!!! Thanks

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drapdap

Posted: Tue May 01, 2012 4:21 am Post subject: Re: ICL8038 and batteries ... what can I do?! :)

Joined: Oct 11, 2004
Posts: 198
Location: bp
Audio files: 1

Hi KK!

I put my 8038 in one like this, i don't have TH's cookbook, but this LFO is one the best imho... it comes from Thomas's latest book...

http://www.modularsynthesis.com/magicsmoke/as21c-lfo/th-301.htm

you buy a board here:
http://www.magsmoke.com/TH-301-Cucamonga-VCLFO.asp

Tim (he's here somewhere) Servo can be slow, but he's reliable.

the book:
http://www.lulu.com/shop/thomas-henry/an-analog-synthesizer-for-the-21st-century/paperback/product-1449029.html

Also there's the function generator you mention:
http://www.birthofasynth.com/Thomas_Henry/Pages/8038.html

i'd give those chips a proper home rather than mess with them, they are too good to fry.

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RingMad

Joined: Jan 15, 2011
Posts: 308
Location: Montreal, Canada
Audio files: 3

Posted: Tue May 01, 2012 5:08 am Post subject:

Ah, whilst I was drawing up this schematic, someone posted a bunch of links. Here it is anyway. Note that the square wave output is much louder than the sine & triangle. probably by 3X.
Datasheet says for single supply, it needs minimum 10V. I used about 12V with a slightly modified version of this schematic for my Triowaverator box [http://www3.bell.net/james.schid/schidlowsky_esb.html#triowaverator].

EDIT: updated schematic to include pullup resistor (R6) required for square wave output. The value controls the amplitude.

8038 sine-square-triangle generator-v2.png	
Description:	8038 Single supply sine/square/triangle wave generator, updated 2013.03.14
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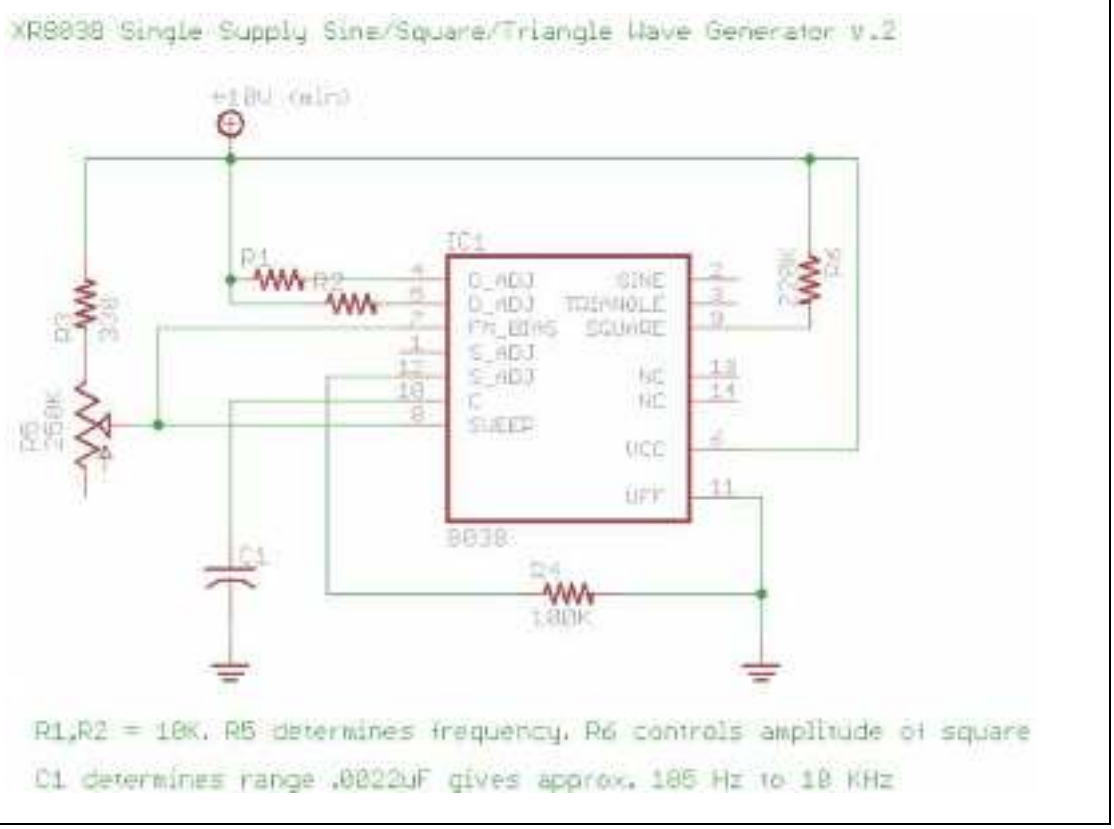

Last edited by RingMad on Thu Mar 14, 2013 4:13 pm; edited 1 time in total

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KK303

Joined: Feb 13, 2012
Posts: 11
Location: UK

Posted: Tue May 01, 2012 5:15 am Post subject:

Sweet man, thats more the sort of schematic I can follow

I really want to be able to use a battey, can something like 2 9v batteries and a voltage divider or voltage regulator be used? Failing that, I guess I should get round to at least using normal wall warts, I can't kill myself with one of those (right? right?!?!) Your Triowaverator box looks very cool aswell maybe more the sort of thing Im after...will investigate this further after work....

Thanks for those links drapdap, actually that LFO is looking similar to the one that made me buy the chips in the first place, although that PCB does a look a bit scary to me just now...certainly something to work up to. I had considered that Thomas Henry book, but theres quite a few bad reviews, most notably saying theres nothing to really explain the hows and whys....which I alway need spelled out in black and white....I have found that a revised edition of chip cookbook is in the works however? Maybe I'll wait for this!

Thanks! Anyone else made primitive/simple stuff with the 8038?

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drapdap

Joined: Oct 11, 2004
Posts: 198
Location: bp
Audio files: 1

Posted: Tue May 01, 2012 6:32 am Post subject:

i see, well don't be afraid, be smart. get a walwart that puts out 18v AC and use that... i use this power supply:
http://www.cgs.synth.net/modules/cgs66_psu.html
i'm just saying because there's not so much schematics for a 9v synth around, at least not as much as for +-15, so you open up a lot of possibilites if you make a proper psu for yourself, might be scary first, but...

> **KK303 wrote:**
>
> I had considered that Thomas Henry book, but theres quite a few bad reviews,

which is some sort of envy. if you can read schematics, you will enjoy it.
that's true that is not like Thomas's other books but it's schematics for a FULL top notch synth, with modern parts that are available, for 15 dollars, hm, what else do you need to build one?
i never regretted buying it, built a lot of things.

> **KK303 wrote:**
>
> I have found that a revised edition of chip cookbook is in the works however? Maybe I'll wait for this!

You can, but after waiting to get hold of that book the last 6 years, i gave up the ghost.

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RingMad

Joined: Jan 15, 2011
Posts: 308
Location: Montreal, Canada

Posted: Tue May 01, 2012 8:09 am Post subject:

Well if you wanted to have this portable, i.e. play in the woods with no wall to plug the wallwart into, then maybe two 9V batteries in series would work... datasheet says that it can handle up to 30V max for single supply, so 18V should be ok.

But then again, you could just as easily rig up the two 9V batteries as a bipolar supply and then you could use the circuits in the datasheet.

Audio files: 3

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bubzy

Joined: Oct 27, 2010
Posts: 590
Location: United Kingdom
Audio files: 63

Posted: Tue May 01, 2012 4:46 pm Post subject:

while it is true that the TH book doesnt explain hows and whys, its hardly important.
its kinda
YOU WANT VCA? YOU GOT IT!
YOU WANT VCO? YOU GOT IT!
YOU WANT LFO? YOU GOT IT!

etc.....

its an awesome book and definately worth the (relatively) small price tag.

_____
Richard

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elmegil

Joined: Mar 20, 2012
Posts: 1903
Location: Chicago
Audio files: 16

Posted: Tue May 01, 2012 6:36 pm Post subject:

And a Third for TH's book. They say "not for beginners"...honestly, I think it depends on what kind of beginner you are. I know how to solder, I have some electronics background (but haven't used it in 20 years), and I've been able to jump in with both feet. If you're not afraid to try and mess it up and learn and try again, I don't see any reason not to get it. It's full of good stuff, even without any explanation of why...and some of the stuff you can find the why's and wherefore's on the birth of a synth site, like the XR 2206 VCO.

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KK303

Joined: Feb 13, 2012
Posts: 11
Location: UK

Posted: Wed May 02, 2012 3:33 am Post subject:

I'll pick up the book I think...theres also the worry that a small investment could lead to major dent on my funds building all the stuff of course Not that I have any problem with that, but my finance directory (aka the wife).....

Well I built the circuit above so it was great to finally do something with the chips. I used 2 used batteries in series, I got about 14v from it and that seemed to do the job. I didnt have the 10k resistors to hand so used 2 10k pots, using the in combination wih the other pot gave some further control over the pitch and wave form...got some new sounds (well, non -555/40106 type sounds) so I'm excited at what I can do with this chip now...

One strange thing however, I got sound out of pins 2 and 3, but you said the SQR output (9) would be 3x louder...I got next to a dead signal from there (sounded like an ungrounded output) is that normal?

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elmegil

Joined: Mar 20, 2012

Posted: Wed May 02, 2012 4:24 am Post subject:

I have no help for the large dent that comes from the small investment, I'm definitely experiencing that myself

Posts: 1903
Location: Chicago
Audio files: 16

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RingMad

Posted: Wed May 02, 2012 4:56 am Post subject:

> **KK303 wrote:**
>
> Well I built the circuit above [...]
> One strange thing however, I got sound out of pins 2 and 3, but you said the SQR output (9) would be 3x louder...I got next to a dead signal from there (sounded like an ungrounded output) is that normal?

Joined: Jan 15, 2011
Posts: 308
Location: Montreal, Canada
Audio files: 3

Hmmm, sorry about that. Actually, I never used the square output, and I had isolated this circuit from a more complicated schematic my friend gave me. I just looked at it again and it appears that he has a 220K pullup resistor (i.e. 220K between pin 9 and Vcc). Changing the value of that supposedly changes the amplitude of its output. Please try that and let me know, so I can fix the schematic and/or warn people who might find it here and try to use it.

James.

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2kohm

Posted: Wed Mar 06, 2013 11:41 am Post subject: 8038
Subject description: Sqr Out at Pin 9

Hi

Yes! 100k pullup to + V Works Fine
I used the Single (12vdc) for Testing the ICs (no bipolar right now)

Thx for the schem!

Joined: Feb 19, 2013
Posts: 51
Location: germany
Audio files: 4

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RingMad

Posted: Thu Mar 14, 2013 4:20 pm Post subject:

Ooops, I forgot about this thread... as promised, since you confirmed the pullup resistor was needed for the square wave, I've updated the schematic above.

I wish I could figure out how to get this chip to produce a nice triangle or sine at very low frequencies. The datasheet says it's possible, but the shape degrades too much.

James.

Joined: Jan 15, 2011
Posts: 308
Location: Montreal, Canada
Audio files: 3

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JovianPyx

Posted: Fri Mar 15, 2013 3:05 pm Post subject:

> **RingMad wrote:**
>
> I wish I could figure out how to get this chip to produce a nice triangle or sine at very low frequencies. The datasheet says it's possible, but the shape degrades too much.

Joined: Nov 20, 2007
Posts: 1434
Location: West Red Spot, Jupiter
Audio files: 173

There have to be numerous schematics on the web that use this IC. I've seen it mentioned in many Synth-DIY posts.

If you want to do it yourself, I would start with this: http://www.intersil.com/content/dam/Intersil/documents/fn28/fn2864.pdf and use the test circuit as a starting point. There are also several other schematics in that PDF that may be of some help, certainly the one that shows how to obtain a low distortion sine output (and at the same time the best triangle available from the IC). Schematics you will find on the web may also reveal how to control pitch with an expo CV.

This and the XR2207 seem to be ICs that will work, but aren't necessarily the best choices for musical applications. I've seen schematics (like Thomas Henry) that force them into "compliance"; if waveform purity and pitch accuracy are the goal, there are probably better ways to go. Most of the time I've seen them suggested more for LFO than for VCO.

I do understand the desire for a single chip multi-waveform VCO, but historically, this has always had problems. Either it's difficult to control pitch in a musical way or the waveforms have impurities that are not acceptable (to some). Of course - I don't really know what RingMad intends when he writes "shape degrades too much", but I think I generally understand.

The datasheet says that the frequency range begins at 0.001 Hz. The curves suggest that it works better as frequency decreases. This says to me that it should make nice a LFO at least. I probably can't visually notice 1% inaccuracy in a sinewave on an oscope. I would also use a capacitor similar in size to those suggested in the schematics on the datasheet.

Go here: http://www.birthofasynth.com/Thomas_Henry/Pages/8038.html

TH is gonna be about as good as it gets. His schematic shows how to set the IC up to get the best out of it.

It's a linear pitch CV design, so to use expo you need a circuit that converts an expo control voltage to a linear one. Or replace the FM input (pin 8) with your own circuit. I believe the Rene Schmitz 4069 saw VCO circuit might have an adaptable expo converter.

HTH

FPGA, dsPIC and Fatman Synth Stuff

Time flies like a banana.
Fruit flies when you're having fun.
BTW, Do these genes make my ass look fat?

---

corruptio optimi pessima

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