NONLINEARCIRCUITS

ADSR312 - WAMOD #11

This module is based on the Aries 312 ADSR, which was originally sold as a kit in 1975 ($49.50). It is a nice early design that does not use CMOS (logic chips) or a micro-processor; instead it is discrete – meaning all transistors, diodes and passive components (capacitors & resistors). This was common in the 60s but became rarer and rarer as op-amps became cheaper.

ADSR stands for attack, decay, sustain and release, check wikipedia for a full description. An extra feature of this module is the separate trigger and gate inputs. The envelope will remain in the ADS stages whilst the gate is high and enter release when the gate stops. The trigger input allows you to retrigger the envelope whilst in the ADS stages. This allows you to set up complex envelopes which can be very interesting and allow your sounds to move away from the standard musical paradigms.

For most WAMOD systems, the LFO square waves will be ideal for running the ADSR. In June, we will build sequencers which have a variety of gate outputs that will be perfect for driving this module.

Building

There are five 1206 sized 100k surface mount (smd) resistors to install, do these 1st. Easiest way is to put a little bit of solder on one pad, position the smd resistor with your finger or tweezers on the PCB. Reheat the solder and slide the resistor into position. Let it cool down and then apply a bit of solder to the other pad.

There are **two different types of transistors** used; BC547 (marked 'n') and BC557 (marked 'p'). It is important not to mix these up. The markings on the PCB for the BC557 (p) all have their flat edge on the downwards side and the markings for the BC47 (n) face upwards (and one to the side).

It is also essential to install diodes correctly, be sure the line marked on the diode body lines up with the line on the PCB

The LED goes on the back of the PCB, so it pokes thru the panel. The short lead goes thru the square hole.

Once all the components are installed, attach the pots to the PCB and install the LED, do not solder them yet. Attach the jacks to the panel; make sure the ground tabs line up with the appropriate holes on the PCB. Mount the PCB onto the panel, ensure everything is straight and fitted correctly. Check the pot shafts do not rub against the panel. Once it is all sorted, solder on the pots, LED and jacks. Use some trimmed resistor leads to connect the ground tabs of the jacks to the PCB. *Voila!*

component	quantity	notes
100k pot	1	
1MA pot	3	
jacks	4	Kobiconn style
BC547	7	marked 'n' on PCB
BC557	5	marked 'p' on PCB
1N4148 diodes	13	
LED	1	short lead square hole
10R	2	
470R	1	
1k	4	
1k2	1	
2k2	1	
4k7	1	
10k	3	
22k	3	
33k	3	
39k	2	
47k	2	
68k	1	
100k	5	1206 smd
180k	1	
470k	2	
RL	1	choose to suit your LED eg: 330R for regular, 4k7 for superbright.
10 pin connector	1	Eurorack power connector
104 (small)	3	These are orange and quite little, place in small spaces marked '104'
104 (big)	1	100nF
102	1	1nF
2u2 electro	1	long lead square hole
10uF electro	2	long lead square hole
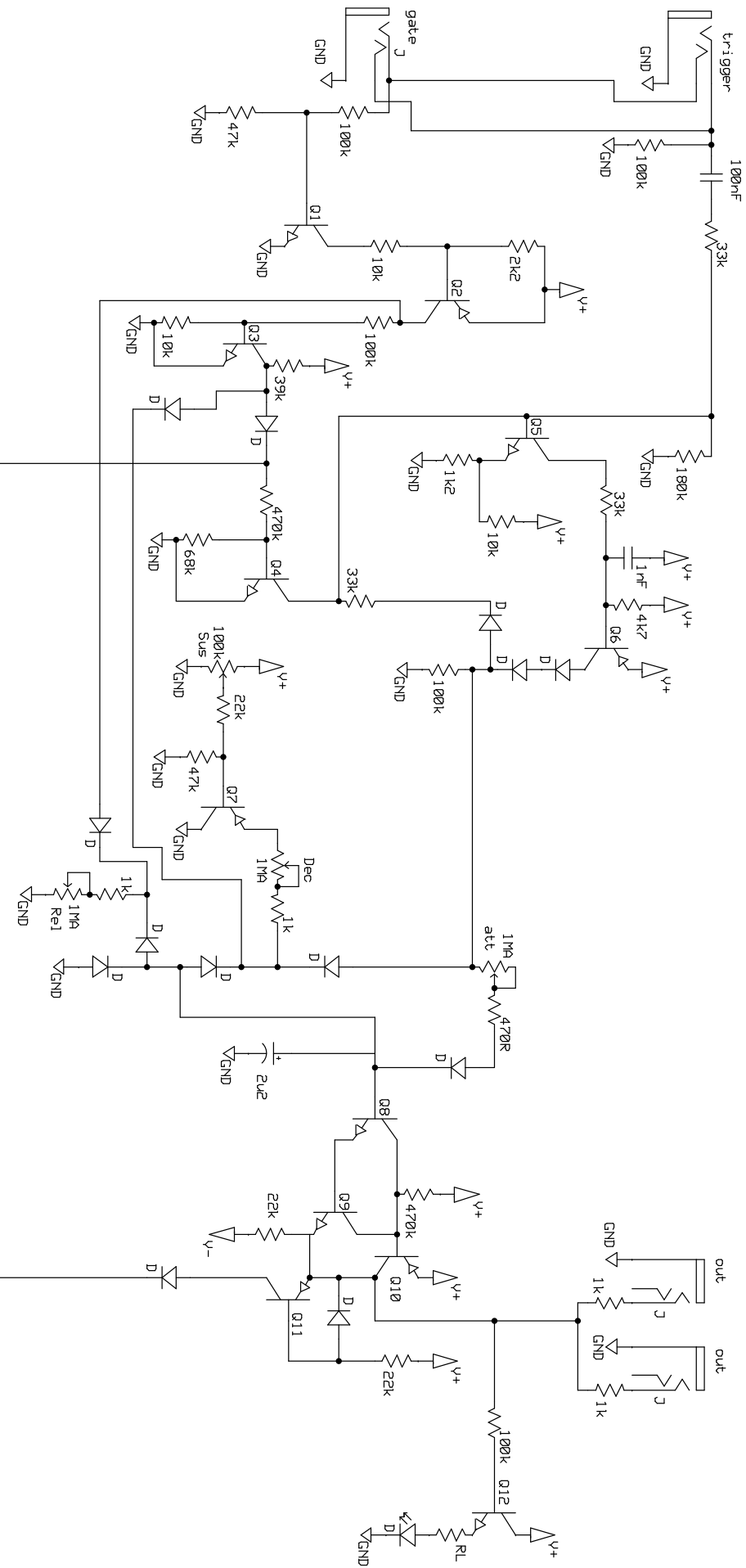
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