

Serge Triple Comparator

for music synthesizers.

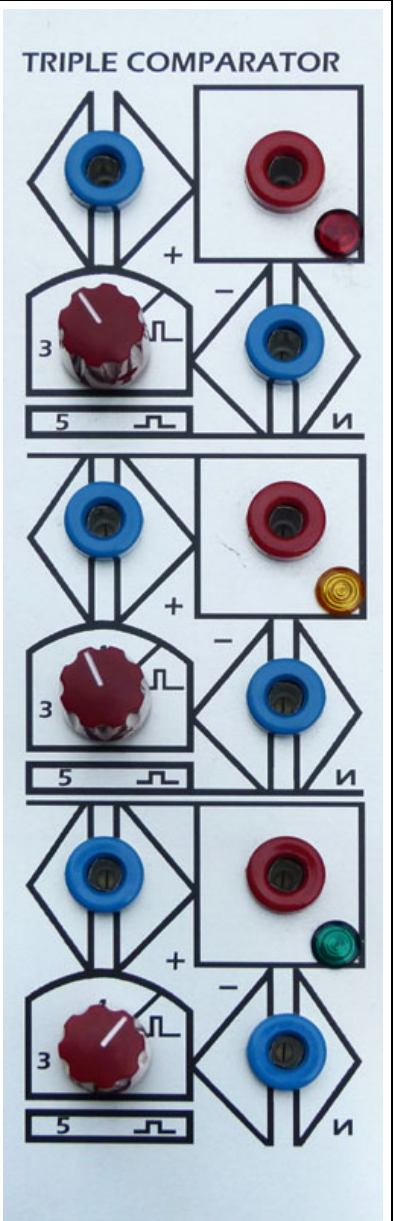


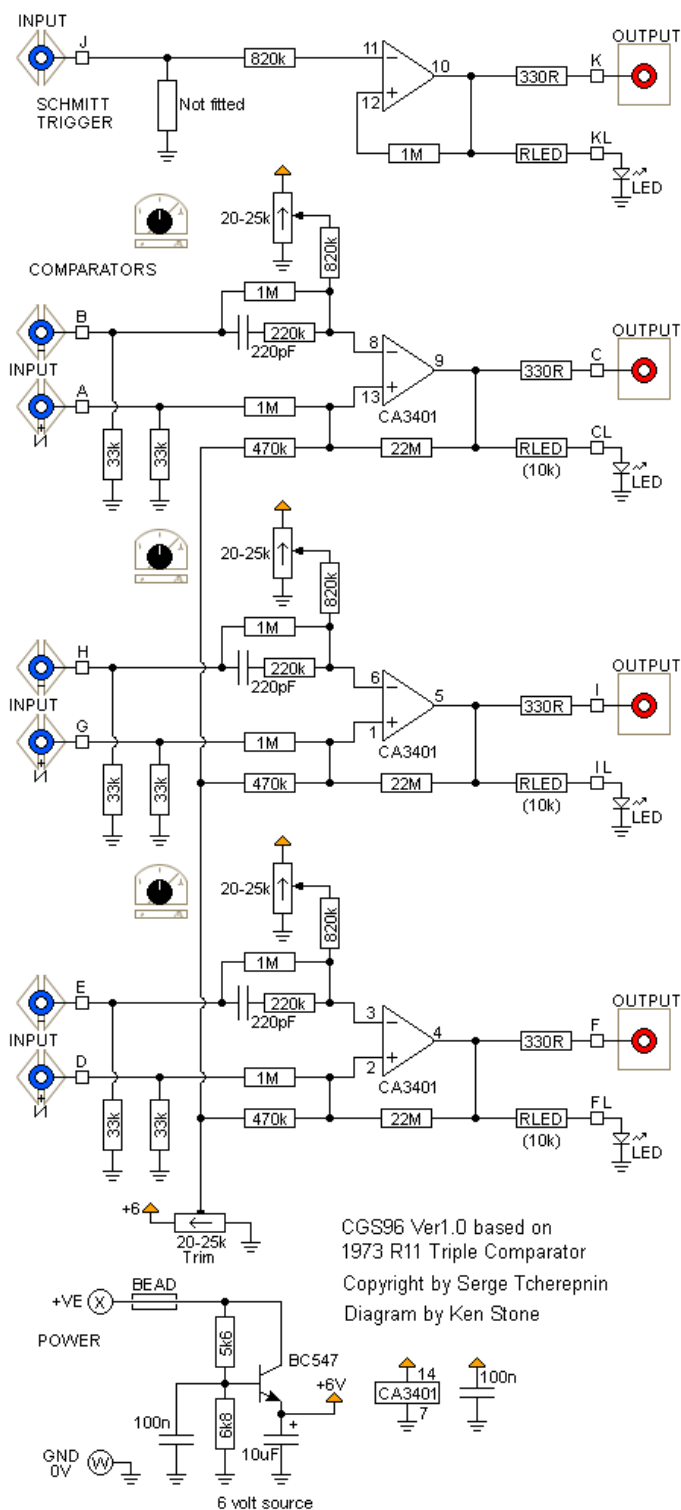
The TRIPLE COMPARATOR consists of three independent functions which are useful in the production of square waves and variable pulse waves. The Comparator reference level can be a time-varying control voltage, a complex audio signal, or a fixed preset voltage. Additionally, the comparators are useful for level detection and for logic decisions based on amplitude. The module also contains a single, non-adjustable, Schmitt trigger.

When running from +12 volts, the output of the Schmitt trigger will rise to about 5 volts when the input falls below approximately 0.6 volts and will fall to approximately 0 volts when the input rises over approximately 4.3 volts. This section of the module is frequently left off panels.

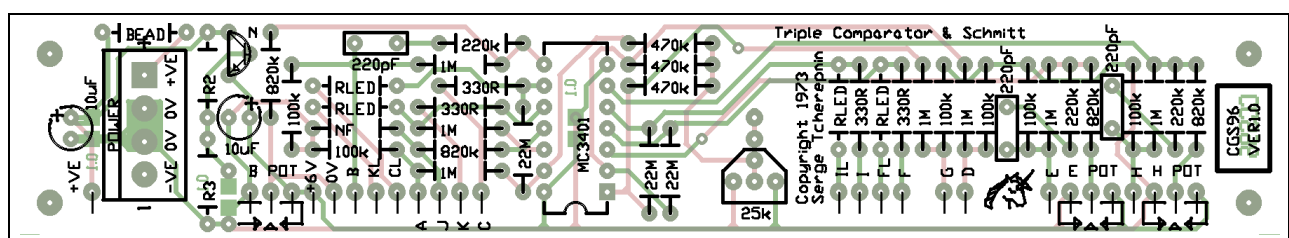
It will work on either +12 volts, or +15 volts. No negative power rail is used.

A little on how it works:



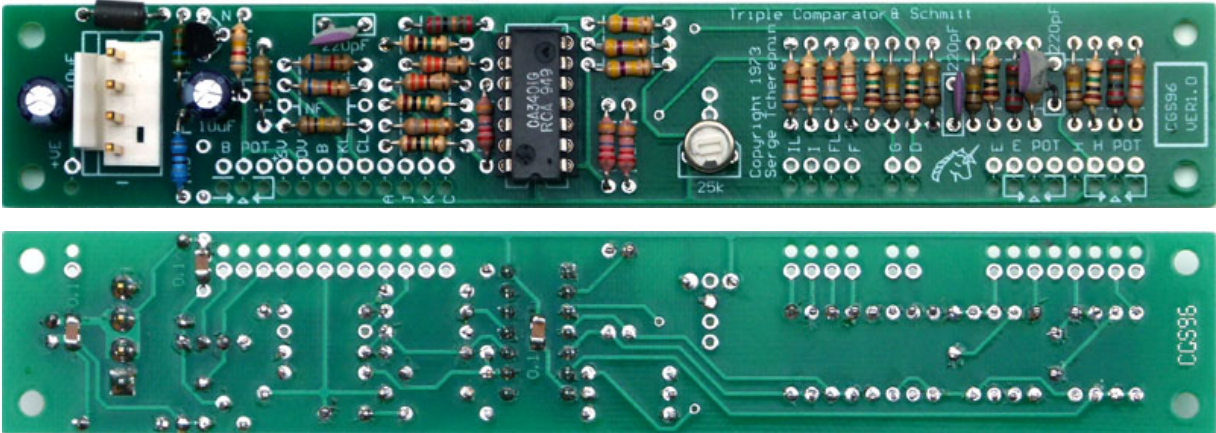


The schematic for the Triple Comparator. The upper part of the diagram shows the Schmitt Trigger, while below that are three identical comparators. At the very bottom is the local "6 volt" regulator. (This will supply a higher voltage when the module is run from 15V, unless the values of R2 and R3 are swapped.)



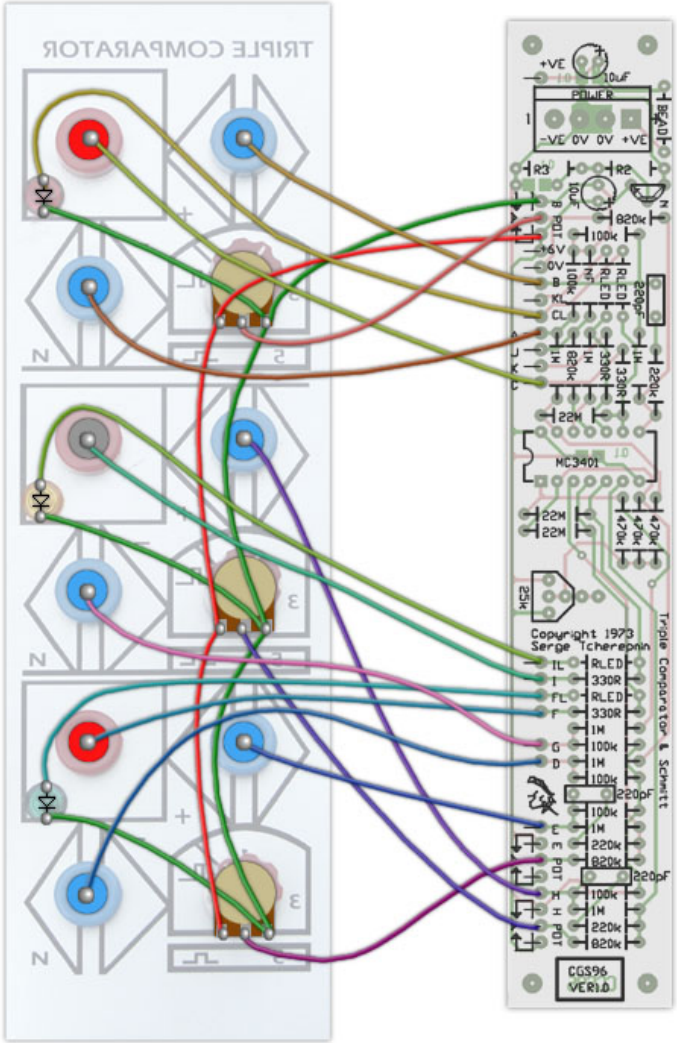
The component overlay for the VER1.0 PCB. Note: do not use the pad marked 0V. [Click here for an enlarged, printable version. Print at 300dpi.](#)

Note: On the VER1.0 PCB, do not use the 0V pad. Instead use either the CCW end pad of the pots or the spare pad at the edge of the PCB next to R3.



The lower photograph here shows the positions of the three 100n (0.1uF) SMT capacitors.

	Pad identification
A	Comp 1 Input 2 (+)
B	Comp 1 Input 1 (-)
C	Comp 1 Output
CL	Comp 1 LED anode
D	Comp 3 Input 2 (+)
E	Comp 3 Input 1 (-)
F	Comp 3 Output
FL	Comp 3 LED anode
G	Comp 2 Input 2 (+)
H	Comp 2 Input 1 (+)
I	Comp 2 Output
IL	Comp 2 LED anode
B POT	Comp 1 pot CCW (0V), Wiper, CW (+6V)
E POT	Comp 2 pot CCW (0V), Wiper, CW (+6V)
H POT	Comp 3 pot CCW (0V), Wiper, CW (+6V)
0V	NOT USED on VER1.0 PCB
+6V	Local +6V (Not used)
	Part Identification
R2	5k6 for +12 V power supply, 6k8 for +15 volt power supply
R3	6k8 for +12 V power supply, 5k6 for +15 volt power supply



Construction:

PARTS LIST	
Resistors (1% metal film)	
330R	4
5k6	1

Before you start assembly, check the board for etching faults. Look for any shorts between tracks, or open circuits due to over etching. Take this opportunity to sand the edges of the board if needed, removing any splinters or rough edges.

When you are happy with the printed circuit board, construction can proceed as normal, starting with low profile components such as resistors and diodes first, followed by successively taller components. It is better to use metal film resistors throughout this PCB in order to keep resistor generated noise to a minimum.

Take particular care with the orientation of the polarized components, such as ICs, electrolytics, diodes, and transistors.

When inserting the ICs in their sockets, if used, take care not to accidentally bend any of the pins under the chip. Also, make sure the notch on the chip is aligned with the notch marked on the PCB overlay.

Set up:

Connect a bipolar triangle wave (i.e. AC coupled, or having equal swing above and below 0V) into the B input. Set the top (B) pot fully counterclockwise. Adjust the trimmer for a 50% dutycycle output. Use a scope, if you have one, or set the speed of the triangle wave low enough that you can use the LED to monitor the output.

Notes:

- 330R refers to 330 ohms. 100n = 0.1 uF.
- The module will work on +12 volts or +15 volts.
- PCB info: 6" x 1" with 3mm mounting holes 0.15" in from the edges.
- Please [e-mail me](#) if you find any errors.

Parts list

This is a guide only. Parts needed will vary with individual constructor's needs.

If anyone is interested in buying these boards, please check the [PCBs for Sale](#) page to see if I have any in stock.

Can't find the parts? See the [parts FAQ](#) to see if I've already answered the question. Also see the [CGS Synth discussion group](#).

[Modular Synth Home](#)

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6k8	1
25k trimmer	1
100k	6
220k	3
470k	3
820k	4
1M	7
22M	3
RLED resistor for LED	4
25k, 50k or 100k linear POT	3
Capacitors	
220pF	3
0.1 uF 1206 SMT	3
10uF electrolytic	2
Semi's	
BC547	1
MC3401 or LM3900	1
Misc.	
Ferrite Bead	1
MTA-156 connector 4 Pin	1
MTA-156 header 4 Pin	1
CGS96 PCB	1