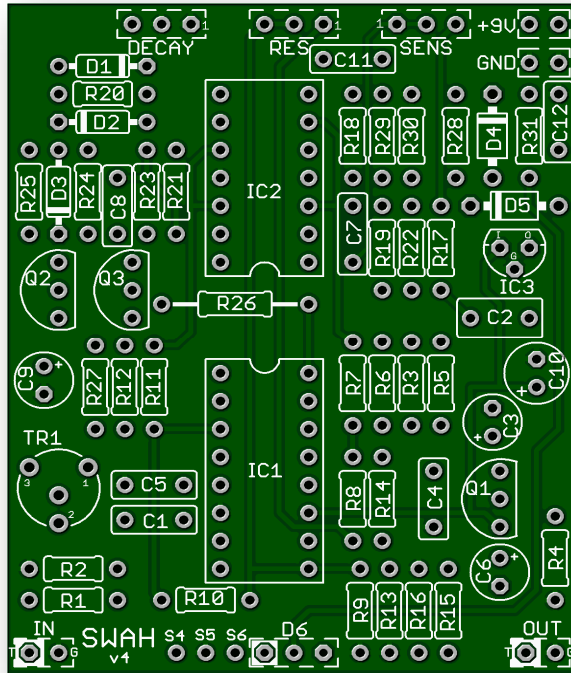


# SWAH V4

## New V4



This is an excellent Autowah that sounds more like a real Wah than any other AutoWah.

### Build Notes:

**Pedal Placement** is critical just as it is with a Standard Wah pedal and should be placed closest to your Guitar in the effects chain.

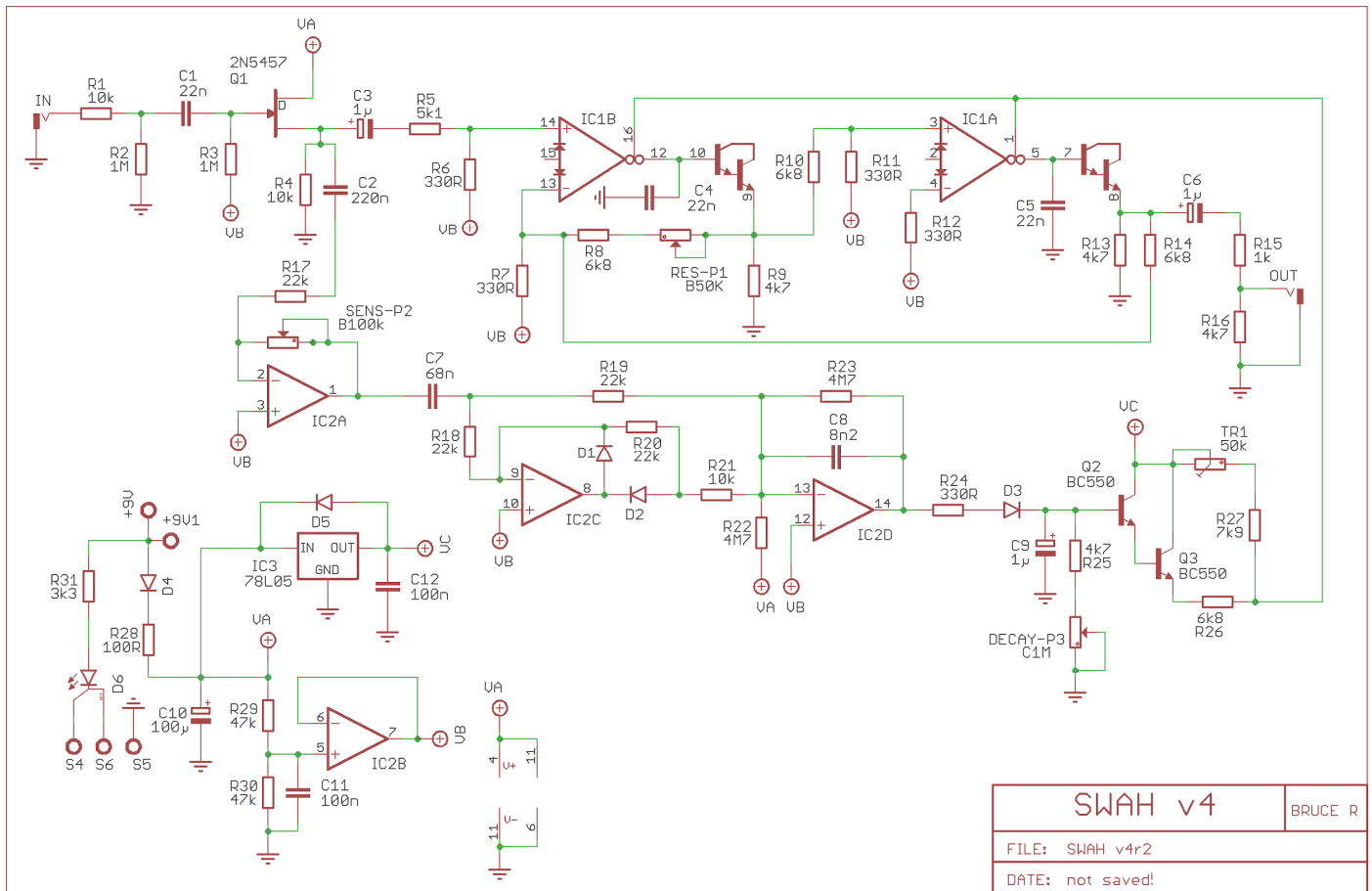
**DECAY:** Controls how fast the filter frequency falls back to resting point (that is set with the Bias control). This can be set fast (CW) so you get the wah effect on every note or slow for a more traditional auto wah sound.

**RESONANCE:** Controls the sharpness or Q-factor of the filter.

**SENSITIVITY:** Sets the filter trigger level, tune this carefully to fit your guitar/bass output and your playing touch. You can further change the sensitivity from your guitar volume knob while playing.

**TR1 - BIAS:** Controls the filter resonance frequency. Set and forget trimmer or add an on-board potentiometer if you like.

R1	10k	R13	4k7	R25	4k7	C5	22n	Q1	2N5457
R2	1M	R14	6k8	R26	6k8	C6	1μ	Q2	BC550
R3	1M	R15	1k	R27	7k9	C7	68n	Q3	BC550
R4	10k	R16	100k	R28	100R	C8	8n2		
R5	5k1	R17	22k	R29	47k	C9	1μ	D1-D2	1N4148
R6	330R	R18	22k	R30	47k	C10	100μ	D3	1N34
R7	330R	R19	22k	R31	3k3	C11	100n	D4-D5	1N4001
R8	6k8	R20	22k			C12	100n	D6	CA Bi-colour
R9	4k7	R21	10k	C1	22n			P1-Reso	B50k Lin
R10	6k8	R22	4M7	C2	220n	IC1	LM13700	P2-Sens	B100k Lin
R11	330R	R23	4M7	C3	1μ	IC2	TL074	P3-Decay	C1M Rev Log
R12	330R	R24	330R	C4	22n	IC3	78L05	TR1-Bias	50k

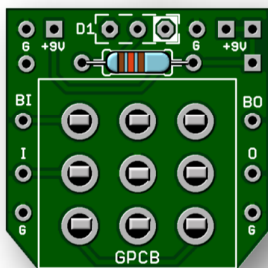


### STATUS LED - Using our 3PDT wiring boards.



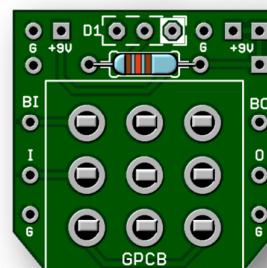
**Bi-Color Common Anode**  
**Green = On**  
**Red = Off**

Short Lead = On Status Color  
 Medium Lead = Off Status Color  
 Long Lead = Common Anode



**Standard On/Off Status**  
**Green = On**

Short Lead = On Status Color  
 Long Lead = Anode, Status Off



**Note: If wiring the LED to our 3PDT board no need to connect S4, S5 & S6 or populate D6 or R31 (CLR) on the main board since you are wiring your LED directly to our board.**

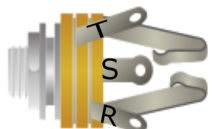
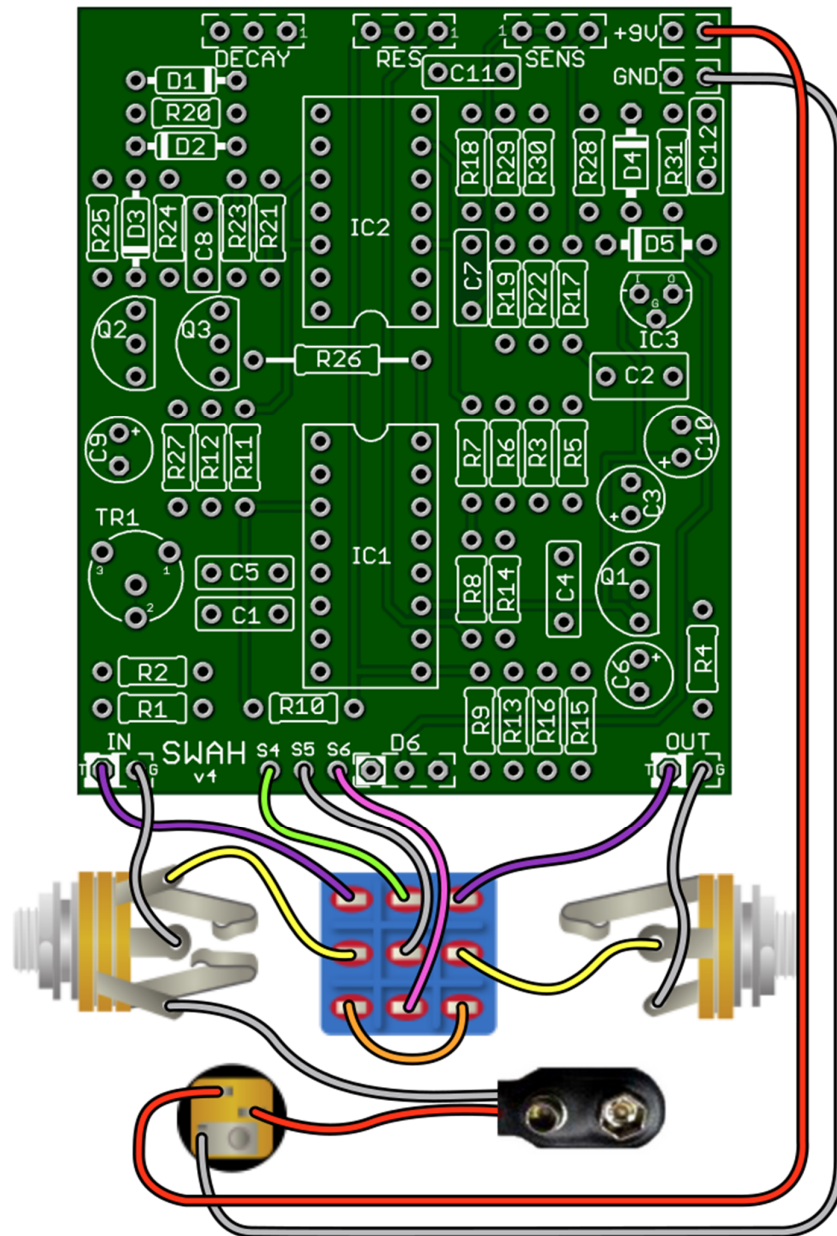
## WIRING

**This wiring diagram is for the new version 4 created 12/2019 only:**

This version is identical circuit-wise to our older versions except that we changed the **In/Out wiring scheme** to exactly match all of our other circuits so there is no need to cross In/Out wiring over the 3PDT footswitch. **Simply follow the diagram below.**

In addition we have added dual Power & Ground pads excellent for adding mod Boards or wiring Combos.

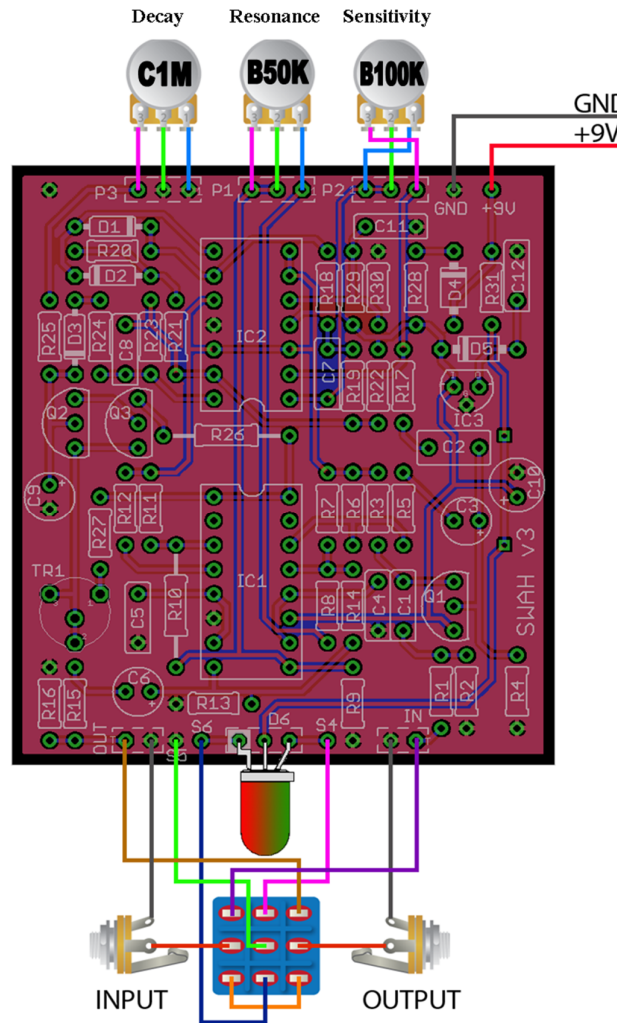
If you have a previous version board, no worries just use the diagram on the next page paying attention to the minor wiring crossover connection to the 3PDT switch.



Be sure your In/Out Jack wiring is correct. A Stereo Jack (for battery use only) has a RING lug which is used to connect to the battery ground. If you do not intend to use a battery there is no need for a Stereo Jack. If using Stereo then only use the Tip and Sleeve lugs. S4, S5 & S6 is only needed when the LED is wired to the Main Board.

**You must use the diagram below for older versions that are PRE V4:**

Note that the main difference is in the Input and Output wiring. Since the In and Out are on the opposite sides of the board.



**MOD Idea:**

**R17 mod** - increasing R17 will allow you to set the Sensitivity more towards the 12 o'clock position. I'd go with a 47kΩ resistor here. The only advantage is being able to turn the signal down a bit further (50% to 0% is better than 20% to 0%) at the expense of turning the signal up (20% to 100% is better than 50% to 100%).

**So why a value of 47kΩ in the short answer?**

It would appear that setting the Sensitivity pot at the 9 o'clock position gives good results. Since "9 o'clock" is about 20% rotation, the value of the Sensitivity pot will be about 20kΩ. The gain is therefore pot value divided by R17 which is 20kΩ / 20kΩ giving a gain of 1.

If the pot is set to 50% rotation, the pot value is now 50kΩ and if you change R17 to 50kΩ (47kΩ nearest standard value), the gain is 50kΩ / 50kΩ which is also a gain of 1. This also implies that it is possible to leave the value of R17 as it is (20kΩ) and change the pot to a 47kΩ pot and still achieve the same results.

**For troubleshooting purposes if needed:**

Proper **Q** voltages for comparison (all pots full CCW)

**Q1:** (7.27 - 3.71 - 3.23 - DSG) <- Drain Source Gate not CBE **Q2:** (5.05 - 3.75 - 2.90 - CBE) **Q3:** (5.05 - 2.90 - 2.86 - CBE)

The audio trace will go from Input to Output and should follow a fairly straight path from IN to R1, C1, thru Q1, thru C3, R5, to IC1B-14, then 16-12-10-9 thru R10, IC1B-13, thru R8, P1, then R10, to IC1A-3, out 1-5-7-8, thru C6, thru R15.

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