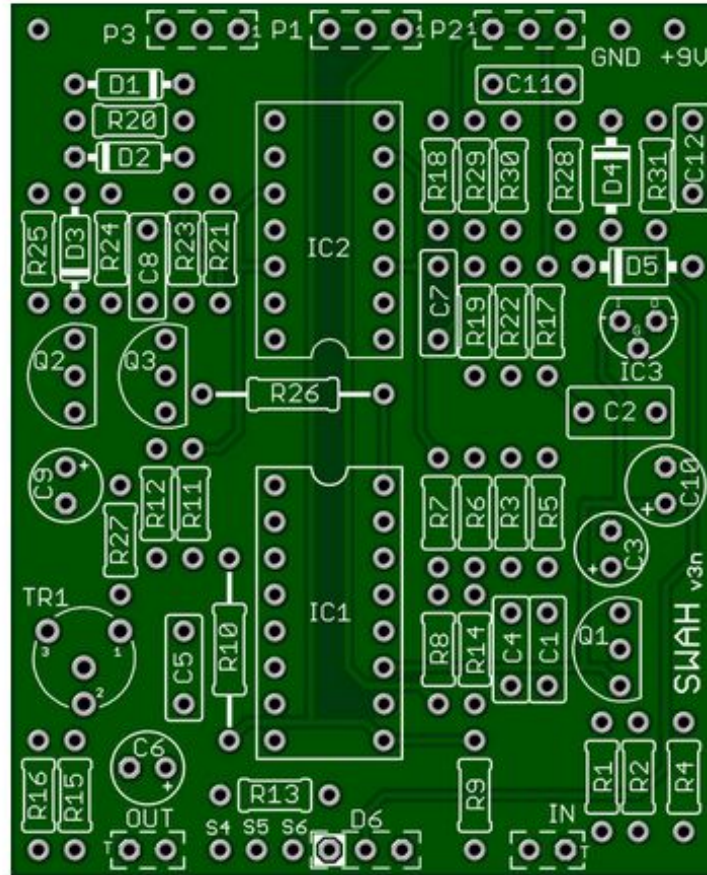


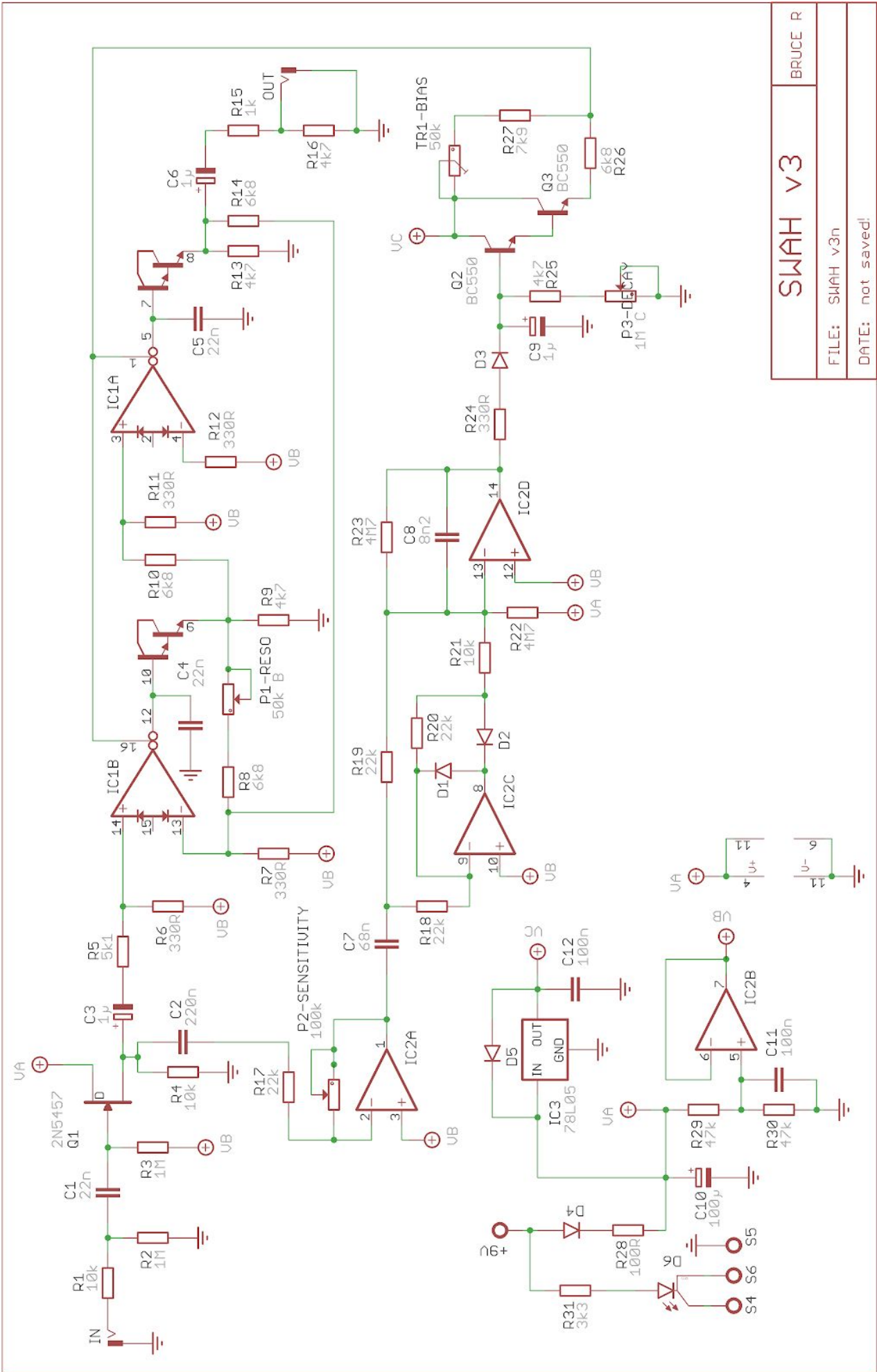
SWAH v3n

While some may compare this project to similarities found in the Snowwhite Autowah™ it is not a clone. We have modified the Circuit to enhance its capabilities. We recommend a 125B or larger enclosure.



Board Dimensions (W x H) 1.96" x 2.42"

R1	10k	R13	4k7	R25	4k7	C5	22n	63V	Q1	2N5457
R2	1M	R14	6k8	R26	6k8	C6	1 μ	16V	Q2	BC550
R3	1M	R15	1k	R27	7k9	C7	68n	63V	Q3	BC550
R4	10k	R16	100k	R28	100R	C8	8n2	63V		
R5	5k1	R17	22k	R29	47k	C9	1 μ	16V	D1-D2	1N4148
R6	330R	R18	22k	R30	47k	C10	100 μ	16V	D3	1N34
R7	330R	R19	22k	R31	3k3	C11	100n	63V	D4-D5	1N4001
R8	6k8	R20	22k			C12	100n	63V	D6	CA Bi-colour LED
R9	4k7	R21	10k	C1	22n	63V			P1	50k Lin
R10	6k8	R22	4M7	C2	220n	63V	IC1	LM13700	P2	100k Lin
R11	330R	R23	4M7	C3	1 μ	16V	IC2	TL074	P3	1M Rev Log
R12	330R	R24	330R	C4	22n	63V	IC3	78L05	*TR1	50k



SWAH v3

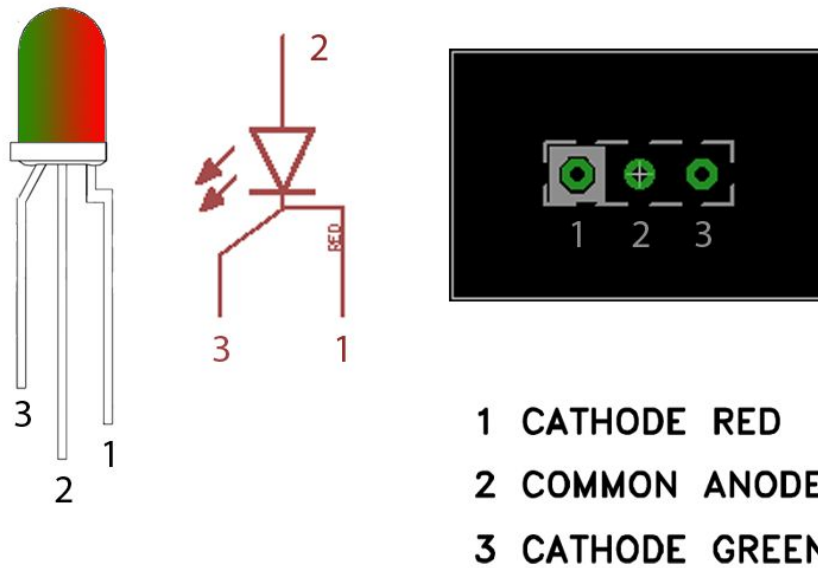
FILE: SWAH v3n

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BRUCE R

STATUS LED

D6 is a common anode bi-colour LED



The diagram above shows the pin-out, schematic symbol and pad connection for a common anode LED.

The pin-out for the bi-colour LED is as follows:

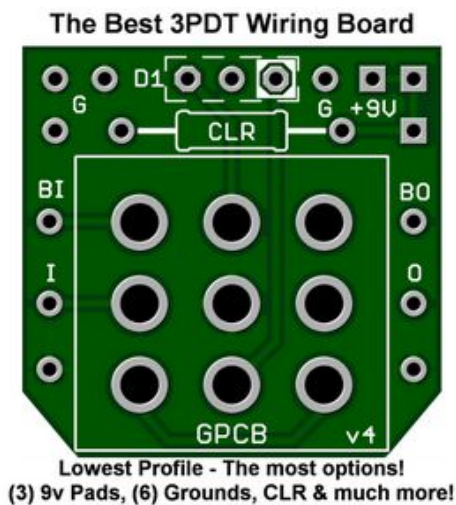
1 st Colour Cathode	90 degree bend in the lead
Common Anode	Middle lead
2 nd Colour Cathode	45 degree bend in the lead

The pad for lead 1 on the circuit board is marked with a white box.

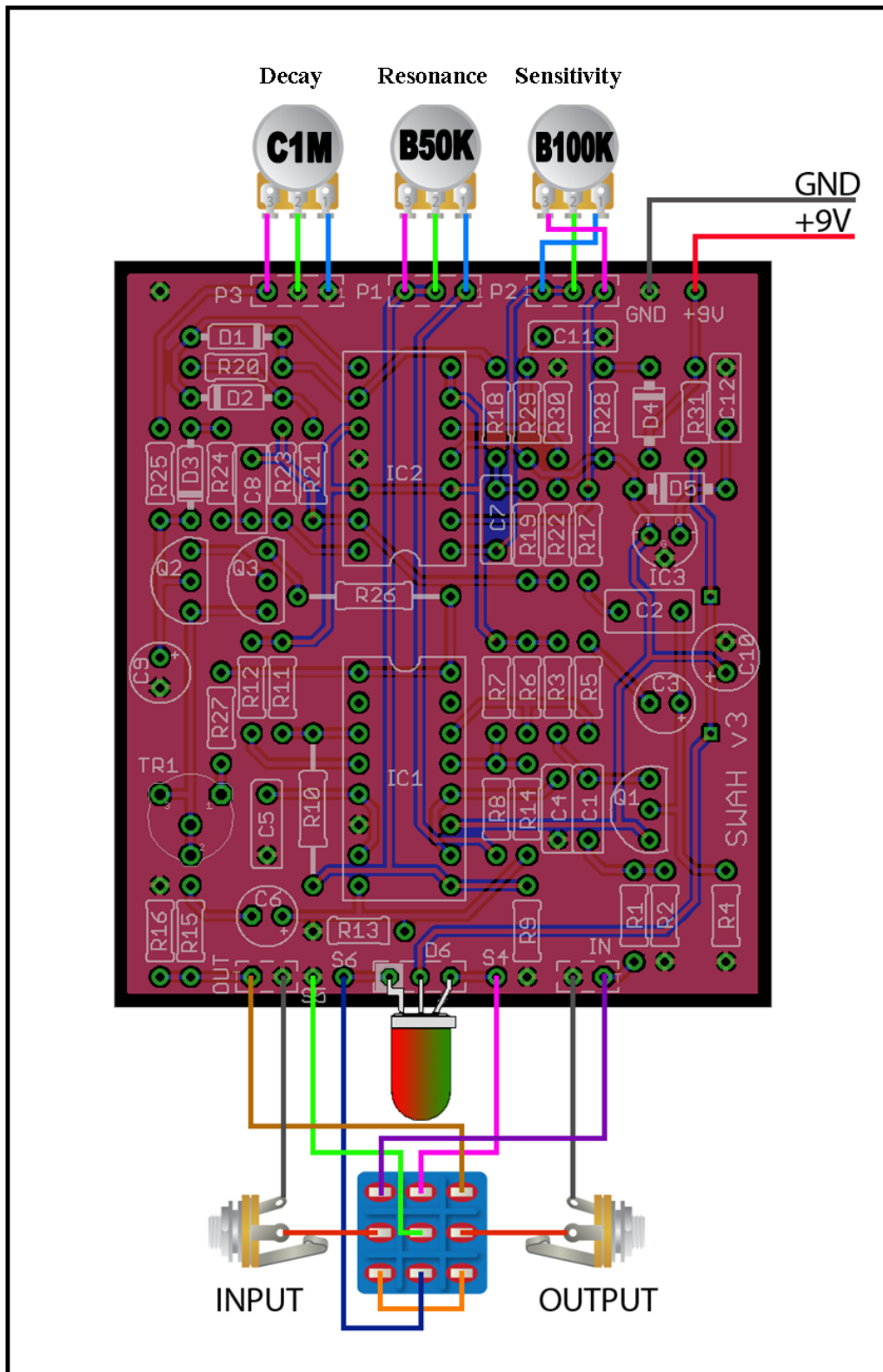
When connected correctly D6 will light red when power is applied and the circuit is in bypass mode and light green when the circuit is in effects mode.

If you use a standard LED the anode is connected to the middle pad and the cathode to the right (non-white) pad.

If you are using one of GuitarPCB's 3PDT Wiring Boards pads S4, S5 and S6 are ignored, D6 and R31 are not installed.



WIRING



Build Notes and Mod Ideas:

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

*TR1 - The bias trimmer aka; Sensitivity controls the filter resonance frequency.
When Sensitivity is turned fully off the Bias can be used as a sweepable filter.

We found out this is a very minor change and not really worthy of an extra potentiometer knob on the enclosure. If you wish to make it external that is always easy to do, but that is up you. Simply attach wiring from pot to trimmer pads. If dialing in the trimmer and it sounds good then leave it there and then you are left with the more useful setting.

For further consideration:

Controls:

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.

BIAS: Controls the filter resonance frequency. When Sensitivity is turned fully off the Bias can be used as a sweepable filter.

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

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.

PLAYING:

Please take time to get used to the controls and as this is a voltage control filter it will react to your playing touch. The envelope control circuit is carefully designed to follow the dynamics of guitar/bass and it might take some time to master the Auto Wah playing technics. This circuit as a result takes some time to adjust to your rig and playing style.

Try also adjusting guitar volume between 8 and 10 to further expand use."

Another thought. I have two types of BC550 transistors, one set is labeled BC550B, the other is BC550C . While is is not specified on the BOM, I find that the circuits I have built that call for BC550 do better with the "C" version.

*Again we stress just like a normal wah, pedal placement is critical.

Do not place anything in front of it or you could lose 50%- to 60% of its range. Also depending on guitar pickups, cable length, impedance, etc.. a quality buffer can be helpful. We sell a quality 3PDT Buffer Board.

R17 mod - short answer - 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.

[Soldering Tutorial on Youtube](#)

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If they do not have a KIT listed send them a note asking if they can help you out.



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