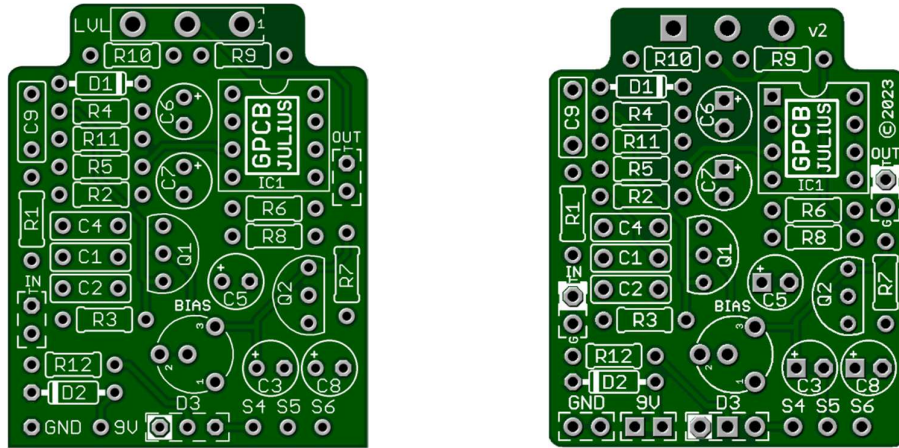


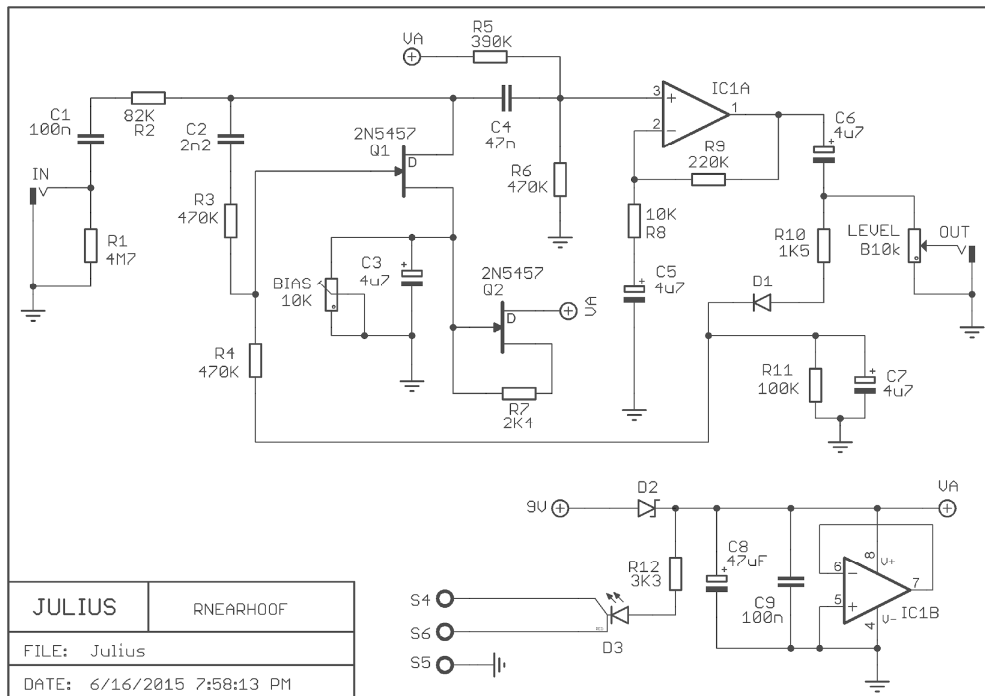
JULIUS

Based on the infamous Orange Squeezer circuit. It is a subtle effect that requires a "sweet spot" using the internal bias pot. Think of the Mark Knopfler as heard in Sultans of Swing.

NOTE: If you have a **V2** version of this PCB it uses the 1N5817 protection scheme so simply use a 1N5817 Diode instead of 1N4001 at the D2 location. Everything else is the same schematically.



Board Dimensions (W x H) 1.33" x 1.60"



Part	Value	Part	Value	Part	Value	Part	Value
R1	4M7	R8	10K	C3	4u7	D1	*Germanium
R2	82K	R9	220K	C4	47n	D2	1N4001
R3	470K	R10	1K5	C5	4u7	D3	*BiColor LED CA
R4	470K	R11	100K	C6	4u7	IC1	JRC4558
R5	390K	R12	3K3	C7	4u7	LEVEL	B10k
R6	470K	C1	100n	C8	47uF	Q1-Q2	2N5457
R7	2K4	C2	2n2	C9	100n	*BIAS	10K Trimmer Pot

Julius is based on the famous Orange Squeezer circuit. It is a subtle effect that requires a "sweet spot" using the internal bias pot. Think of the Mark Knopler smooth, harmonically rich compression as heard in Sultans of Swing. This pedal will not get you the country spank compression. I am currently using a **JRC4558 dual op-amp IC**. Try others. If you are looking for a lot of Compression control you will want our **MoRC**. If you are looking for a small, (will fit into a 1590A) easy to build Compressor that adds rich sparkle and boost to your tone then look no further.

Technical notes about the Orange Squeezer: The compression actually occurs at the junction of the 82K resistor and the first JFET. The gain of that Opamp is the closest thing to a compression control that the OS has. The OS actually decreases the gain of the JFET with two 470K resistors attached to the gate of the JFET. This reduces gain, but linearizes the JFET response. The whole secret of the OS is the more signal that you put in, the more it feeds voltage into the rectifier and the more it turns the first JFET on to cut the amount of signal getting into the Opamp.

Important Bias Info: The trimmer (bias pot) is there purely to adjust for the wide variation in Vgs sensitivity in same-part-number JFETs. The trimmer is just to compensate for the variation in JFETs. It's NOT a compression control, an attack control, or any other control having to do with the compression other than just setting it to the right place to work. You do not want to make this an external pot as it could easily get knocked out of position.

***The Bias can be measured on leg 3 of the trimmer to be at +1.5V to +1.75V depending on the JFET used. While it is recommended to set at just the point above where the signal cuts out you can add in a nice boost when it is set a little higher. This also mixes well with other pedals and tube amplifiers.**

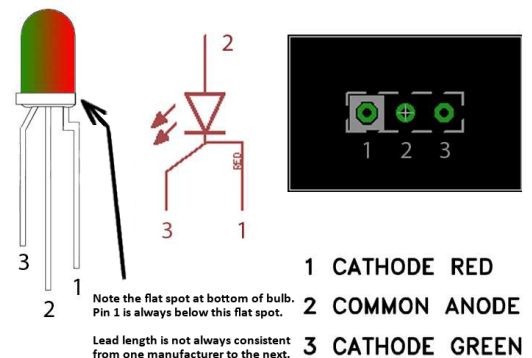
***The lower forward voltage of a 1N34A is recommended for D1 however be careful because many popular Chinese resellers are lately offering flimsy glass diodes and crack very easily which will ruin them. Feel free to try a 1N60 or 1N270 instead.**

STATUS LED

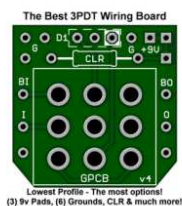
D3 is a common anode bi-color LED. The diagram at right shows the pin-out, schematic symbol and pad connection for a common anode LED. The pin-out for the bi-color LED is typically (but not always) as follows:

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

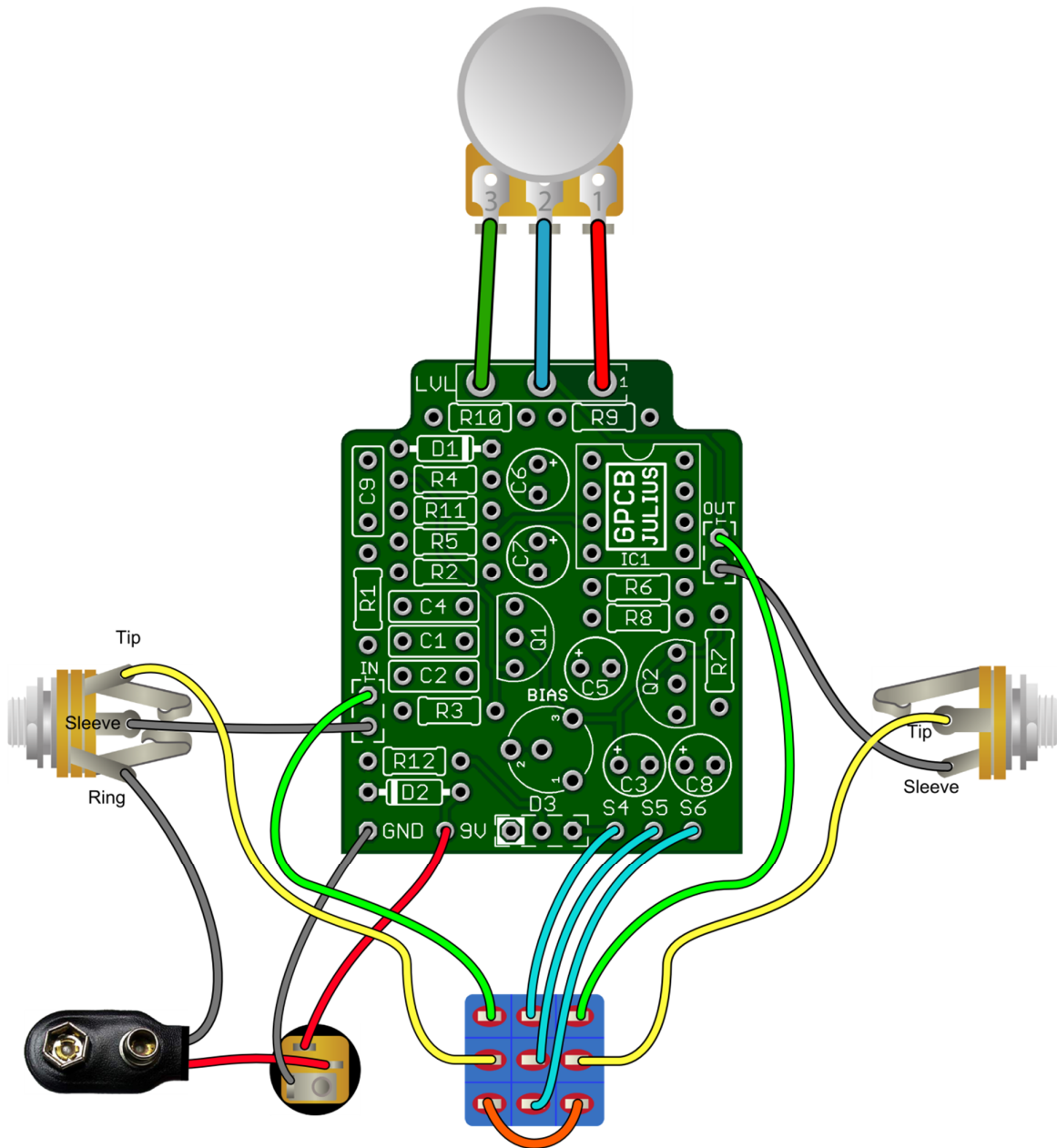
When connected correctly, the LED will light red when power is applied and the circuit is in bypass mode. The LED will light green when in effects mode. **If you wish to use a standard LED, connect the anode to the middle pad and the cathode to the right (non-white) pad to show the circuit in effects mode.** If you use a 3PDT wiring board that includes an LED, you can omit this LED and R7. *R7 is the LED's Current Limiting Resistor (CLR). If you use a different LED, you may want to change this value to adjust LED brightness.



If you are using one of GuitarPCB's handy 3PDT wiring boards, pads S4, S5, S6 and D3 would be ignored and R12 would not be installed. See wiring guide below for reference.



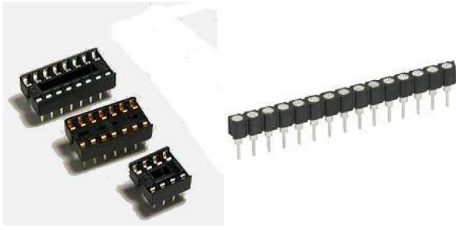
For this version you must hand wire your potentiometer. We plan for a revision later that will allow you to also use an on-board potentiometer. For now use our easy wiring guide below.



A [YouTube Demo](#) is available.

IC's and transistors are easily damaged by heat from soldering and should never be directly soldered to the PCB.

For transistors, diodes, and LED's, use SIP (Single inline package) sockets. You simply cut the number of sockets required with an Exacto / Stanley knife or by gripping and rocking with pliers. This allows for easy changes and troubleshooting.



[Soldering Tutorial on Youtube](#)

Need a kit? Check out our authorized worldwide distributors:

USA – Check out [PedalPartsAndKits](#) for all your GuitarPCB kit needs in the USA.

Europe – [Das Musikding](#) Order either boards or kits direct from Europe.

[PedalPartsAustralia](#) - Order either boards or kits direct from Australia

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



This document, PCB Artwork and Schematic Artwork © GuitarPCB.com. Schematic, PCB and this document by Bruce R. and Barry. All copyrights, trademarks, and artworks remain the property of their owners. Distribution of this document is prohibited without written consent from GuitarPCB.com. GuitarPCB.com claims no rights or affiliation to those names or owners.