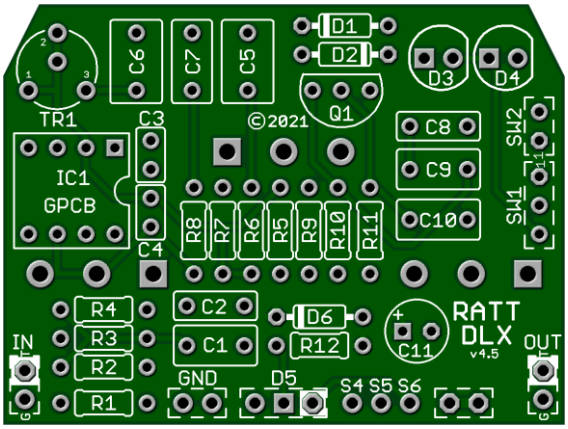
RATT DELUXE v4.5

This is the best sounding and most versatile Ratt available. GuitarPCB values have been a DIY fan favorite for over 12 years now. It includes multiple clipping options (see our Clipping Chart- Page 3) and our version of the Ruetz Mod.



Board Dimensions are 1.95” by 1.47” inches

Part	Value
R1	1M
R2	1M
R3	1M
R4	1k
R5	10k
R6	4k7
R7	100R
R8	1k
R9	1k5
R10	1M
R11	10k
R12	1k8

Part	Value
C1	220n
C2	10n
C3	22p
C4	100p
C5	470n
C6	330n
C7	220n
C8	3n3
C9	220n
C10	220n
C11	47u
TR1	100R*

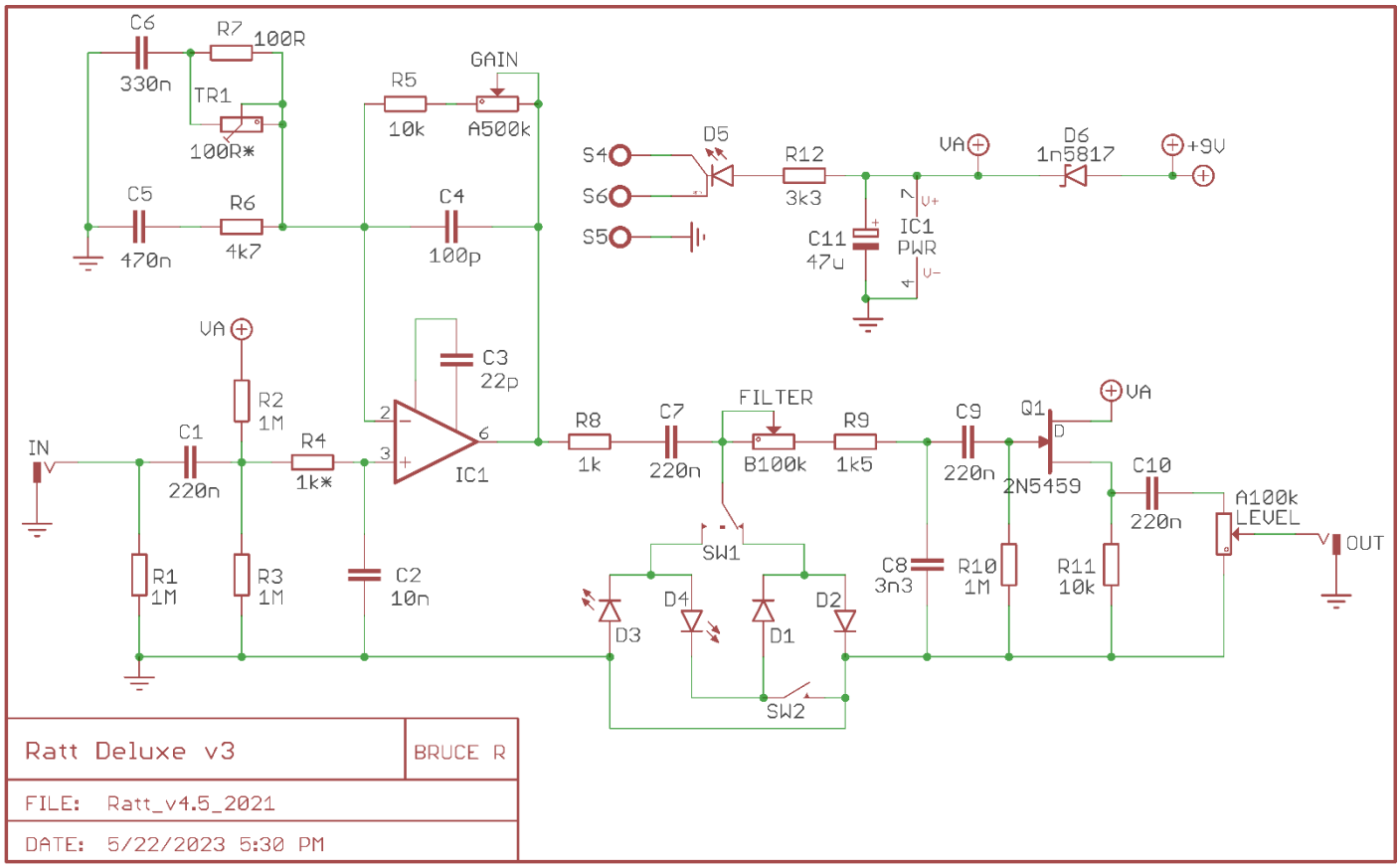
Part	Value
FILTER	B100k
GAIN	A500k
LEVEL	A100k
Q1	2N5459
D1-D2	1N914
D3-D4	LED-5MM
D5	Status LED
D6	1N5817
IC1	LM308
SW1	SPDT ON-OFF
SW2	SPST

STATUS LED

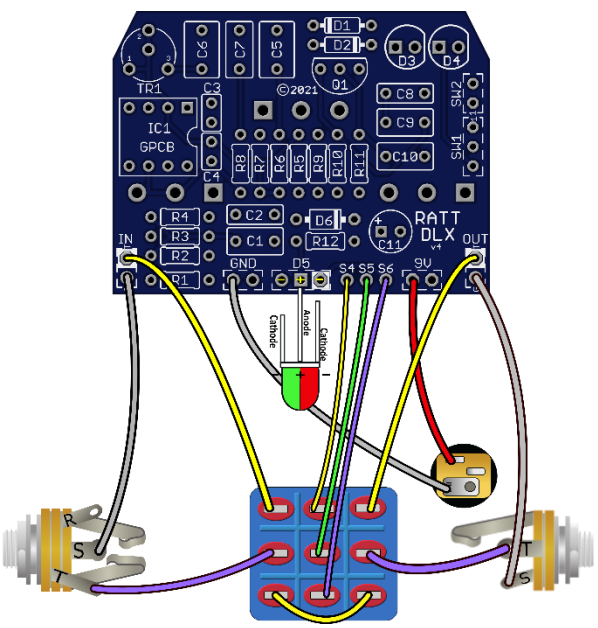
D5 is a Status LED that can be either a Bi-Color Common Anode or a Standard On/Off LED. (See Tip Sheet)

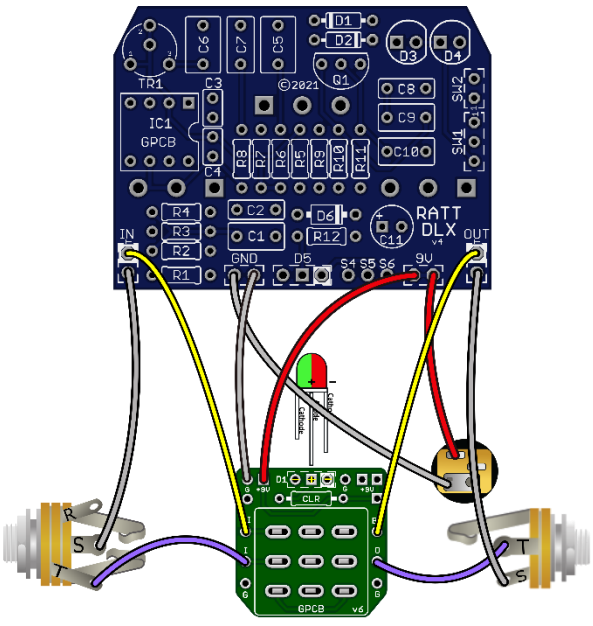
IC1 – LM308 or OP07. Q1 – 2N5459, 2N5458, or 2N5457 all work equally well.

Version 4.5 update: The only updated item on version 4.5 is the incorporation of the 1N5817 protection diode. You will notice that on the 4.5 version, the diode silkscreen (D6) is in the opposite orientation from previous versions.



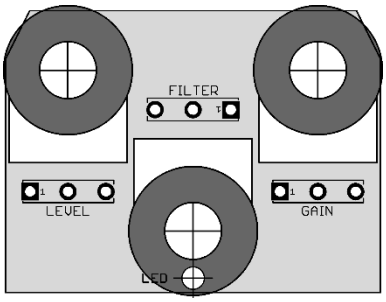
Wiring Diagram





Build Notes: If you are using our 3PDT board, you should omit wires and parts from S4, S5 & S6, D5 and R12 (CLR). The CLR and LED will be populated on the 3PDT board instead.

Drill Template:



Note: If you purchase a pre-drilled enclosure just opening the holes up a little will allow On-Board pots to fit better in enclosures not drilled specifically for this board. A slightly larger hole will be covered by the washer and nut. Place board in enclosure first with on-board pots and solder just one leg till you have a perfect fit before finishing it off. Do not simply solder pots first without "fitting". Use anti-static barrier between Pot and Board!

MODS/TWEAKS

R5: This has been added to prevent the Gain pot from being turned completely off. This is useful in that you can set the minimum gain (via the value of R5) when the Gain pot is at 0% rotation, this will give more usage out of the gain pot itself. Socket R5 and try different values – 10kΩ is suggested as a starting point.

R7 – TR1: This is a version of the Ruetz mod.

If you want to make this mod an external pot, don't install the trim pot and wire the external pot to the respective pads. This mod reduces the high frequencies much less than the bass and mid frequencies when the gain pot is turned down. The best results will be obtained when the R7 – TR1 value is between 0Ω (a wire jumper) and 100Ω, there are several methods to achieve this:

- Socket R7 and don't install the trim pot. Try different values for R7 ranging from a jumper up to 100Ω. GuitarPCB carries 100**R** trim pots.
- Using a 1kΩ trim pot in conjunction with R7 at 120Ω or 100Ω will yield the desired results.

IC1 – C3: If you are using the LM308 for the op amp, C3 should be installed, the value of this capacitor determines the roll-off of high frequencies, small values roll off less high frequency than larger values. The original 30pF capacitor may be harder (more expensive) to find, using a 33pF capacitor will make little difference. Other types of mono op amp can be tried. OP07, LM301, TL071 etc...

Diodes: There are many different types and combinations of diodes that can be tried, the fast-switching diode family 1N4148, 1N4448, 1N914, 1N916 etc can be interchanged with no noticeable difference, the actual measured forward voltage of each diode is probably more important.

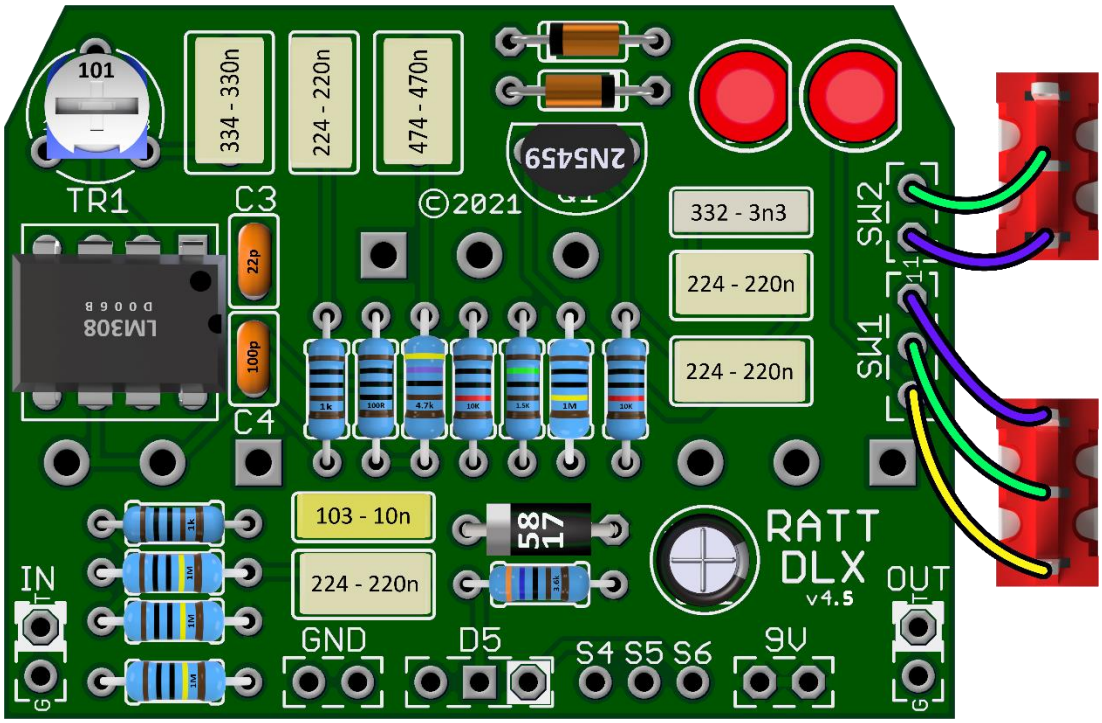
LED: Apart from the standard red clipping LEDs, other colors could be tried for slightly different results.

While we highly suggest GuitarPCB stock values these are the value changes for a ProCo Rat Build stock version: R6 – 560R, R7 – 47R, C1 – 22n, C2 – 1n, C5 – 4.7u, C6 – 2.2u, C7 – 4.7u, C9 – 22n, C10 – 1u, C11 – 100u. Kits will use GuitarPCB values.

RATT CLIPPING CHART – Shows six different Options when using SW1 and SW2

SW1	SW2	CLIPPING	SYMMETRICAL	ASSYMETRICAL	DIODES
LEFT	CLOSED	YES	YES		D3>D4
LEFT	OPEN	YES	NO	YES	D3>D4,D1,D2
CENTER	CLOSED	NO	----	----	NONE
CENTER	OPEN	NO	----	----	NONE
RIGHT	CLOSED	YES	YES		D1>D2
RIGHT	OPEN	YES	NO	YES	D1.D4.D3>D2

Populated board for troubleshooting purposes.



For more build guides and tutorials please visit the [Guides Page](#) at GuitarPCB.com

For specific build support please visit our dedicated [Support Forum](#)

[Soldering Tutorial on YouTube](#)

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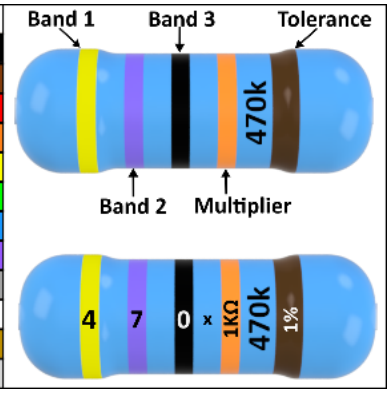
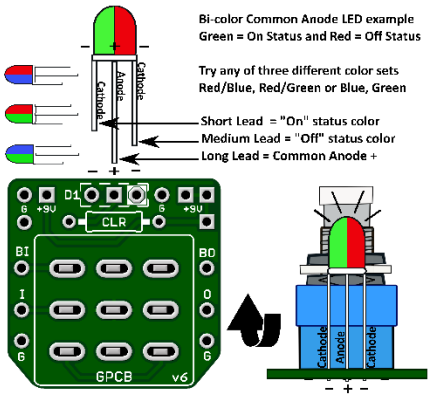
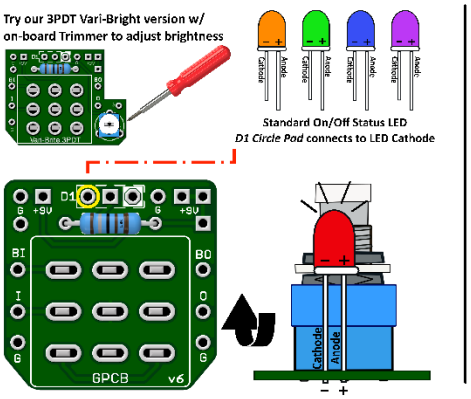
- **USA – Check out [PedalPartsAndKits](#) for all your GuitarPCB kit needs in the USA.**
- **Europe – [Das Musikding](#) Order either boards or kits direct from Europe.**
- **[PedalPartsAustralia](#) - Order either boards or kits direct from Australia**

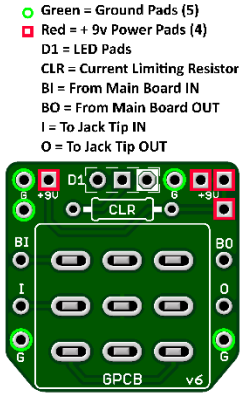
COLOR	1st Band	2nd Band	3rd Band	Multiplier	Tolerance
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	±1%
RED	2	2	2	100Ω	±2%
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100KΩ	±0.5%
BLUE	6	6	6	1MΩ	±0.25%
VIOLET	7	7	7	10MΩ	±0.10%
GREY	8	8	8	100MΩ	±0.05%
WHITE	9	9	9	1GΩ	
GOLD				0.1Ω	±5%
SILVER				0.01Ω	±10%

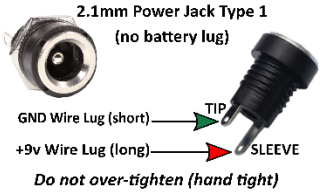


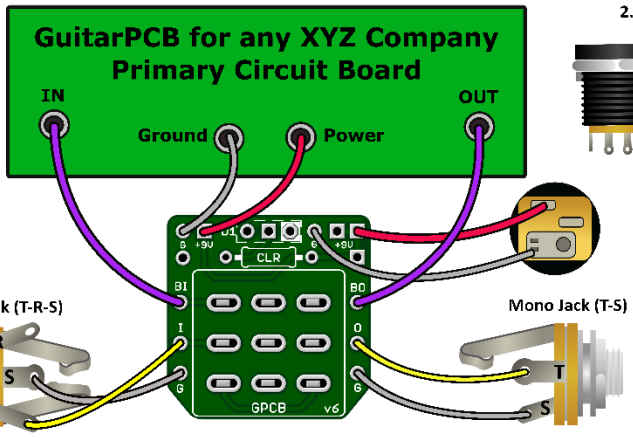
GuitarPCB Tip Sheet

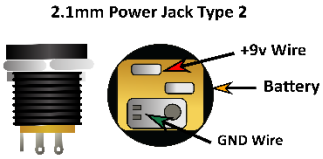




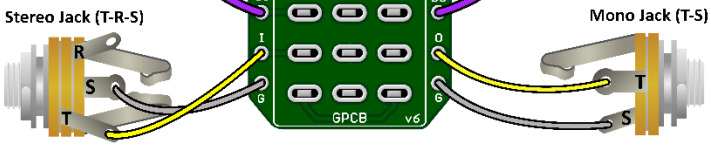






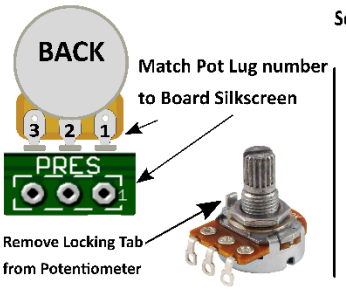


T = Tip
R = Ring
S = Sleeve

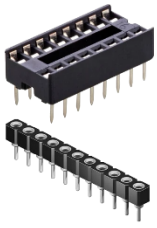


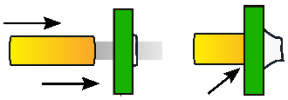
T = Tip
S = Sleeve

Multiple +9v and Ground Pads are convenient hookup points for additional circuits within the same enclosure. This also allows for diverse wiring schemes to suit indiviual needs.



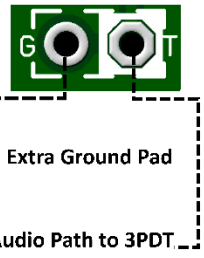
Sockets make troubleshooting easier

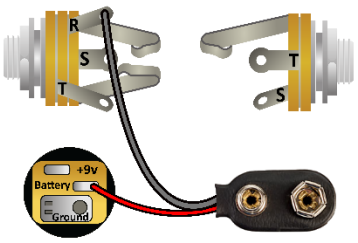




When soldering wire to a PCB push the protective PVC jacket flush with the board and pad.

Main Board IN/OUT Pads





Input/Output Jack Wiring

T = Tip | R = Ring | S = Sleeve

A Stereo Jack is only needed if using a Battery. Otherwise use a Mono Jack
Battery Strap RED wire is connected to Power Jack
Battery Strap Black wire is connected to RING (stereo jack)
If wiring an LED to our 3PDT Wiring Board then S4, S5 & S6 are not needed