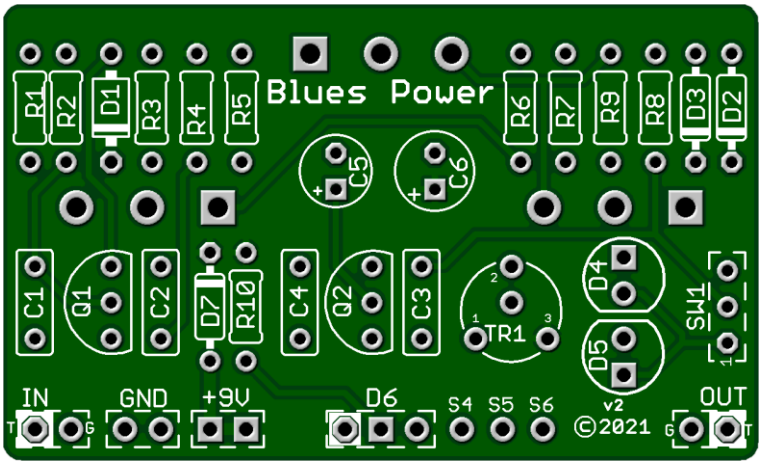
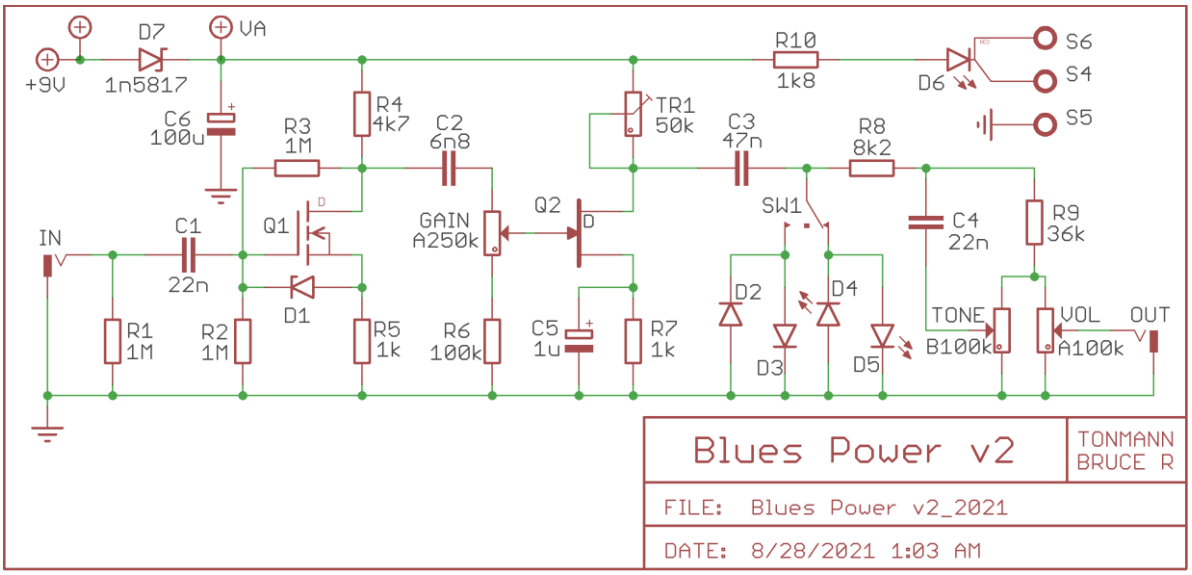
Blues Power v2 2021

Blues Power is unique in that it combines a simple MOSFET boost stage with a JFET “tube” stage. This is based off the ROG Peppermill but with added clipping options to allow the circuit to exhibit more clipping than the original and with LEDs a much warmer tube-style tone. We have also changed a value to allow more bass response. Now besides being used a boost it can also work as an overdrive with Bass or Standard guitar. The tone control is a low pass filter at minimum rotation, but at 65% rotation it changes to a fine high pass filter.



Board Dimensions (W x H) – 2.10 x 1.26



Part	Value
R1	1M
R2	1M
R3	1M
R4	4k7
R5	1k
R6	100k
R7	1k
R8	8k2
R9	36k
R10	1k8

Part	Value
C1	22n
C2	6n8
C3	47n
C4	22n
C5	1u
C6	100u
D1	1N4739
D2-D3	1N34A
D4-D5	Green LED

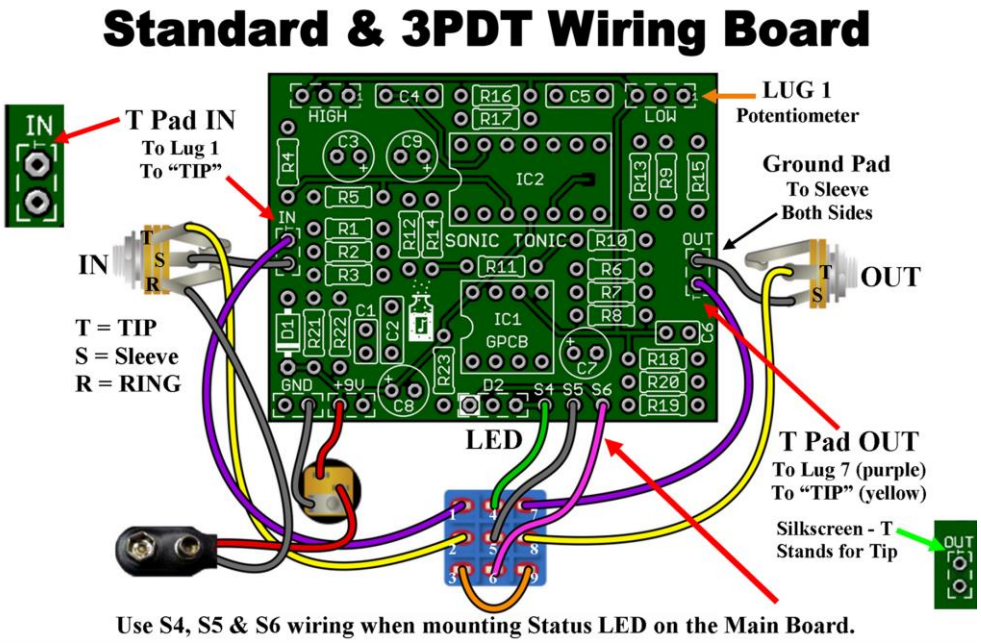
Part	Value
D6	Status LED
D7	1N5817
Q1	BS170
Q2	J201
VOL	A100k
GAIN	A250k
TONE	B100k
SW1	SPDT On-Off-On
TR1	50k

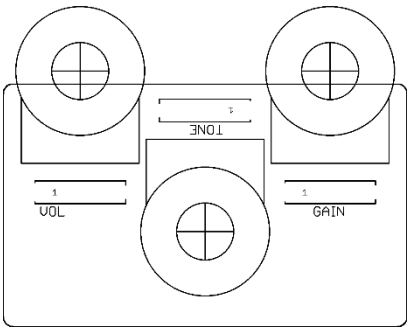
Build Notes and Mods

- Socket both transistors to allow easy replacement or testing. BS170s should be used in Q1, but a variety of JFETs will work in Q2. Be sure to verify the pin-out is the same. Try 2N5457 and MPF102 depending on the tone you want to achieve.
- R10 is the CLR so adjust accordingly to the desired LED color and brightness.
- **Adjust TR1 so that the Drain of Q2 is at 4.5V.** You can do this by placing the "common" lead of your voltmeter to ground and the "positive" lead of your voltmeter on the Drain of Q2 after it has been installed.
- As with all diode clipping circuits, you can experiment with different diodes. BAT41s, 1N4148, Zeners, and many Germanium types sounded good. 1N34A's or BAT41's sounded the best to my ears.
- If you do choose to experiment, I recommend leaving the LED clipping in place (D4 and D5) and adjust D2 and D3 to taste.
- When D2 and D3 are engaged, there is a significant volume drop, (it's normal) but you may not find it optimized for your setup. Experiment with R9 to compensate for volume. Lowering this value may help. Also doubling up the diodes or tying an LED in series will bring the volume up. You can do this mod easily with one of our **DPDT Wiring Boards.**

WIRING

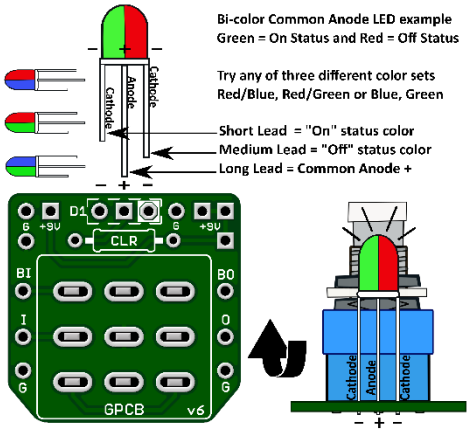
Use the standard wiring diagram below. Be sure to use the "T" pads on the In and Out sections for connecting Audio which routes to Jack Tip. The pad beside it is a ground for connecting to Jack Sleeve.





Drill Template

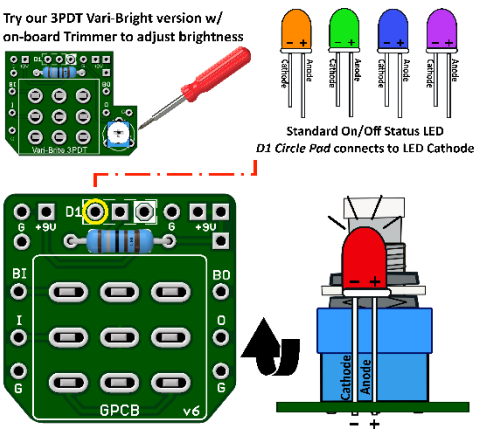
GuitarPCB Tip Sheet



Bi-color Common Anode LED example
Green = On Status and Red = Off Status

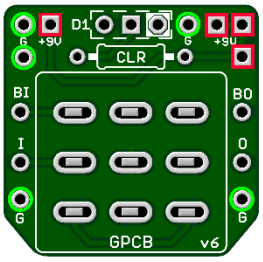
Try any of three different color sets
Red/Blue, Red/Green or Blue, Green

Short Lead = "On" status color
Medium Lead = "Off" status color
Long Lead = Common Anode +

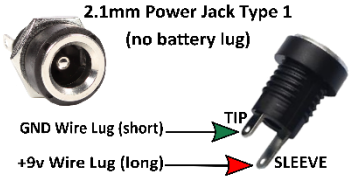


Try our 3PDT Vari-Bright version w/
on-board Trimmer to adjust brightness

Standard On/Off Status LED
D1 Circle Pad connects to LED Cathode



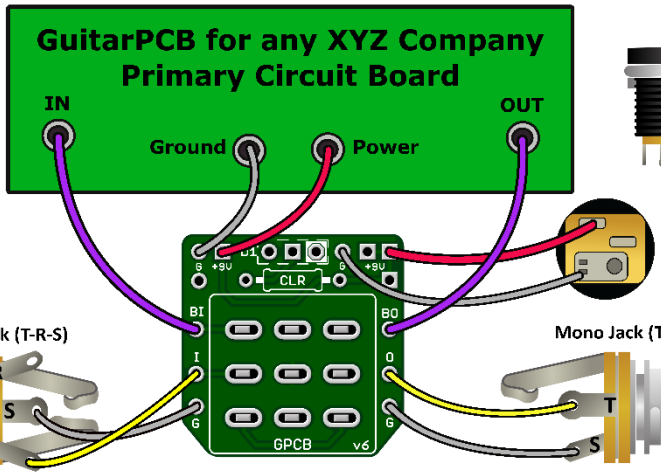
Green = Ground Pads (5)
Red = + 9v Power Pads (4)
D1 = LED Pads
CLR = Current Limiting Resistor
BI = From Main Board IN
BO = From Main Board OUT
I = To Jack Tip IN
O = To Jack Tip OUT

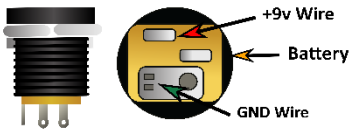


2.1mm Power Jack Type 1
(no battery lug)

GND Wire Lug (short) — TIP
+9v Wire Lug (long) — SLEEVE

Do not over-tighten (hand tight)





2.1mm Power Jack Type 2

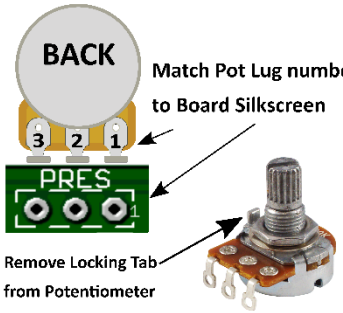
T = Tip
R = Ring
S = Sleeve

Stereo Jack (T-R-S)

Mono Jack (T-S)

T = Tip
S = Sleeve

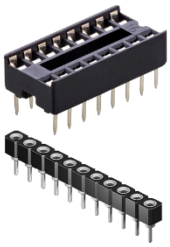
Multiple +9v and Ground Pads are convenient hookup points for additional circuits within the same enclosure. This also allows for diverse wiring schemes to suit indiviual needs.

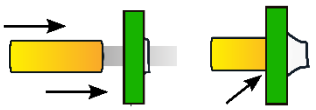


Match Pot Lug number
to Board Silkscreen

Remove Locking Tab
from Potentiometer

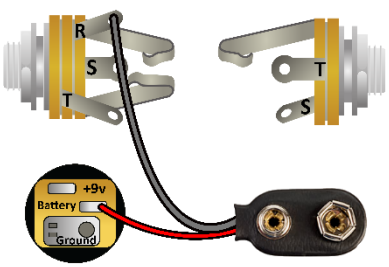
Sockets make troubleshooting easier





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