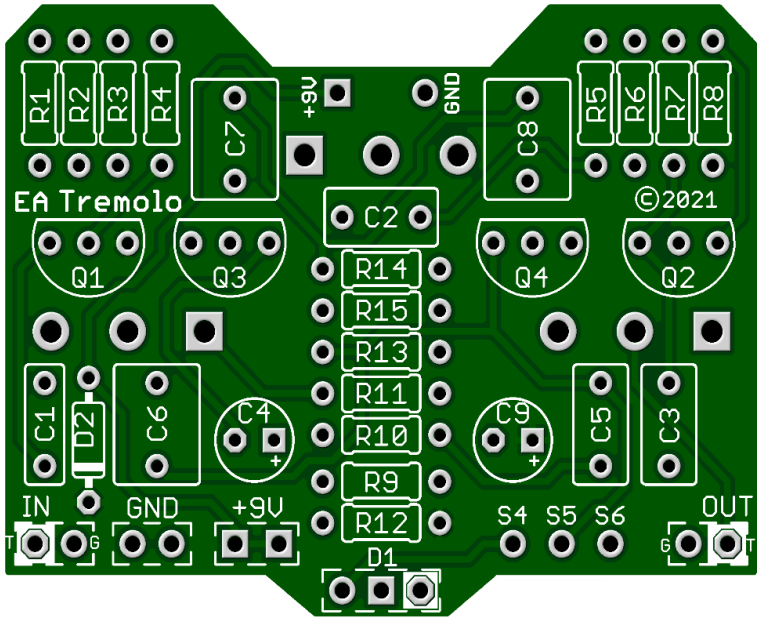
EA TREMOLO v4 2021

One of the easiest and best sounding Tremolo circuits available. The excellent buffer associated with this circuit also enhances your guitar tone while using it. The LED will blink in time with the SPEED potentiometer. This can easily be done in one of two ways. Use a Bi-color LED so it is always blinking and you know the SPEED of the Tremolo before activating it or use a Standard LED and it will only blink when the circuit is activated.



Board Dimensions (W x H) 1.95” x 1.50”

Part	Value
R1	1M
R2	1M
R3	1M
R4	10k
R5	560k
R6	150k
R7	4k7
R8	180R
R9	1k2

Part	Value
R10	120k
R11	68k
R12	10k
R13	2M2
R14	15k
R15	1k
C1	47n
C2	220n

Part	Value
C3	470n
C4	22u
C5	470n
C6	1u
C7	1u
C8	1u
C9	47u
*D1	Status LED

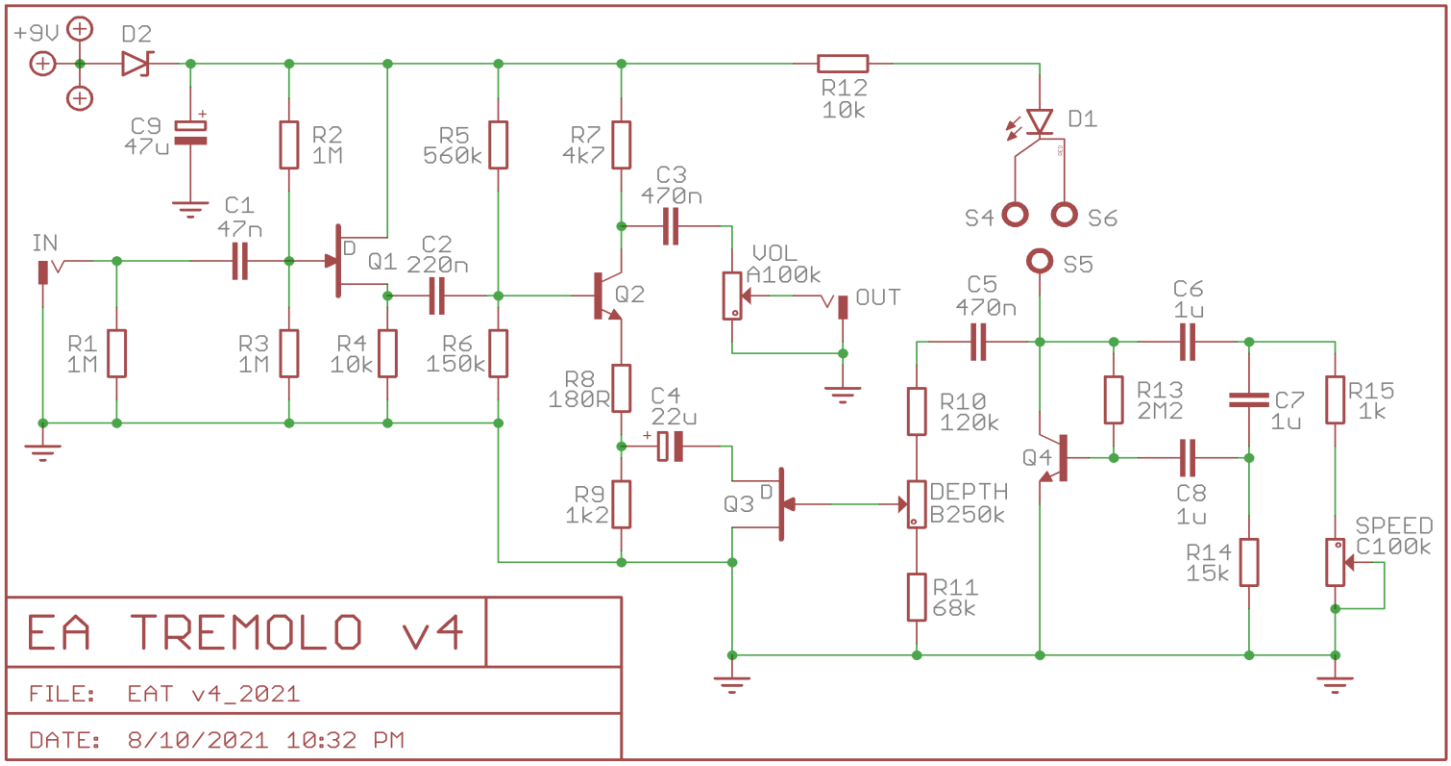
Part	Value
D2	1N5817
DEPTH	B250k
SPEED	C100k
VOL	A100k
Q1	2n5457
Q2	2n5088
Q3	2n5457
Q4	2n5088

STATUS LED

***D1** is a Status LED that can use either Bi-Color Common Anode or a Standard On/Off LED.

New in this GuitarPCB 2021 version release:

- Easy to build version. (With the Best Tremolo Tones)
- Removed Kill Switch option.
- Added 1N5817 circuit protection diode which is superior.
- Added on-board potentiometers.
- Larger off-board wiring pads.
- Added extra +9v and Ground pads for “Combo Builds” allowing easy wiring options and connectivity.



Wiring Diagram:

Diagram 1

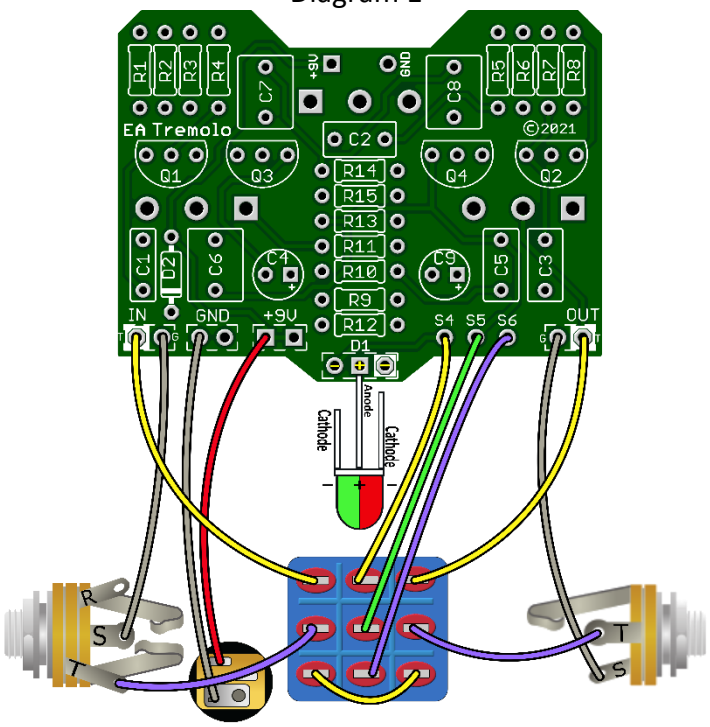
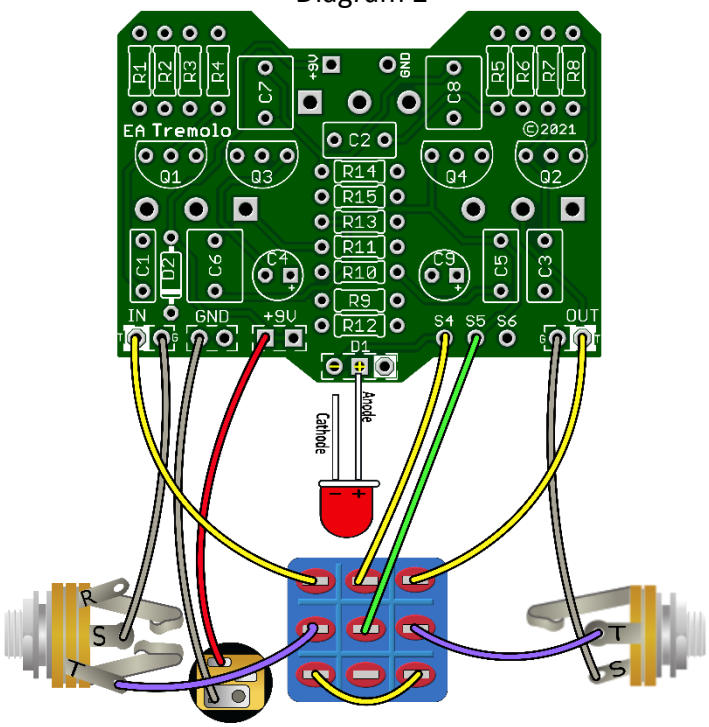


Diagram 2



Build Notes:

Do not use a 3PDT Wiring Board with this build due to the Status LED also being part of the LFO. The reason for this is that the LFO will blink in time with the Tremolo. With a Tremolo circuit it is very helpful to know what the SPEED is before activating your pedal.

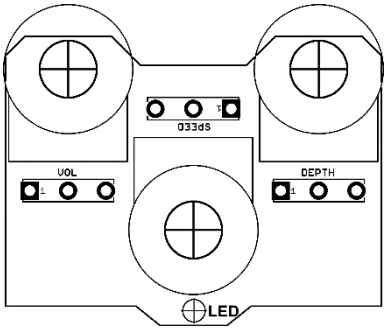
In Diagram 1 above the LED will blink the SPEED even when the pedal is off using the red color.

In Diagram 2 the pedal will not show the SPEED when the pedal is off due to using a standard LED. Also remove S6 wire.

Circuit Analysis:

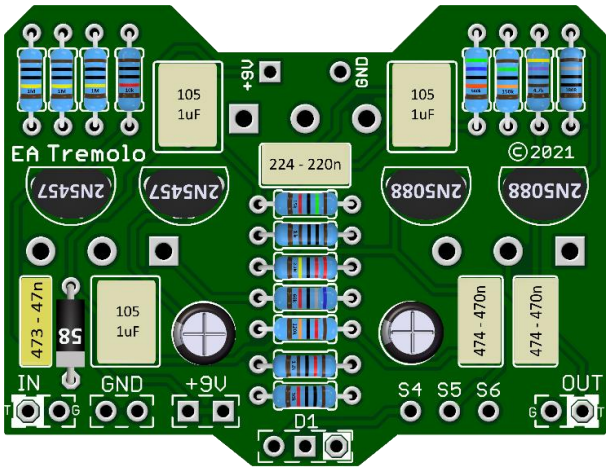
Audio - Two stages, Q1 is a buffer stage which doesn't amplify the signal but "grabs" as much guitar signal as possible from the input and sends it to the second stage, Q2. The second stage amplifies the audio signal, the amount of audio signal gain for Q2 is controlled by the JFET, Q3.
LFO - this produces a low frequency alternating (almost sine wave) signal at the collector of Q4. If the LED blinks in time with the Speed control you can safely assume that the LFO section is functioning properly.
Control - this takes the signal from the collector of Q4, removes the DC bias voltage of Q4 (via C5) and then reduces the amplitude of the LFO signal (R10, P2 & R11) and feeds the reduced signal to the gate of Q3. Q3 lies at the heart of the tremolo effect. With the drain connected to C4 and the source connected to ground Q3 is configured as a variable resistor (the resistance between the drain and the source). The drain-source resistance is controlled by the voltage on the gate which is supplied from the LFO section.

Drill Template



Drill Tips: Measure your components before selecting a drill bit. We recommend drilling the pot holes, mounting the pots in the enclosure, and then soldering the pots to the board. This approach should resolve the issue of the pots not fitting through the holes after soldering. We also recommend you make the holes for the pots a little larger than the threads in case you decide to remove the board and put it back in during the build, to avoid problems. Use this guide at your own risk. Make sure page scaling is turned off when you print this PDF, or the image above may be smaller than expected. Verify everything before drilling.

Populated Board Image for Troubleshooting

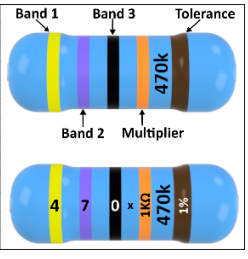


For more build guides and tutorials please visit the Guides Page at GuitarPCB.com
For specific build support please visit our dedicated Support Forum
Soldering Tutorial on YouTube

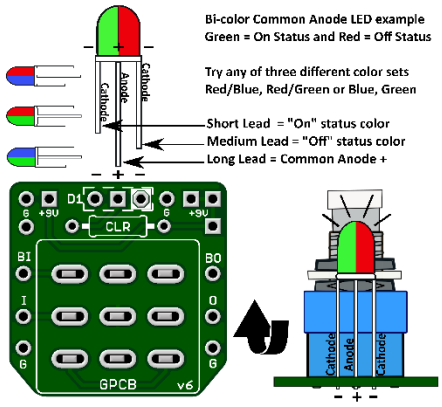
Need Kits - Check out our authorized worldwide distributors:

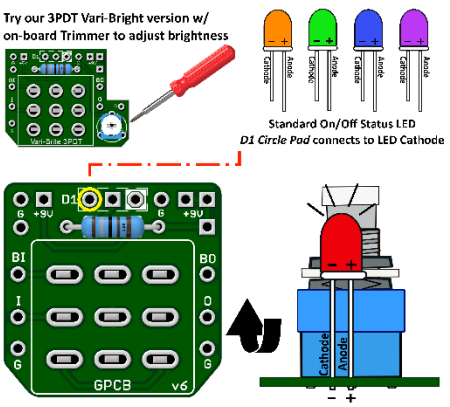
- **USA – Check out PedalPartsAndKits for all your GuitarPCB kit needs in the USA.**
- **Europe – Das Musikding Order either boards or kits direct from Europe.**
- **PedalPartsAustralia - Order either boards or kits direct from Australia**

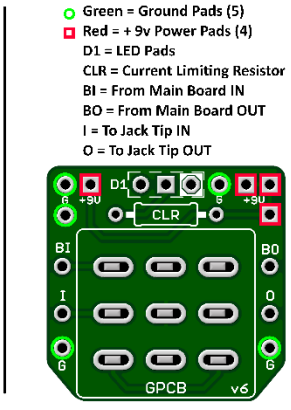
COLOR	1st Band	2nd Band	3rd Band	Multiplier	Tolerance
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	±1%
RED	2	2	2	100Ω	±2%
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100KΩ	±0.5%
BLUE	6	6	6	1MΩ	±0.25%
VIOLET	7	7	7	10MΩ	±0.10%
GREY	8	8	8	100MΩ	±0.05%
WHITE	9	9	9	1GΩ	
GOLD				0.1Ω	±5%
SILVER				0.01Ω	±10%

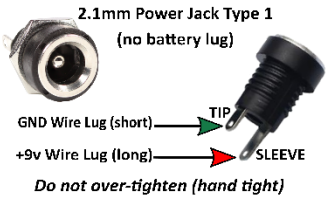


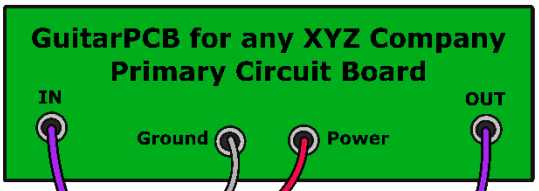
GuitarPCB Tip Sheet

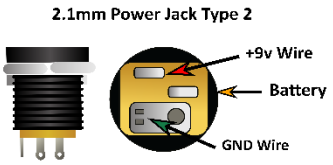




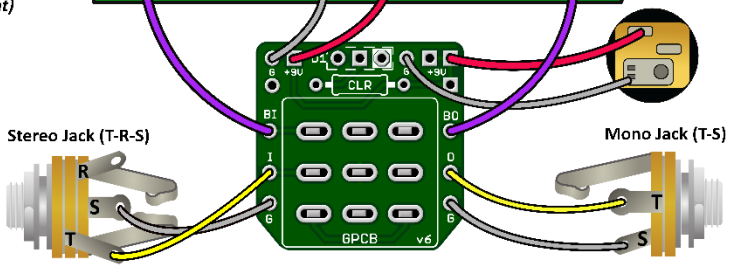






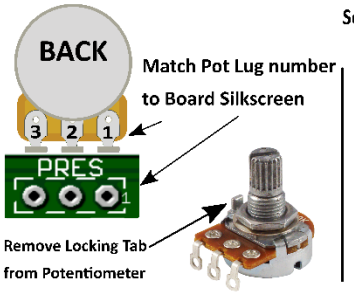


T = Tip
R = Ring
S = Sleeve

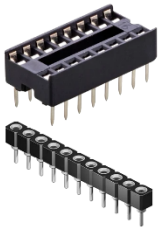


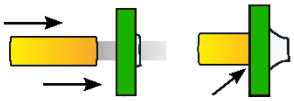
T = Tip
S = Sleeve

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.



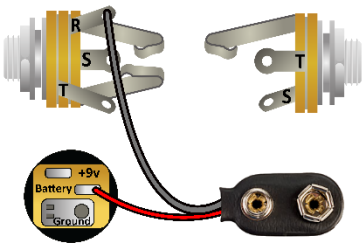
Sockets make troubleshooting easier





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