

Soviet Phase

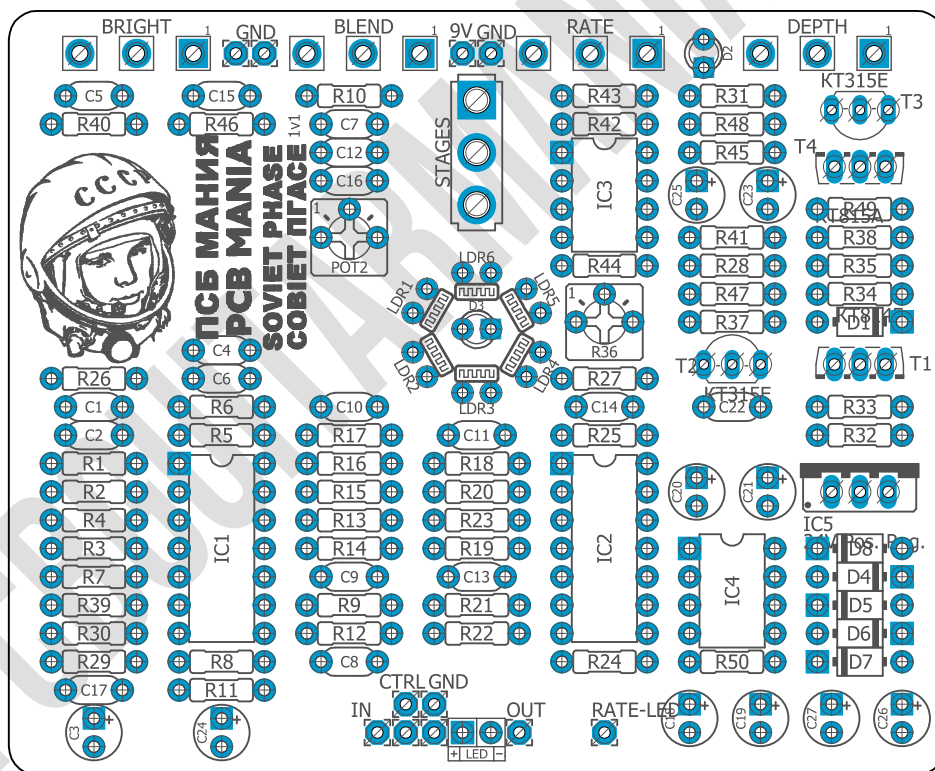
Based on:
Estradin Phaser
Effect type:
Analog Phaser
Build difficult:
Advanced

Amount of parts:
High, total 108 components
Technology:
Low noise J-FET quad operational
amp, Op Amp
Power consumption:
9V

Enclosure type:
1590BB
Get your board at:
[Soviet Phase](#)
Get your kit at:
[Das Musikding \(Europe\)](#)

Project overview:

Inspired by Estradin Effekt-2 Phaser, the legendary stompbox from the Soviet Era and one of the most interesting phasers you will ever hear.



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Introduction

Estradin Effekt-2 Phaser was launched in the late 1980s at the same plant that manufactured the famous Soviet synths Polivoks/Formanta. It rapidly gained its status as one of the most desirable and great-sounding Soviet effects pedals ever made due to its profound analog phaser effects suitable for any kind of music.

In PCB Guitar Mania, we decided to produce a modern version of the board that maintains the unique characteristics of the original and makes it accessible to any DIY enthusiast that wants to have it in his pedalboard without the need to break into a museum of the Soviet era. If you are interested in boards of this period, we have an everyday expanding collection with other gems such as the LEL` DD and the Ltava.

This warm analog optical phaser has two modes of the intensity of the effect. The STAGES switch operates with intensity, allowing you to switch between a full circle and 1/3 circle so that you can get two different phasers in one box. It also features BLEND, BRIGHT, DEPTH, and RATE control knobs to give you deep control of your output signal.

Controls

Potentiometers

- Blend
- Bright
- Depth
- Rate

Switches

- Stages

Bill of materials

Resistors	
Part	Value
R1	360k
R2	18k
R3	18k
R4	51k
R5	91k
R6	56k
R7	330k
R8	56k
R9	56k
R10	8k2
R11	56k
R12	56k
R13	56k
R14	56k
R15	56k
R16	56k
R17	56k
R18	56k
R19	56k
R20	56k
R21	56k
R22	56k
R23	56k
R24	56k
R25	56k
R26	56k
R27	56k
R28	16k
R29	360k
R30	56k
R31	5k6
R32	51R
R33	820R
R34	820R
R35	1k2
R37	1k2

R38	200R
R39	16k
R40	360k
R41	18k
R42	1M
R43	2k2
R44	130k
R45	2k7
R46	2k
R47	110R
R48	110R
R49	18k
R50	4k7

Photoresistors	
Part	Value
LDR1	<u>CDS Photo</u> <u>Conductive Cell****</u>
LDR2	<u>CDS Photo</u> <u>Conductive Cell****</u>
LDR3	<u>CDS Photo</u> <u>Conductive Cell****</u>
LDR4	<u>CDS Photo</u> <u>Conductive Cell****</u>
LDR5	<u>CDS Photo</u> <u>Conductive Cell****</u>
LDR6	<u>CDS Photo</u> <u>Conductive Cell****</u>

Capacitors	
Part	Value
C1	6n8
C2	6n8
C4	680p
C5	100n
C6	100n
C7	330p
C8	220n
C9	100n
C10	68n
C11	33n

C12	100n
C13	22n
C14	10n
C15	10n
C16	330p
C17	6n8
C22	6n8

Electrolytic Capacitors	
Part	Value
C3	47u (25V or above)
C18	10u (25V or above)
C19	10u (25V or above)
C20	220u (25V or above)
C21	220u (25V or above)
C23	220u (25V or above)
C24	220u (25V or above)
C25	22u (25V or above)
C26	10u (25V or above)
C27	10u (25V or above)

Potentiometers	
Part	Value
BLEND	B50k
BRIGHT	B100k
DEPTH	B2k
RATE	B220K

Trim pots	
Part	Value
POT2 (TRIM2)*****	10k
R36 (TRIM1)*****	1k

IC	
Part	Value
IC1	TL074
IC2	TL074
IC3	JRC4558

IC4	7660SPCA (MAX1044)
IC5	24V Pos. Reg.

Switches	
Part	Value
Stages	SPDT toggle on/on
-	3PDT Stomp foot

Transistors	
Part	Value
T1	KT814B*
T2	KT315E***
T3	KT315E***
T4	KT815A**

Diodes	
Part	Value
D1	6V8 Zener
D2	3mm red LED
D3	3mm red LED
D4	1N5817
D5	1N5817
D6	1N5817
D7	1N5817
D8	1N5817
LED	3mm red LED

Shopping list

Resistors		
Qty	Value	Parts
1	5k6	R31
2	110r	R47, R48
1	16k	R39
4	18k	R2, R3, R41, R49
1	1M	R42
2	1k2	R35, R37
1	200r	R38
1	2k	R46
1	2k2	R43
1	330k	R7
3	360k	R1, R29, R40
1	4k7	R50
1	51k	R4
1	51r	R32
21	56k	R6, R8, R9, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R30
1	2k7	R45
1	16k	R28
3	820r	R33, R34
1	8k2	R10
1	91k	R5
1	130k	R44

Photoresistors		
Qty	Value	Parts
6	<u>CDS Photo Conductive Cell****</u>	LDR1, LDR2, LDR3, LDR4, LDR5, LDR6

Capacitors		
Qty	Value	Parts
4	100n	C5, C6, C9, C12
2	10n	C14, C15
1	220n	C8
1	22n	C13

2	330p	C7, C16
1	33n	C11
1	680p	C4
1	68n	C10
4	6n8	C1, C2, C17, C22

Electrolytic Capacitors		
Qty	Value	Parts
4	10u (25V or above)	C18, C19, C26, C27
4	220u (25V or above)	C20, C21, C23, C24
1	22u (25V or above)	C25
1	47u (25V or above)	C3

Potentiometers		
Qty	Value	Parts
1	B100k	BRIGHT
1	B2k	DEPTH
1	B50k	BLEND
1	B220k	RATE

Trim pots		
Qty	Value	Parts
1	10k	POT2*****
1	1k	R36*****

IC		
Qty	Value	Parts
1	24V Pos. Reg.	IC5
1	7660SPCA (MAX1044)	IC4
1	JRC4558	IC3
2	TL074	IC1, IC2

Switches		
Qty	Value	Parts
1	SPDT on/on	Stages

1	3PDT Stomp foot	-
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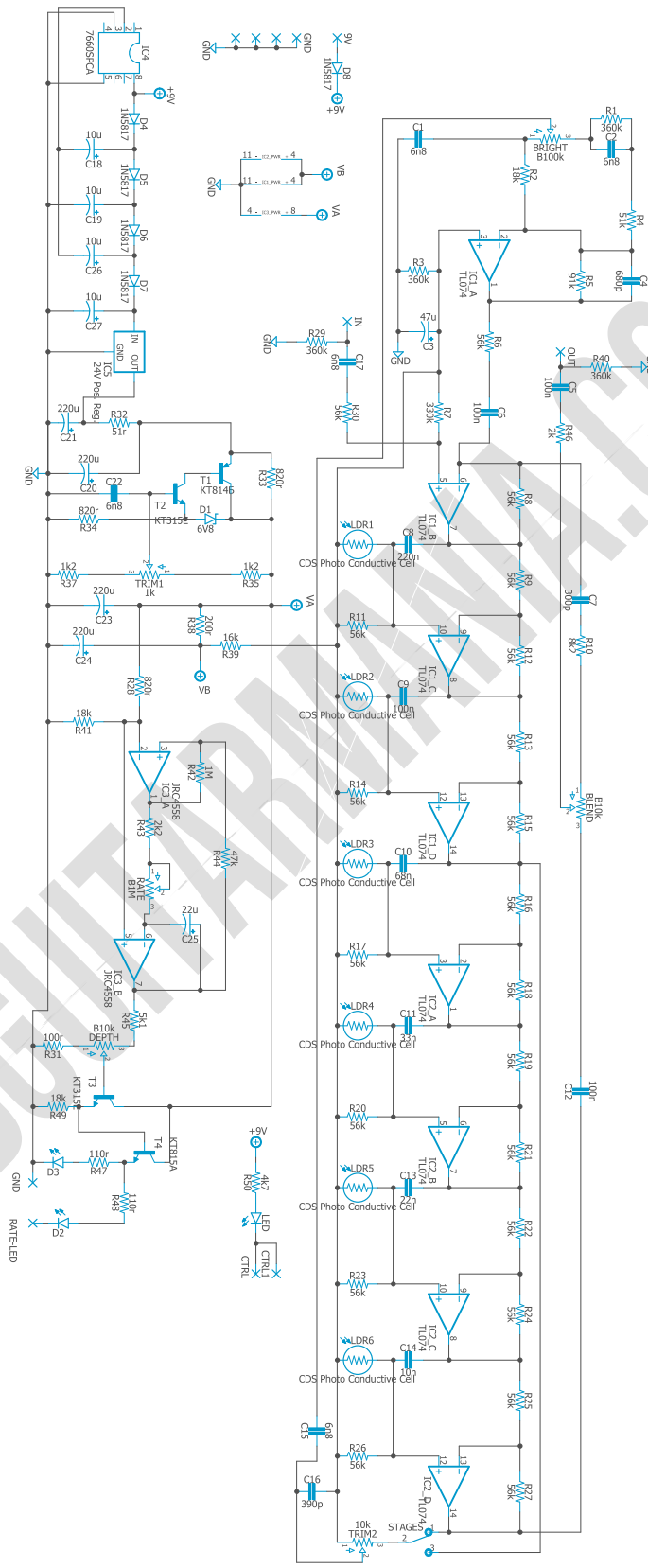
Transistors		
Qty	Value	Parts
1	KT814B	T1
2	KT315E	T2, T3
1	KT815A	T4

Diodes		
Qty	Value	Parts
5	1N5817	D4, D5, D6, D7, D8
1	6V8 Zener	D1
3	3mm red LED	D2, D3, LED

Jacks		
Qty	Value	Parts
1	DC JACK	-
2	AUDIO JACK	-

PCBGUITARMANIA.COM

Schematic



Components Recommendations

As many people like to experiment with some pedals with higher voltage, always ensure your **electrolytic capacitors'** max tolerance is over 25v.

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for those under 1nf. However, high-quality components such as Wima's Capacitors and Panasonic's electrolytics can deliver a better performance.

All the resistors used for testing this project are 1/4W Metal Film.

The BOM and Shopping list are exclusive regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

Build Notes

If this is one of your first projects, I recommend you to take a look at our [Pedal Building Guide](#).

For a successful and tidy build, it's recommended the following order:

1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off-board wiring

KT814B*

You can place a more accessible replacement with the same result: [any TIP45 bipolar transistor type or equivalent](#).

KT815A**

You can place a more accessible replacement with the same result: [any TIP41 bipolar transistor type or equivalent](#).

KT315E***

You can replace it with any general-purpose transistor with hfe between 200-300, such as 2N3903, 2N3904, S8050, C945 (no leg flipping needed), C3198 (no leg flipping needed). The original transistor has a 1-Emitter, 2-Collector, and 3-Base pinout; flip the legs correspondently if it is necessary.



1. Emitter
2. Collector
3. Base

CDS Photo Conductive Cell****

A trustful source for this component that sells worldwide:

<https://www.taydaelectronics.com/photo-conductive-cell-resistor-ldr-650nm-radial-ke-10720.html>

R36*****

R36 (TRIM1) should be set to get 5.6V at the T2 base.

POT2*****

Set POT2 (TRIM2) by ear until you get maximum modulation without self-oscillation.

Wiring Diagram

All our projects include a free 3PDT Board to make the wiring easier and tidier. Also, all of our PCBs feature the status LED on board.

The pad named “Ctrl” or “LED” is the one that controls the status of the led; wire it to the “LED” pad on the 3PDT board or in the control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB; check it [here](#) to access our [Pedal Wiring Guide](#).

Drill Template

This Project has been planned to fit into a 1590bb enclosure type.

Check the Attached “Drilling templates” to drill the box properly. The files are on Scale 1:1, ready to print on an A4 page.

Licensing and Usage

We really appreciate your trust and support in buying this PCB, as well as your will to dive into the DIY electronics world. For us, that's why you can make this project work properly and enjoy not only the building process but also experiment and play with it on your rig.

We try to reply to every question we receive on our email or our social media. Still, we try to encourage all our customers to join our [PCB Guitar Mania - Builders Group](#) on Facebook to post all your doubts, issues, suggestions, or requests, share your builds, and have some feedback from other fellow builders and us!

We tested all our projects following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been checked. These are suggestions based on the schematic analysis and the experiences and opinions of others. Feel free to share with us your views and recommendations regarding the mods your personal experimentation.

These boards may be used for commercial endeavors in any quantity unless expressly noted. No attribution is necessary, though accreditation or a link back is always much appreciated.

If you are a builder planning to make your own run of pedals, we also offer the service of custom-made boards with your brand and logo, design according to your specifications.

The only usage restrictions are that, first, you cannot resell the PCB as part of a kit without prior arrangement with us, and second, you cannot scratch off the silkscreen or other way of trying to hide our logos and the source of the PCBs. Like it's written above, if you want to have your designs with your brand and logo, we could undoubtedly reach an agreement.

Follow us on [Instagram](#) and [Facebook](#) to stay in tune with the latest projects!