Black Mirror

Based on:
Darkglass B3K

Amount of parts:
Average, total 73 components

Enclosure type:
125b

Effect type:
Bass Drive

Technology:
Jfet, opamps and CMOS

Get your board at:
Black Mirror

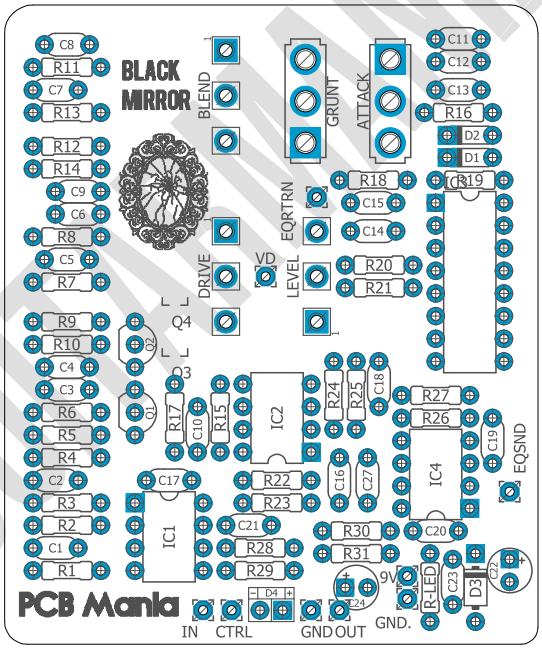
Build difficult:
Advanced

Power consumption:
9V

Get your kit at:
Das Musikding (Europe)

Project overview:

Inspired by Darkglass B3K, this project is a defined and powerful bass overdrive, with intuitive format that contains brutality and clarity at the same time.



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Introduction

Black Mirror delivers killer waves in an intuitive friendly-user way. Build it and immediately have the sound of a high-powered tube amp at your disposal! You can then use the simple controls to go from a tight, responsive boost to an all-out distorted assault.

Controls

- Attack Switch: Sets the amount of treble content to saturate.
- Grunt Switch: Sets the amount of low-frequency content to saturate by selecting between three different bass boost levels before the clipping stage.
- Blend control: Mixes the clean input signal with the overdriven signal.
- EQ Loop allows you to connect an external EQ before the blend knob.

Bill of materials

Resistors	
Part	**Value**
R1	1m
R2	1m
R3	10k
R4	100k
R5	1m
R6	3k3
R7	200k
R8	470k
R9	1m
R10	1m
R11	470k
R12	6k8
R13	1m
R14	22k
R15	330k
R16	6k8
R17	3k3
R18	470k
R19	100r
R20	10k
R21	1m
R22	100k
R23	33k
R24	10k
R25	22k
R26	22k
R27	47k
R28	1k
R29	100k
R30	10k
R31	10k
R-LED	2k2-4k7

Capacitors	
Part	**Value**
C1	100n
C2	1n
C3	220n
C4	22n
C5	22n
C6	22n
C7	100n
C8	220pf
C9	22n
C10	22pf
C11	4n7
C12	22n
C13	220n
C14	22pf
C15	1uf
C16	680pf
C17	22n
C18	2n2
C19	2n2
C20	1n
C21	1uf
C23	330n
C27	2n2

Electrolytics Capacitors	
Part	**Value**
C22	100uf
C24	100uf

Potentiometers	
Part	**Value**
BLEND	100k B
DRIVE	100k C
LEVEL	100k A

IC	
Part	**Value**
IC1	TL072
IC2	TL072
IC3	4049N
IC4	TL072

Transistors	
Part	**Value**
Q1*	J201
Q2*	J201

Switches	
Part	**Value**
Grunt	SPDT On-Off-On
Attack	SPDT On-Off-On

Diods	
Part	**Value**
D1	1n4148
D2	1n4148
D3	1n4001
D4	LED

Shopping list

Resistors		
Qty	**Value**	**Parts**
1	2k2-4k7	R-LED
3	100k	R4, R22, R29
1	100r	R19
5	10k	R3, R20, R24, R30, R31
1	1k	R28
7	1m	R1, R2, R5, R9, R10, R13, R21
1	200k	R7
3	22k	R14, R25, R26
1	330k	R15
1	33k	R23
2	3k3	R6, R17
3	470k	R8, R11, R18
1	47k	R27
2	6k8	R12, R16

Capacitors		
Qty	**Value**	**Parts**
2	100n	C1, C7
2	1n	C2, C20
2	1uf	C15, C21
2	220n	C3, C13
1	220pf	C8
6	22n	C4, C5, C6, C9, C12, C17
2	22pf	C10, C14
3	2n2	C18, C19, C27
1	330n	C23
1	4n7	C11
1	680pf	C16

Electrolytics Capacitors		
Qty	**Value**	**Parts**
2	100uf	C22, C24

Potentiometers		
Qty	**Value**	**Parts**
1	100k C	DRIVE
1	100k B	BLEND
1	100k A	LEVEL

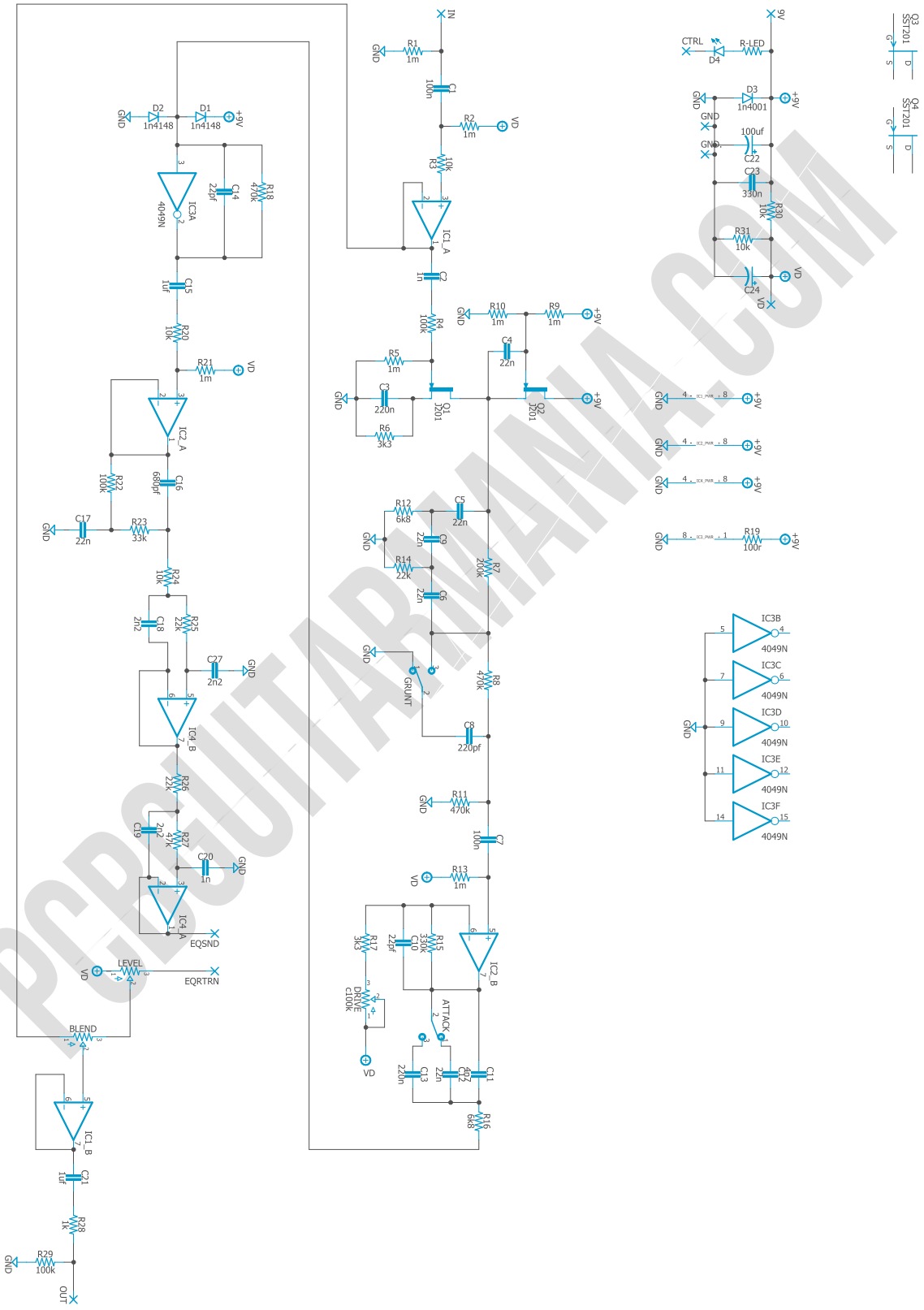
IC		
Qty	**Value**	**Parts**
3	TL072	IC1, IC2, IC4
1	4049N	IC3

Transistors		
Qty	**Value**	**Parts**
2	J201	**Q1*, Q2***

Switches		
Qty	**Value**	**Parts**
2	SPDT On-Off-On	Grunt, Attack

Diods		
Qty	**Value**	**Parts**
2	1n4148	D1, D2
1	1n4001	D3
1	LED	D4

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

Q1-Q4*
This board allows you to choose in between using a pair of through hole J201 for Q1 and Q2, or the SMD J201 for Q3 and Q4. Choose either pair as you prefer.

EQ LOOP
This project allows you to add an external EQ through a Loop, similar in a way to how the B7K operates. If you'd like to include another board with an active EQ on the same enclosure you can supply the power through the pad "VD", that delivers 4.5v.
If you prefer to go straight for the original version of the B3K just wire a cable straight from the pads "**EQSND**" to "**EQRETRN**".

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 125b 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.

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