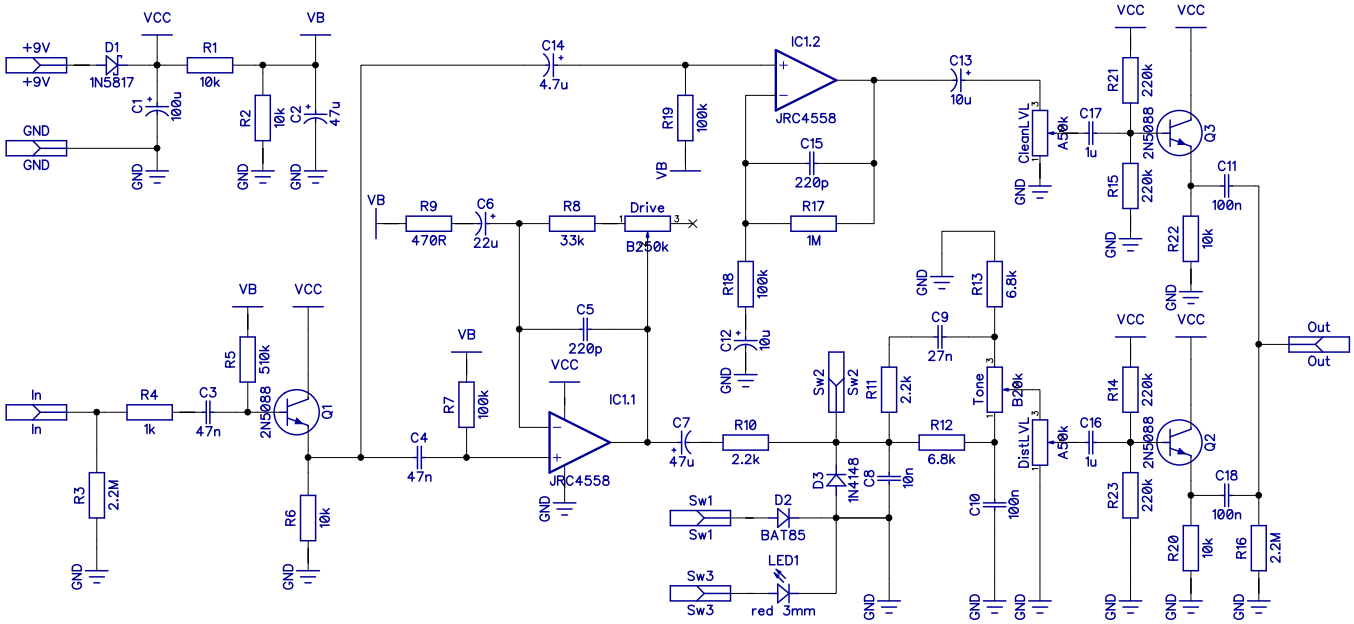
The Abyss

Release date: 2015.11.03.

The Abyss is a bass distortion. It is an original drdFX design based on the Maxon SD9 Sonic Distortion with some enhancments, such as a paralel clean boost and clipping diode option switch. The effect is especially designed for bass guitars because the boosted clean signal is mixed back to the output to retain the lost low frequencies in the distortion side. Of course the effect can be used with guitars too.

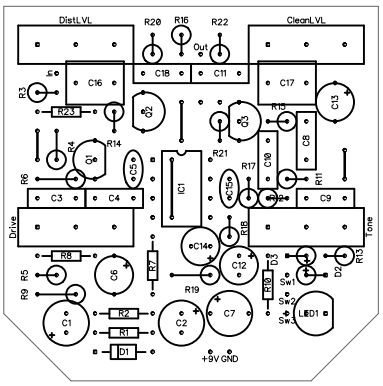
SCHEMATIC

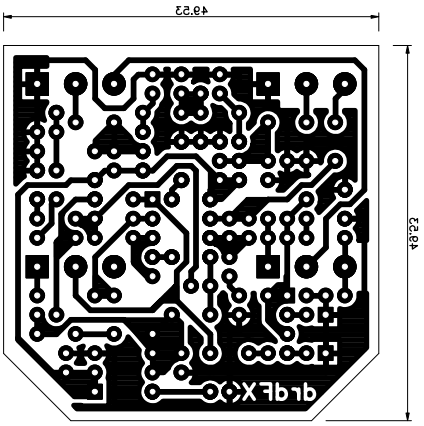


BOM											
Resistors				Capacitors				Semiconductors		Others	
R1	10k	R17	1M	C1	100u	C17	1u	D1	1N5817	CleanLVL	A50k
R2	10k	R18	100k	C2	47u	C18	100n	D2	BAT85	DistLVL	A50k
R3	2.2M	R19	100k	C3	47n			D3	1N4148	Drive	B250k
R4	1k	R20	10k	C4	47n			LED1	red 3mm	TOne	B20k
R5	510k	R21	220k	C5	220p			Q1	2N5088	Sw1	SPDT
R6	10k	R22	10k	C6	22u			Q2	2N5088		
R7	100k	R23	220k	C7	47u			Q3	2N5088		
R8	33k			C8	10n			IC1	JRC4558		
R9	470R			C9	27n						
R10	2.2k			C10	100n						
R11	2.2k			C11	100n						
R12	6.8k			C12	10u						
R13	6.8k			C13	10u						
R14	220k			C14	4.7u						
R15	220k			C15	220p						
R16	2.2M			C16	1u						

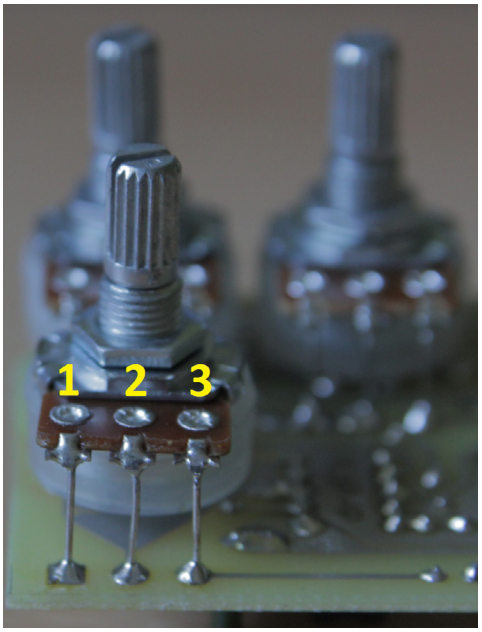
LAYOUT

Due to the size the PCB can only be built into a 1590B or a 125B box.





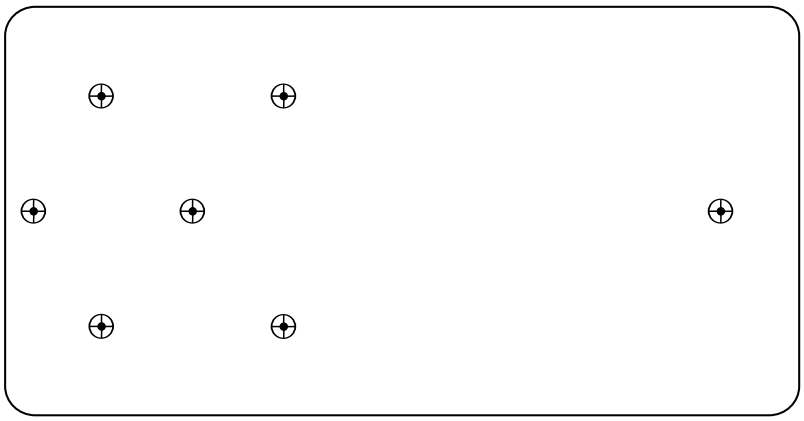
NOTES



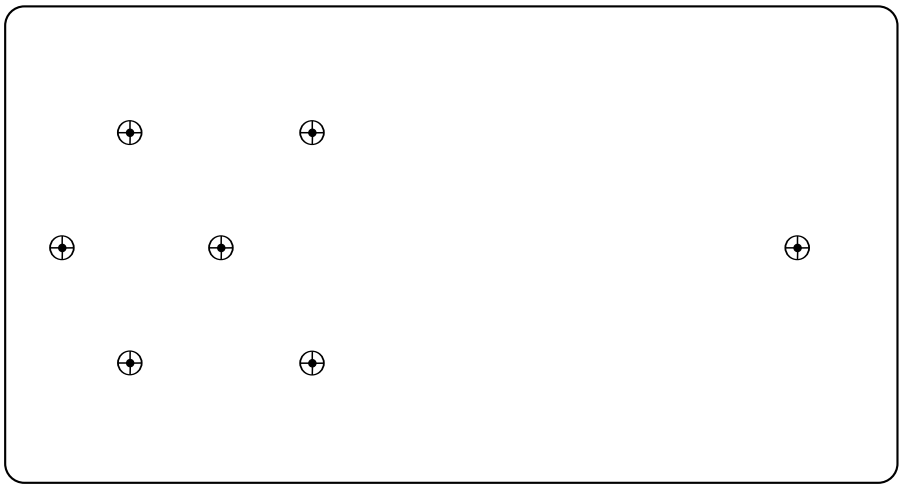
The pots are board mounted to the bottom of the board. The square pads mark the lug 1, for the numbering of the lugs see the picture.
The clipping diode switch is not board mounted, but connects with wires. If you plan to put it in the middle as in the Drilling Templates section, then carefully measure the length of the pot wires to have enough space to prevent contacting the switch lugs with the solder joints at the bottom of the board. I would suggest to use some insulating tape or material on the back of the board too beneath the switch (I usually use a small strip of double-sided foam tape and leave the film on one side). Because you need longer pot lugs you will most probably need smaller elco capacitors if you plan to build the effect in a 1590B box. The standard 11mm high ones will be too tall, use the smaller 4-6mm pieces. The original Maxon SD9 had two Si diodes in a symmetrical arrangement, I have changed that to two types of asymmetrical arrangements (Si + LED and Si + Schottky), but feel free to experiment.
The original Sonic Distortion had the common JRC4558 as a dual opamp. I have kept this, but socket the chip and experiment with different types too.
The 2N5088 transistors all just serve as buffers, so you can change them to any NPN type transistors, just check the pinout.
The Drive, Tone and Dist LVL pots control the distortion side: respectively the amount of distortion, the tone and the level. The Clean LVL pot controls the boosted clean signal's level. With the two level pots you can set the proportions of the distorted and clean signal. The two sides are completely independent, so it is possible to use either side alone too by turning down the other side's level pot completely.

DRILLING TEMPLATES

Here are the drilling templates for the 1590B and 125B boxes:



1590B



125B