Oxford

FX Type: **DISTORTION**
Build Level: Intermediate
Based On: Nobels® ODR-S™

Last Updated: June 7, 2024 11:55 AM

Overview

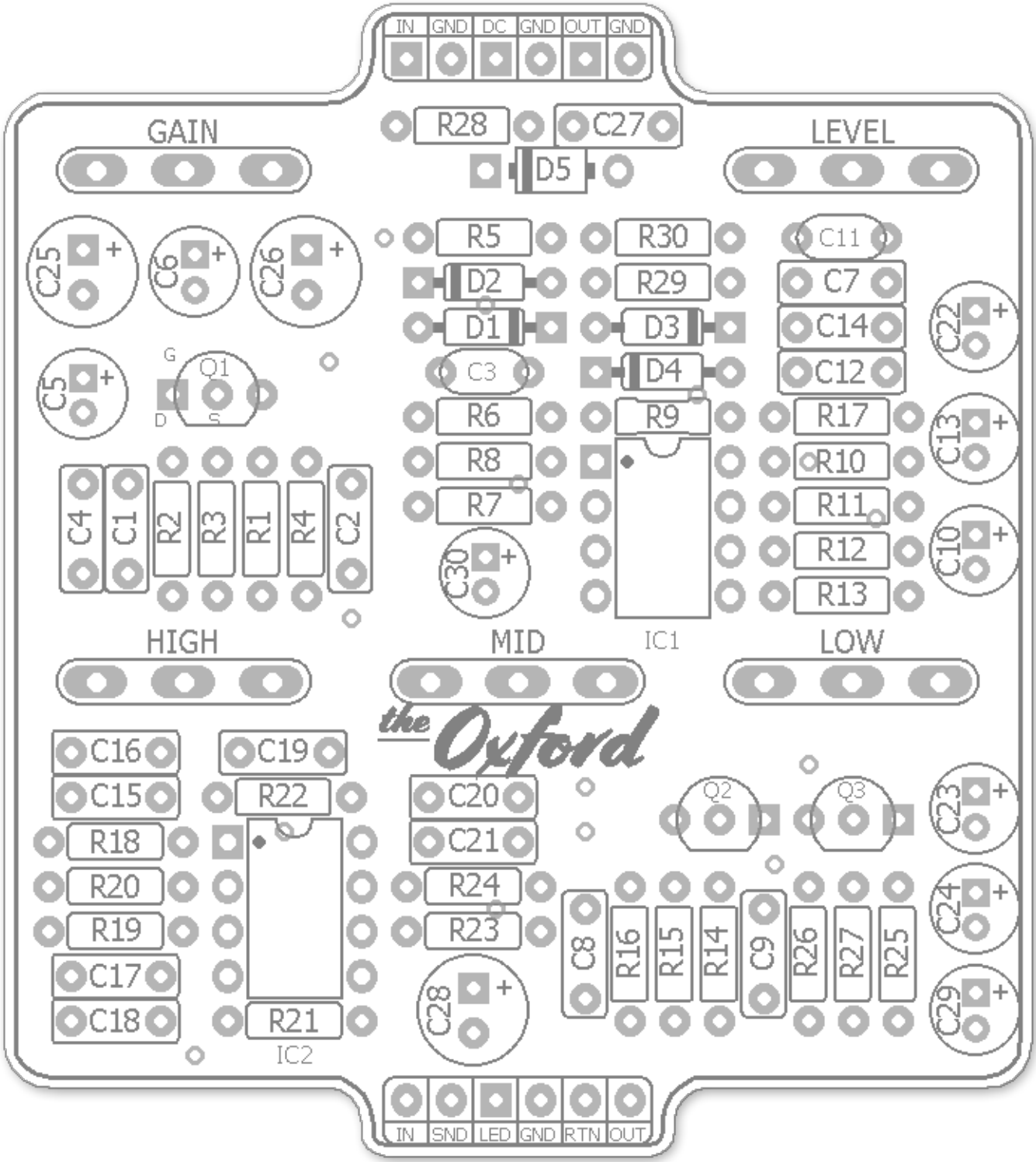
If you are a fan of the Nobels® ODR-1™, you'll no doubt like its cousin the ODR-S™. The addition of a three-band EQ offers more tonal range. The germanium clipping diodes makes for a thicker and more compressed overdrive/distortion than offered by the ODR-1™.

Controls

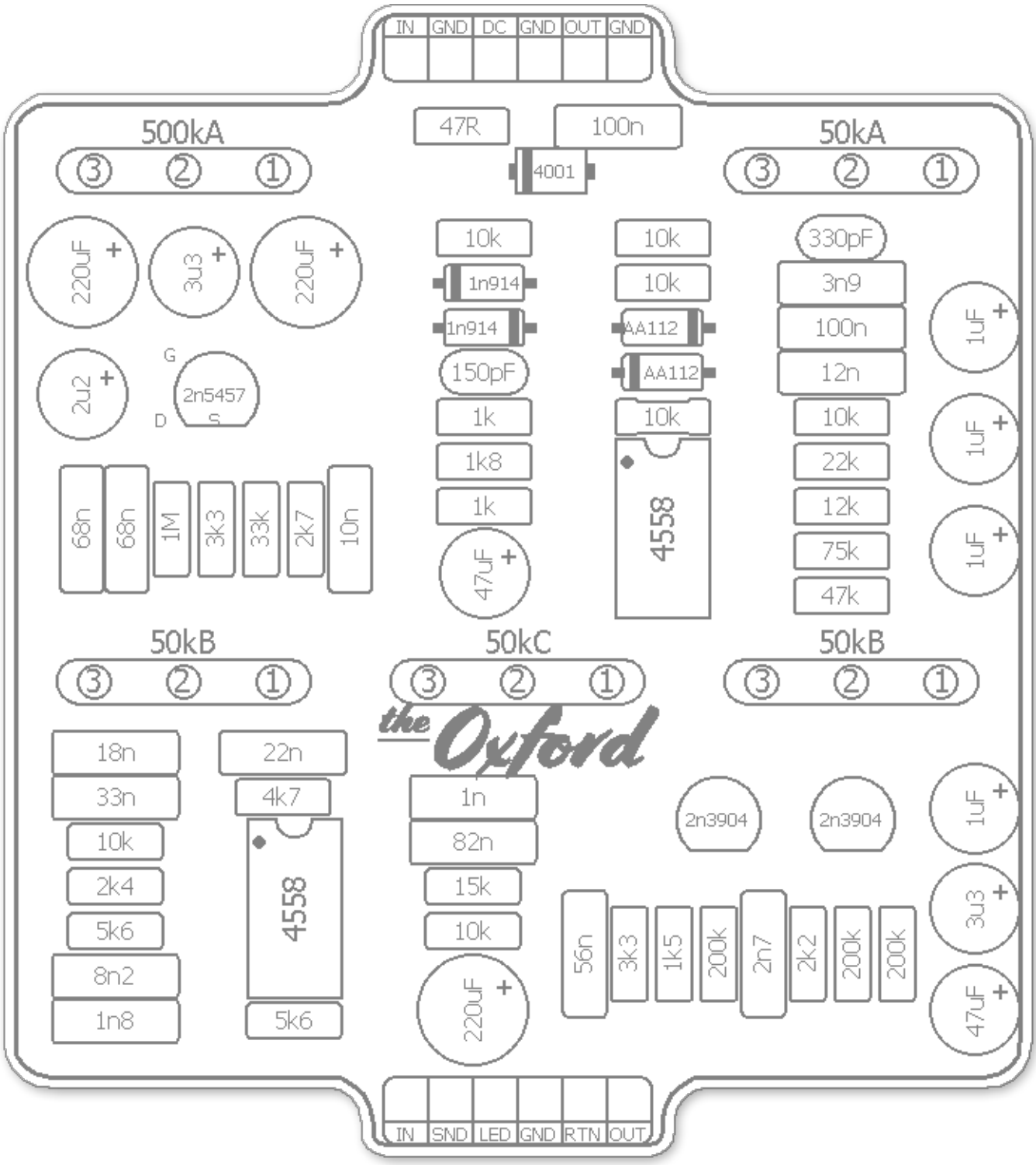
- **LEVEL:** Total effect output.
- **GAIN:** From moderate to heavy distortion.
- **BASS/TREBLE:** Active Baxandall style controls which allow for boost or cut in the bass and treble frequencies.
- **MIDS:** Ranges from mids scoop (CCW) to mids boost (CW) by way of a gyrator.

Further study:
https://nordland-electronics.de/en/blog/development-of-the-odr-s.html

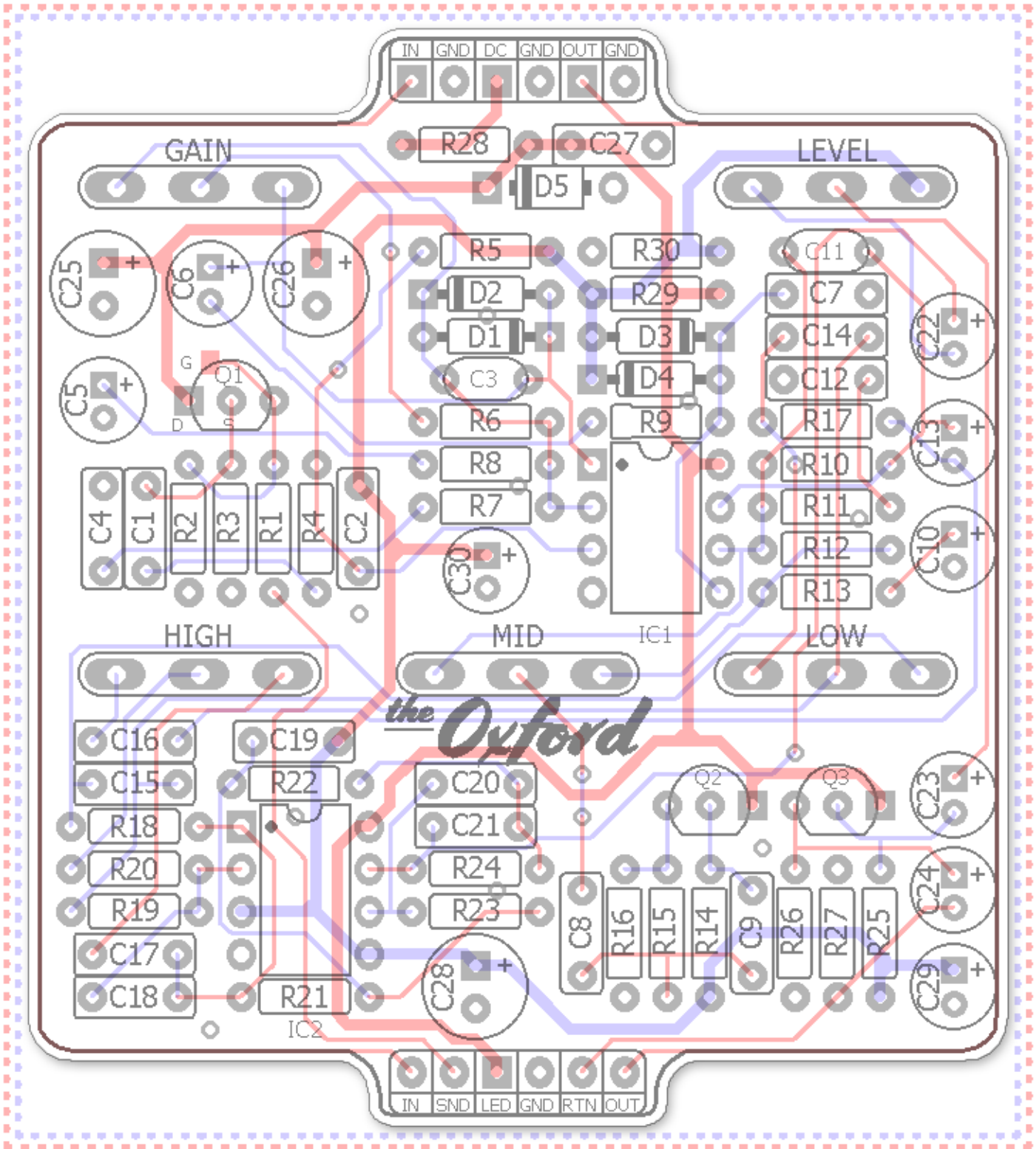
Parts Layout



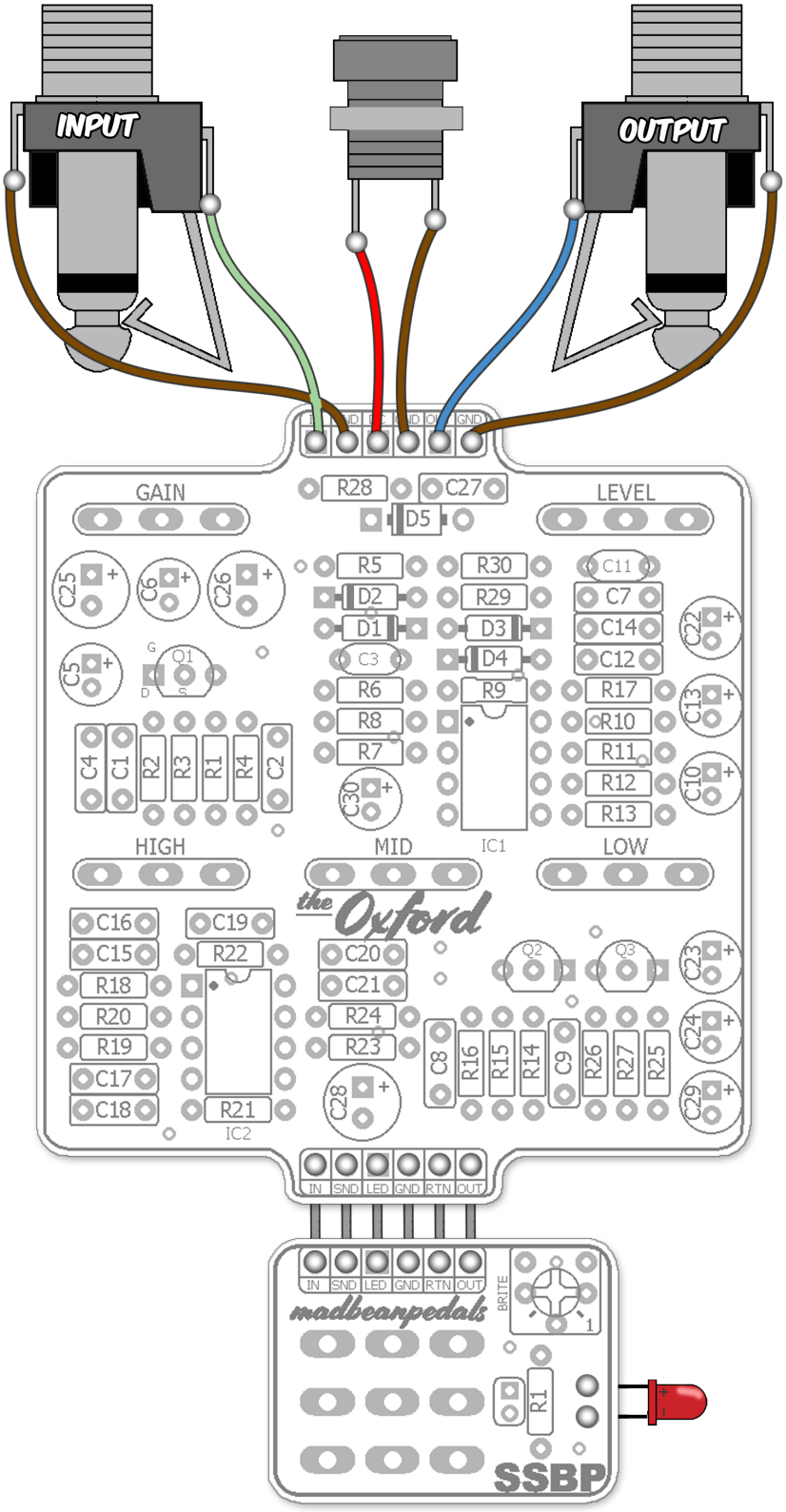
Component Values



Trace Layout



Wiring



The Oxford is compatible with the SSBP and SSABP bypass boards offered at madbeanpedals. Both use the same wiring.

B.O.M.

Resistors		Caps		Diodes	
R1	33k	C1	68n	D1	1n914
R2	1M	C2	10n	D2	1n914
R3	3k3	C3	150pF	D3	AA112
R4	2k7	C4	68n	D4	AA112
R5	10k	C5	2u2	D5	1n4001
R6	1k	C6	3u3	Transistors	
R7	1k	C7	3n9	Q1	2n5457
R8	1k8	C8	56n	Q2	2n3904
R9	10k	C9	2n7	Q3	2n3904
R10	22k	C10	1uF	IC	
R11	12k	C11	330pF	IC1	4558
R12	75k	C12	12n	IC2	4558
R13	47k	C13	1uF	Pots	
R14	200k	C14	100n	LEVEL	50kA
R15	1k5	C15	33n	LOW	50kB
R16	3k3	C16	18n	HIGH	50kB
R17	10k	C17	8n2	MID	50kC
R18	10k	C18	1n8	GAIN	500kA
R19	5k6	C19	22n		
R20	2k4	C20	1n		
R21	5k6	C21	82n		
R22	4k7	C22	1uF		
R23	10k	C23	1uF		
R24	15k	C24	3u3		
R25	200k	C25	220uF		
R26	2k2	C26	220uF		
R27	200k	C27	100n		
R28	47R	C28	220uF		
R29	10k	C29	47uF		
R30	10k	C30	47uF		

Shopping List

Value	QTY	Type	Rating
47R	1	Carbon / Metal Film	1/4W
1k	2	Carbon / Metal Film	1/4W
1k5	1	Carbon / Metal Film	1/4W
1k8	1	Carbon / Metal Film	1/4W
2k2	1	Carbon / Metal Film	1/4W
2k4	1	Carbon / Metal Film	1/4W
2k7	1	Carbon / Metal Film	1/4W
3k3	2	Carbon / Metal Film	1/4W
4k7	1	Carbon / Metal Film	1/4W
5k6	2	Carbon / Metal Film	1/4W
10k	7	Carbon / Metal Film	1/4W
12k	1	Carbon / Metal Film	1/4W
15k	1	Carbon / Metal Film	1/4W
22k	1	Carbon / Metal Film	1/4W
33k	1	Carbon / Metal Film	1/4W
47k	1	Carbon / Metal Film	1/4W
75k	1	Carbon / Metal Film	1/4W
200k	3	Carbon / Metal Film	1/4W
1M	1	Carbon / Metal Film	1/4W
150pF	1	Ceramic / MLCC	16v min.
330pF	1	Ceramic / MLCC	16v min.
1n	1	Film	16v min.
1n8	1	Film	16v min.
2n7	1	Film	16v min.
3n9	1	Film	16v min.
8n2	1	Film	16v min.
10n	1	Film	16v min.
12n	1	Film	16v min.
18n	1	Film	16v min.
22n	1	Film	16v min.
33n	1	Film	16v min.
56n	1	Film	16v min.
82n	1	Film	16v min.
68n	2	Film	16v min.
100n	2	Film	16v min.

Value	QTY	Type	Rating
1uF	4	Electrolytic	16v min.
2u2	1	Electrolytic	16v min.
3u3	2	Electrolytic	16v min.
47uF	2	Electrolytic	16v min.
220uF	3	Electrolytic	16v min.
1n914	2		
AA112	2	sub: 1n60P, or other GE	
1n4001	1		
2n5457	1	Through-Hole or SMD	
2n3904	2	or, 2n5088	
4558	2		
50kA	1	PCB Right Angle	16mm
50kB	2	PCB Right Angle	16mm
50kC	1	PCB Right Angle	16mm
500kA	1	PCB Right Angle	16mm

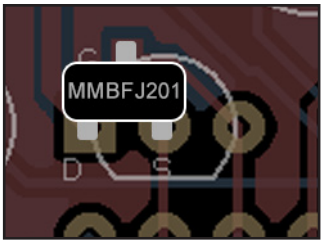
Additional Hardware

(1) 125B enclosure
(2) Lumberg 1/4” Compact mono jacks
(1) Slim 2.1mm DC jack
(1) Standard 3PDT footswitch
(1) 5mm LED

Build Notes

- The Oxford has two additions to the stock circuit: a 47R current limiting resistor on the supply and some additional filtering on the VB voltage. These were used to avoid motorboating when the Gain and Bass knob are maxed. Thanks to Kevin at AION FX for helping me to solve this issue on my prototype build!

- For Q1 you have the option of either a through-hole or a surface mount device. Rather than using two separate parts, they are combined into one so the surface mount version takes advantage of the two through-hole pads. This works out great and is actually easier to solder than a fully surface mount part. You can use the MMBFJ201 or MMBF5457. NOTE: some manufacturers may have the opposite pinout for the Source and Drain pins on surface mount devices. Doesn't matter - they can be used interchangeably in this application.



- The AA112 diodes are not readily available and it appears later units used 1n60P germanium diodes as a sub. Since I do not stock 1N60P I used D9E for mine and those worked great, although they do have a somewhat higher V_F.

Circuit Voltages

IC1	4558
1	4.47
2	4.47
3	4.46
4	0.00
5	4.48
6	4.47
7	4.47
8	9.06
IC2	**4558**
1	4.47
2	4.47
3	4.47
4	0.00
5	4.48
6	4.47
7	4.47
8	9.07

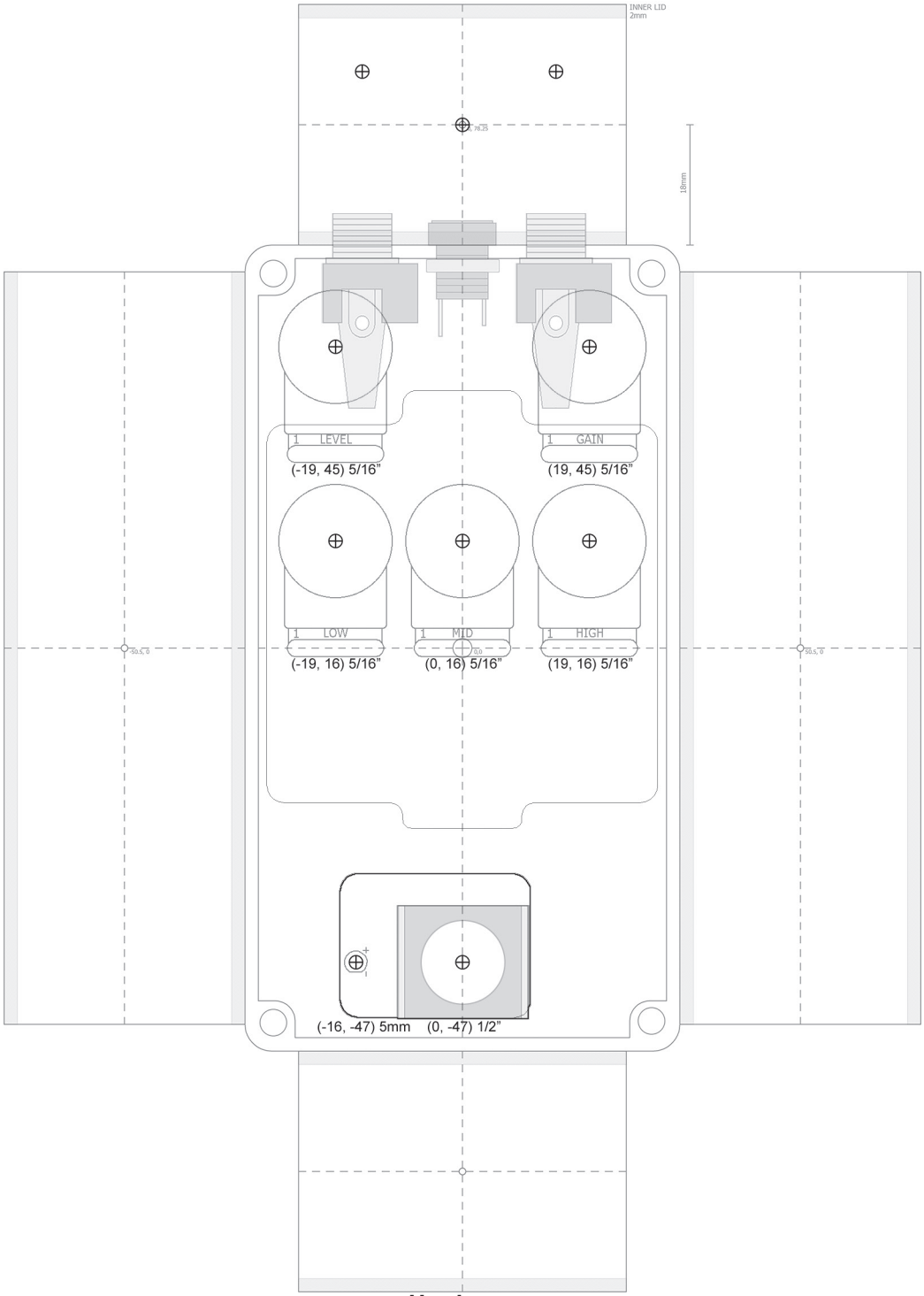
Q1	2n5457
D	9.06
S	560mV
G	0
Q2	**2n3904**
C	9.06
B	3.48
E	2.87
Q3	**2n3904**
C	9.06
B	3.7
E	2.54

9.44vDC One Spot supply
Current Draw: ~9mA
Knobs @ 50%

125B Drill Template

Coordinates are denoted in (X,Y), drill size format starting from the center (0,0) location of the enclosure.

Tayda drill template: https://drill.taydakits.com/box-designs/new?public_key=cGZLSnR5d1BhaUlJb3FmOGVaMTNtdz09Cg==

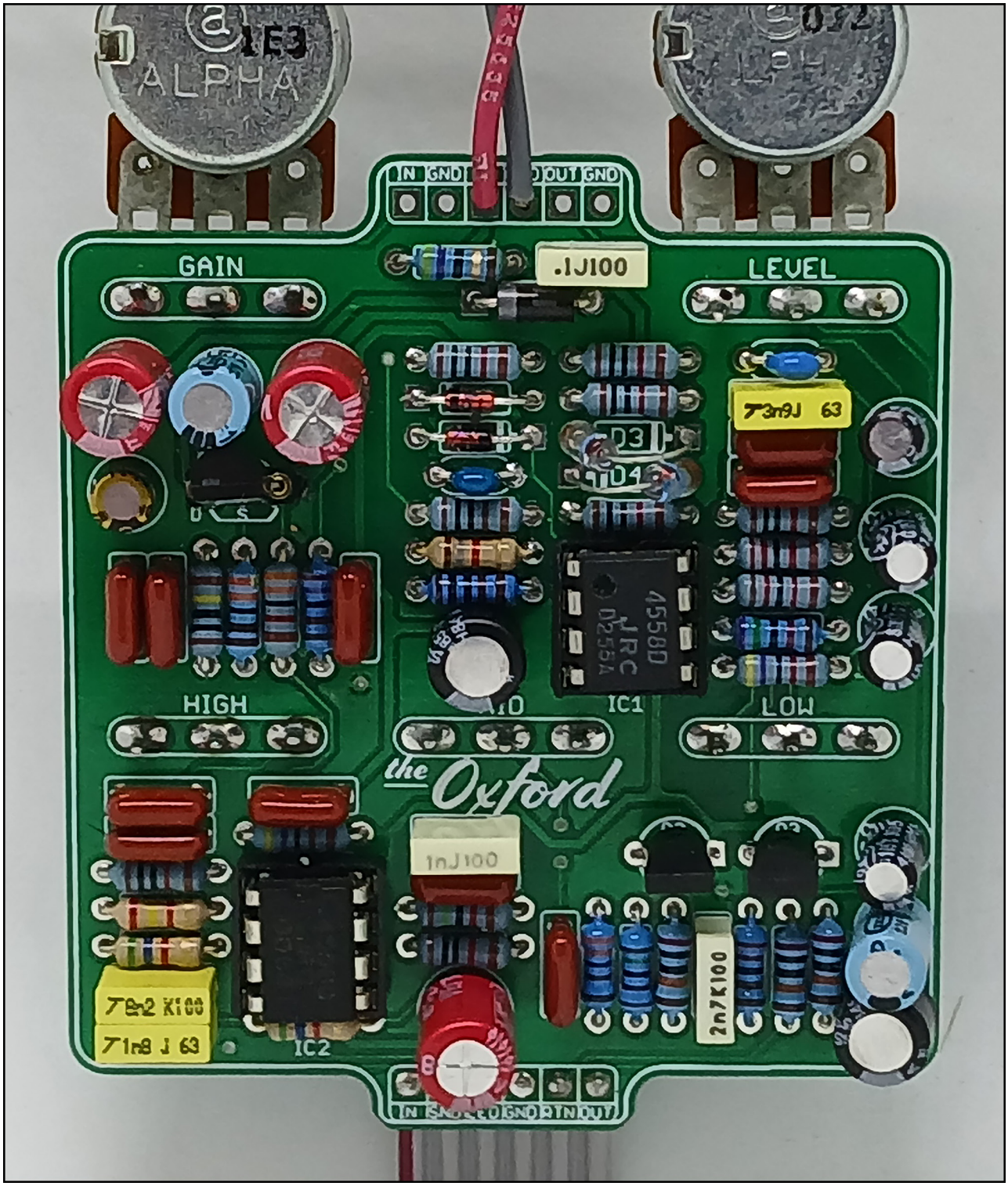


Hardware

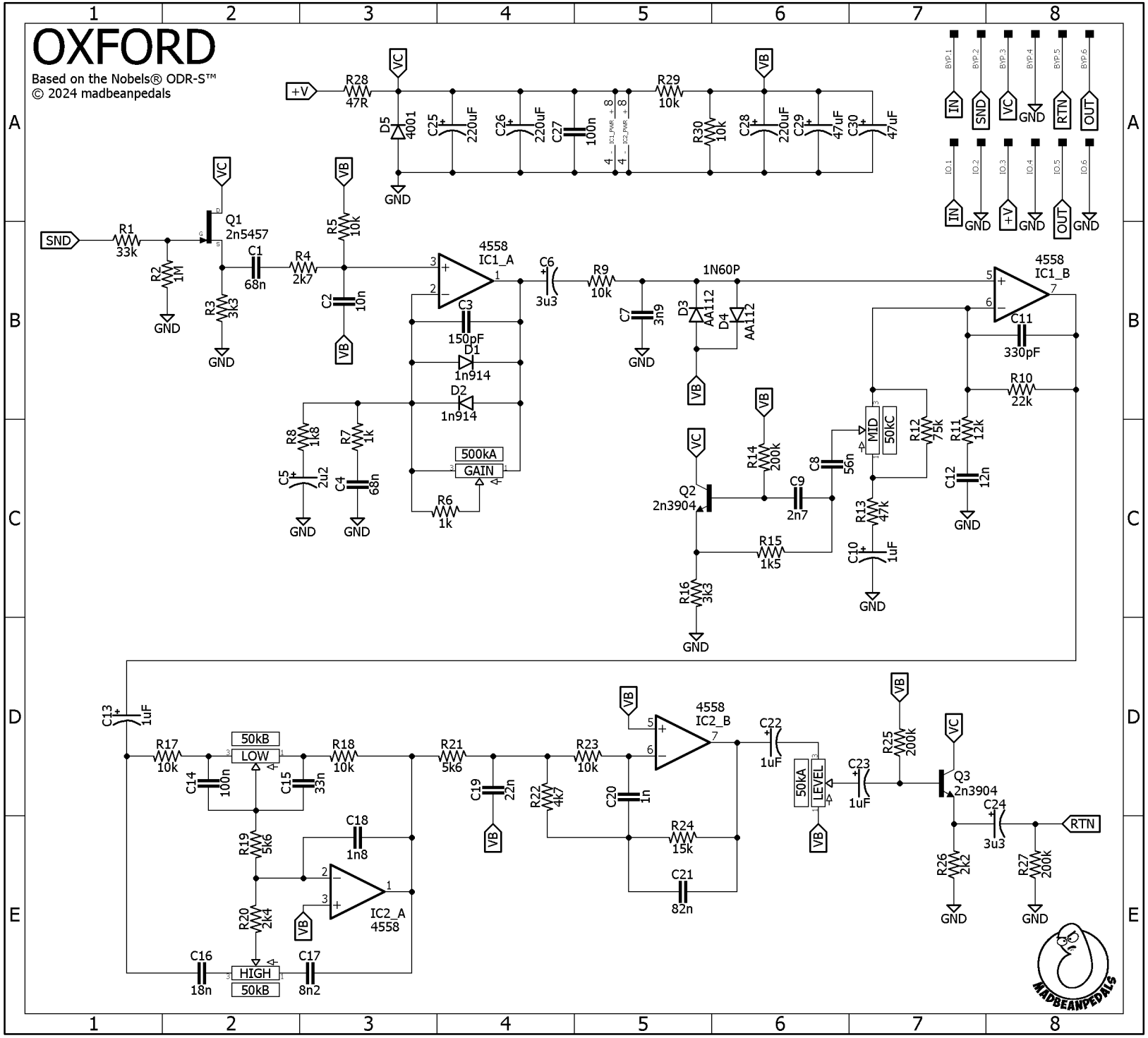
125B enclosure
Lumberg 1/4" Compact mono jacks
Slim 2.1mm DC jack
Standard 3PDT footswitch
5mm LED

NOTE: Different 1/4" and DC jack styles may require different sized drill holes.

Build Pic


ALPHA
IN GND OUT GND
GAIN
.1J100
LEVEL
D3
D4
4558D
IRC
0254
IC1
HIGH
LOW
the Oxford
1nJ100
2n7K100
IC2
IN GND GND PIN OUT

Schematic


OXFORD
Based on the Nobels® ODR-S™
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+V
R28 47R
D5 4001
C25 220uF
C26 220uF
C27 100n
R29 10k
R30 10k
C28 220uF
C29 47uF
C30 47uF
GND
VC
VB
BYP-1
BYP-2
BYP-3
BYP-4
BYP-5
BYP-6
IN
SND
VC
GND
RTN
OUT
IO-1
IO-2
IO-3
IO-4
IO-5
IO-6
+V
SND
R1 33k
R2 1M
R3 3k3
Q1 2n5457
C1 68n
R4 2k7
R5 10k
C2 10n
4558 IC1_A
C3 150pF
D1 1n914
D2 1n914
R6 1k
500kA GAIN
R8 1k8
R7 1k
C5 2u2
C4 68n
C6 3u3
R9 10k
C7 3n9
1N60P
D3 AA112
D4 AA112
4558 IC1_B
C11 330pF
R10 22k
R12 75k
MID 50kC
R11 12k
C12 12n
R14 200k
C8 56n
Q2 2n3904
C9 2n7
R13 47k
R15 1k5
C10 1uF
R16 3k3
C13 1uF
R17 10k
50kB LOW
R18 10k
C14 100n
C15 33n
R19 5k6
C18 1n8
R20 2k4
IC2_A 4558
C16 18n
HIGH 50kB
C17 8n2
R21 5k6
C19 22n
R22 4k7
R23 10k
C20 1n
4558 IC2_B
R24 15k
C21 82n
C22 1uF
50kA LEVEL
C23 1uF
R25 200k
Q3 2n3904
C24 3u3
R26 2k2
R27 200k
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