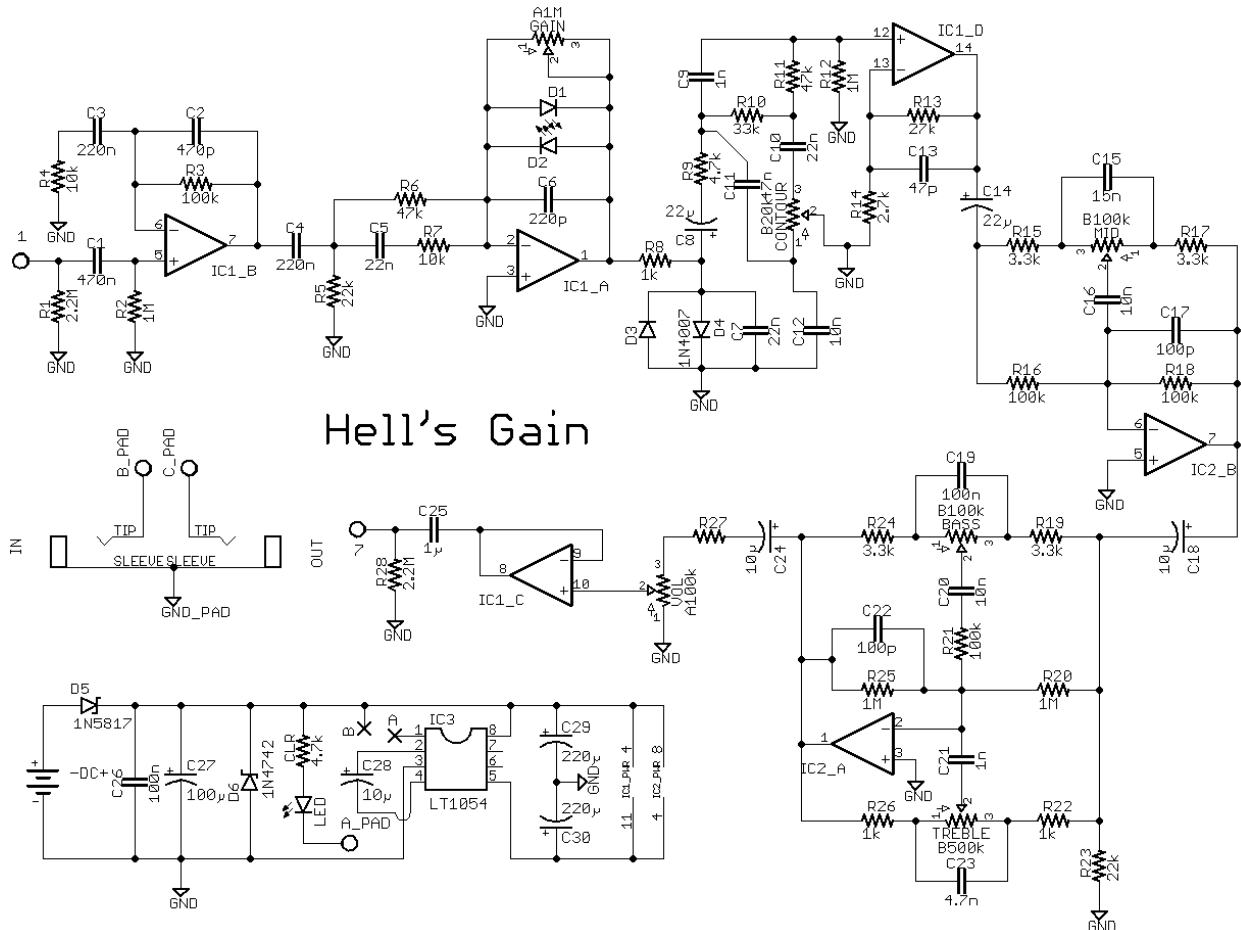


# HELL'S GAIN

## DESCRIPTION

The HELL'S GAIN circuit is a high gain Marshall-style amp emulator designed by Haroldo Gamal from the Handmades Brasil forum. The design is essentially several cascaded opamp gain stages followed by an active 3-band EQ, and runs off a bi-polar power supply provided by a built in charge pump. Either a MAX1044/TL7660 or an LT1054 chip can be used for the charge pump, and it will fit into a 125B with board mounted pots.

## SCHEMATIC



## BILL OF MATERIALS

### Resistors

R1	2.2M
R2	1M
R3	100k
R4	10k
R5	22k
R6	47k
R7	10k
R8	1k
R9	4.7k
R10	33k
R11	47k
R12	1M
R13	27k
R14	2.7k
R15	3.3k
R16	100k
R17	3.3k
R18	100k
R19	3.3k
R20	1M
R21	100k
R22	1k
R23	22k
R24	3.3k
R25	1M
R26	1k
R27	120k (100-220k)
R28	2.2M
CLR	4.7k

### Capacitors

C1	470n
C2	470p
C3	220n
C4	220n
C5	22n
C6	220p
C7	22n
C8	22μ
C9	1n
C10	22n
C11	47n
C12	10n

C13	47p
C14	22μ
C15	15n
C16	10n
C17	100p
C18	10μ
C19	100n
C20	10n
C21	1n
C22	100p
C23	4.7n
C24	10μ
C25	1μ
C26	100n
C27	100μ
C28	10μ
C29	220μ
C30	220μ

### Semiconductors

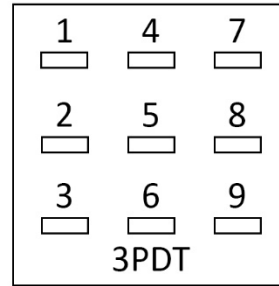
D1	3mm red LED
D2	3mm red LED
D3	1N4007
D4	1N4007
D5	1N5817
D6	1N4742
IC1	TL074
IC2	TL072
IC3	LT1054 or MAX1044/TL7660

### Electromechanical

Gain	A1M
Contour	B20k
Bass	B100k
Mid	B100k
Treble	B500k
Volume	A100k

Notes

If using a MAX1044 for the charge pump, jumper the pads A and B. Input and Output jacks are meant to be connected to the input/output pads at the top of the board, and the numbered pads at the bottom of the board relate to a 3PDT footswitch.

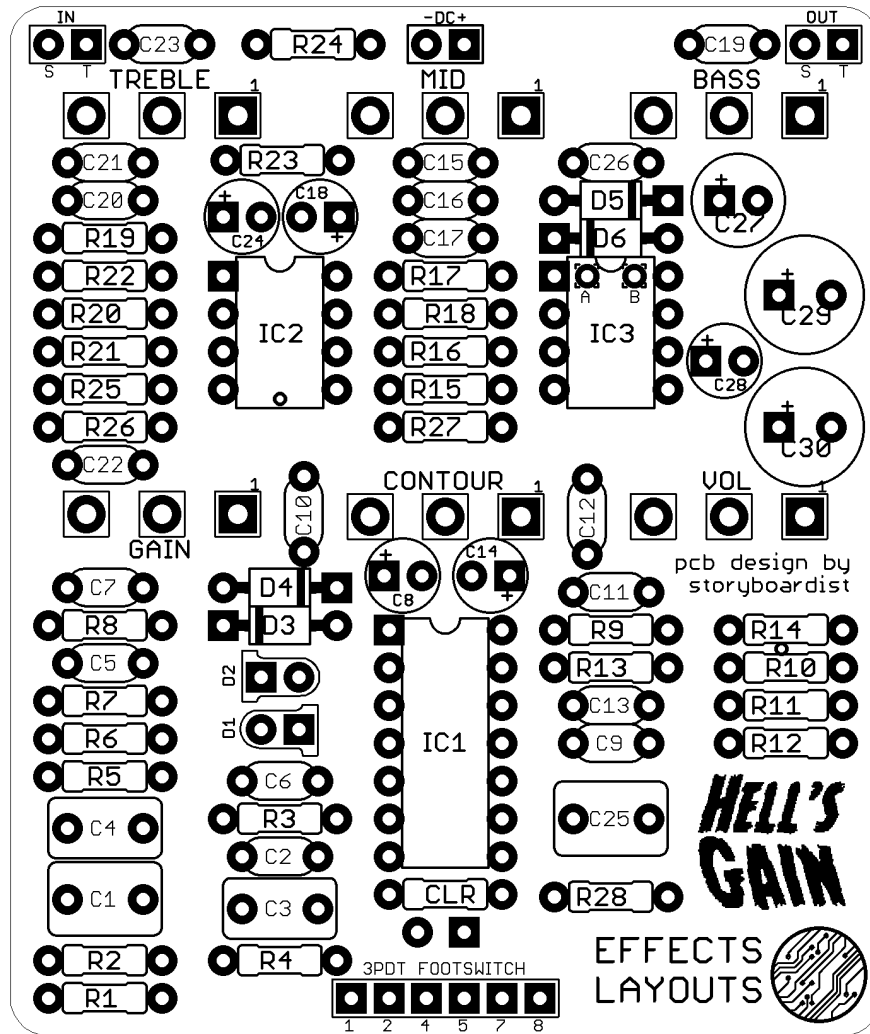


**SHOPPING LIST**

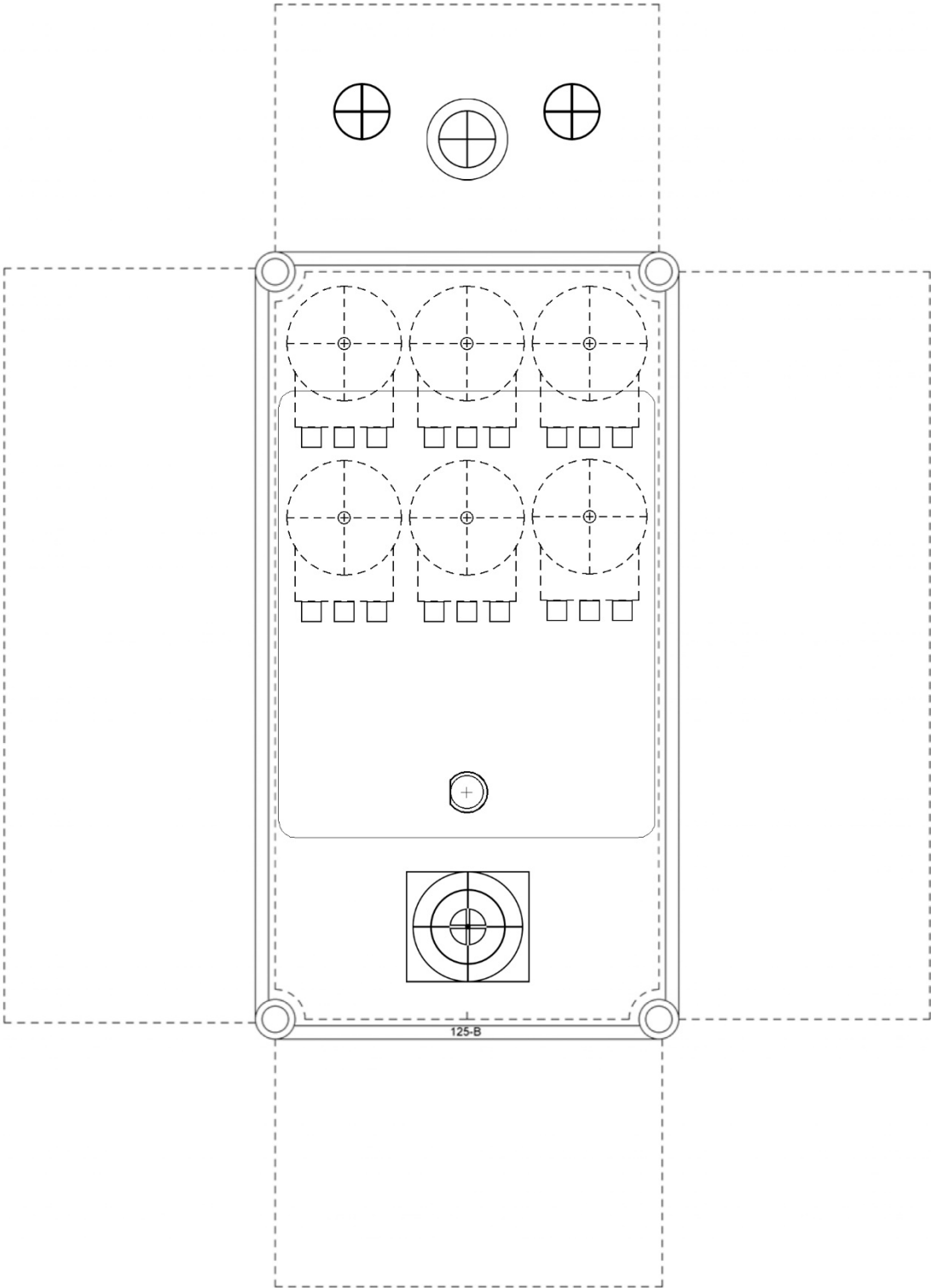
Value	Type (suggested)	Quantity
1k	¼ watt metal or carbon film	3
2.7k	¼ watt metal or carbon film	1
3.3k	¼ watt metal or carbon film	4
4.7k	¼ watt metal or carbon film	2
10k	¼ watt metal or carbon film	2
22k	¼ watt metal or carbon film	2
27k	¼ watt metal or carbon film	1
33k	¼ watt metal or carbon film	1
47k	¼ watt metal or carbon film	2
100k	¼ watt metal or carbon film	4
120k	¼ watt metal or carbon film	1
1M	¼ watt metal or carbon film	4
2.2M	¼ watt metal or carbon film	2
47p	Ceramic (63v or higher)	1
100p	Ceramic (63v or higher)	2
220p	Ceramic (63v or higher)	1
470p	Ceramic (63v or higher)	1
1n	Film (63v or higher)	2
4.7n	Film (63v or higher)	1
10n	Film (63v or higher)	3
15n	Film (63v or higher)	1
22n	Film (63v or higher)	3
47n	Film (63v or higher)	1
100n	Film (63v or higher)	2
220n	Film (63v or higher)	2
470n	Film (63v or higher)	1
1µ	Film (63v or higher)	1
10µ	Electrolytic (35v or higher)	3
22µ	Electrolytic (35v or higher)	2
100µ	Electrolytic (35v or higher)	1

220μ	Electrolytic (35v or higher)	2
1N4007		2
1N4742		1
1N5817		1
3mm red LED		2
5mm LED		1
LT1054/MAX1044/TL7660	Charge pump	1
TL072	Dual opamp	1
TL074	Quad opamp	1
3PDT	Footswitch	1
A100k	16mm right angle PC mount	1
A1M	16mm right angle PC mount	1
B20k	16mm right angle PC mount	1
B100k	16mm right angle PC mount	2
B500k	16mm right angle PC mount	1

LAYOUT



**DRILL TEMPLATE (125B)**



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