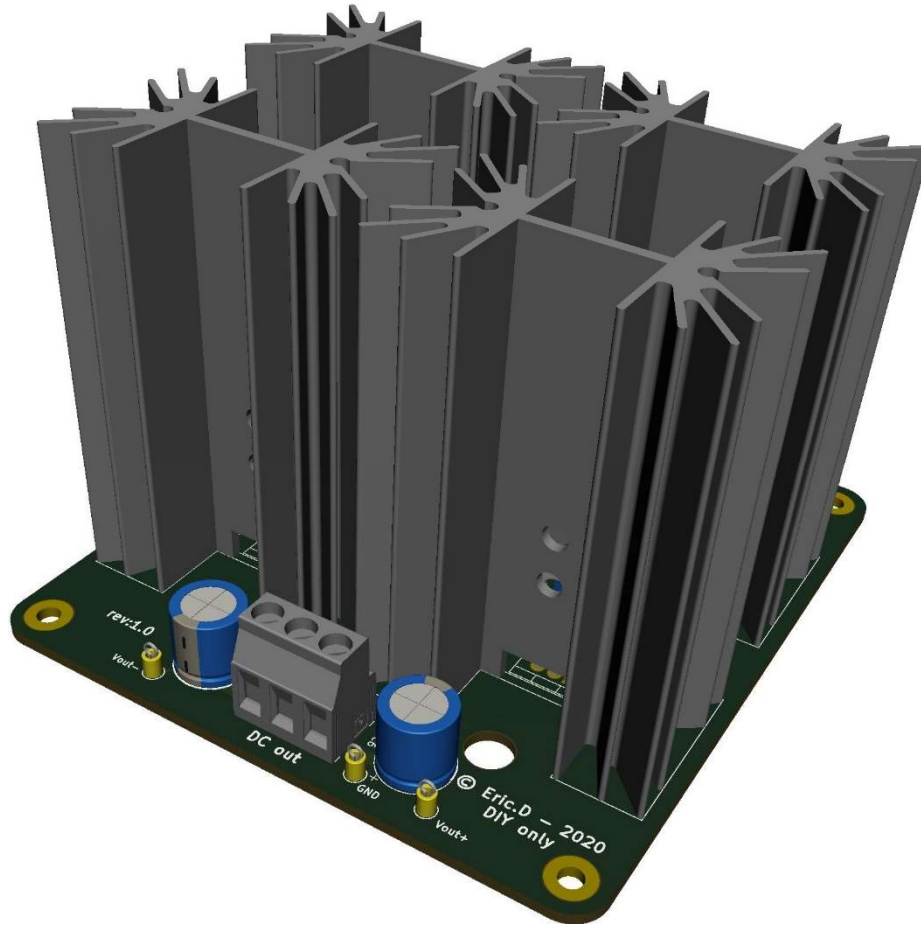


UGS Muse Salas' shunt regulators +/- 24V - 100mA

Eric.D (HCFR) / Eric06 (diyAudio)

Rev 1.0a



For the original shunt regulator design, refer to Salas's project:

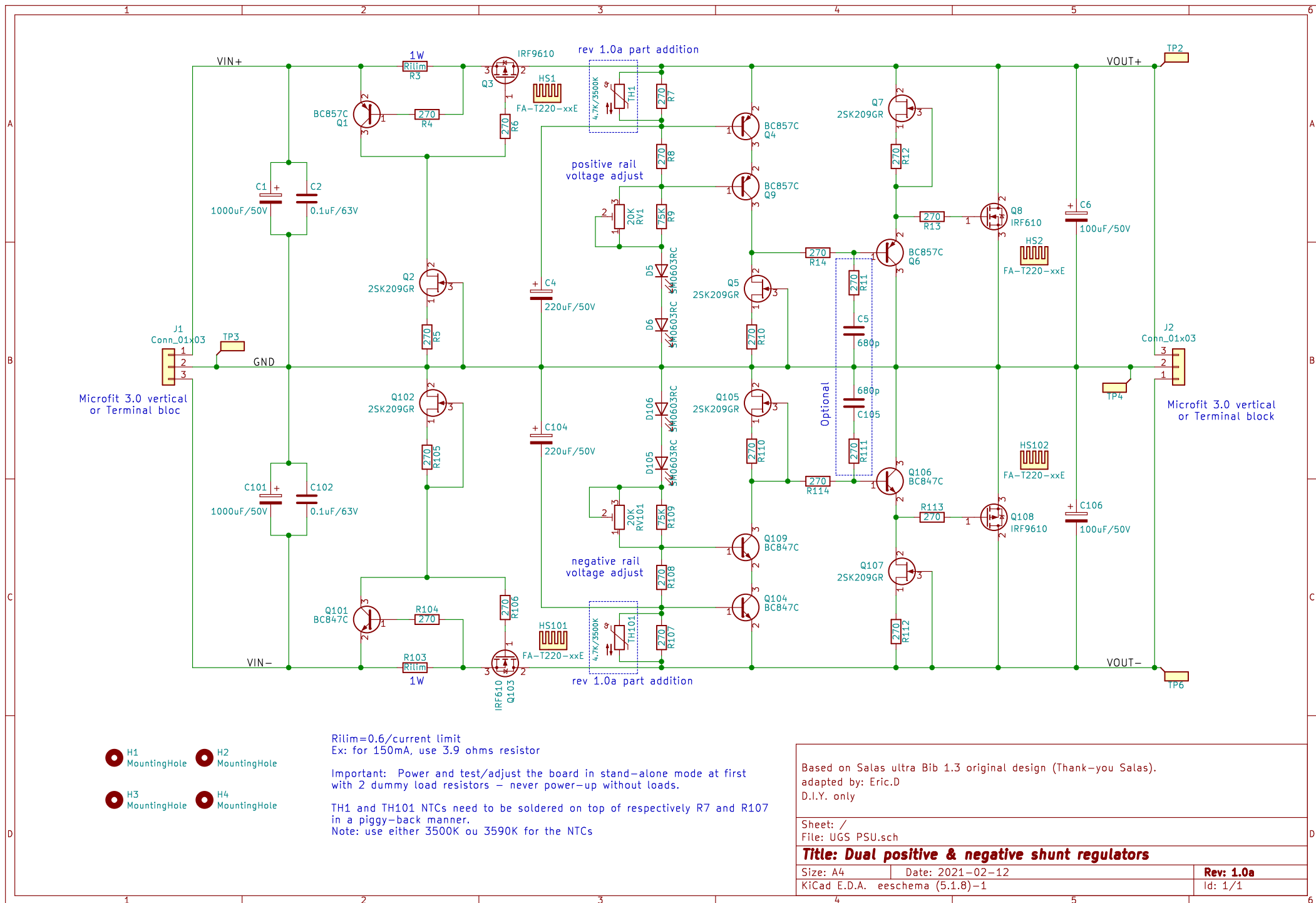
<https://www.diyaudio.com/forums/power-supplies/322411-salas-sslv1-3-ultrabib-shunt-regulator.html>

For the full UGS_muse project, refer to Alex_twn's topic :

<https://www.homecinema-fr.com/forum/diy-amplification/ugs-muse-edition-t30058092.html>

Document history:

Rev 1.0:	first release (14-Apr-2020)
Rev 1.0a	thermistors additions (12-Feb-2021)



Dual Positive&Negative Shunt Regulators PCB BOM

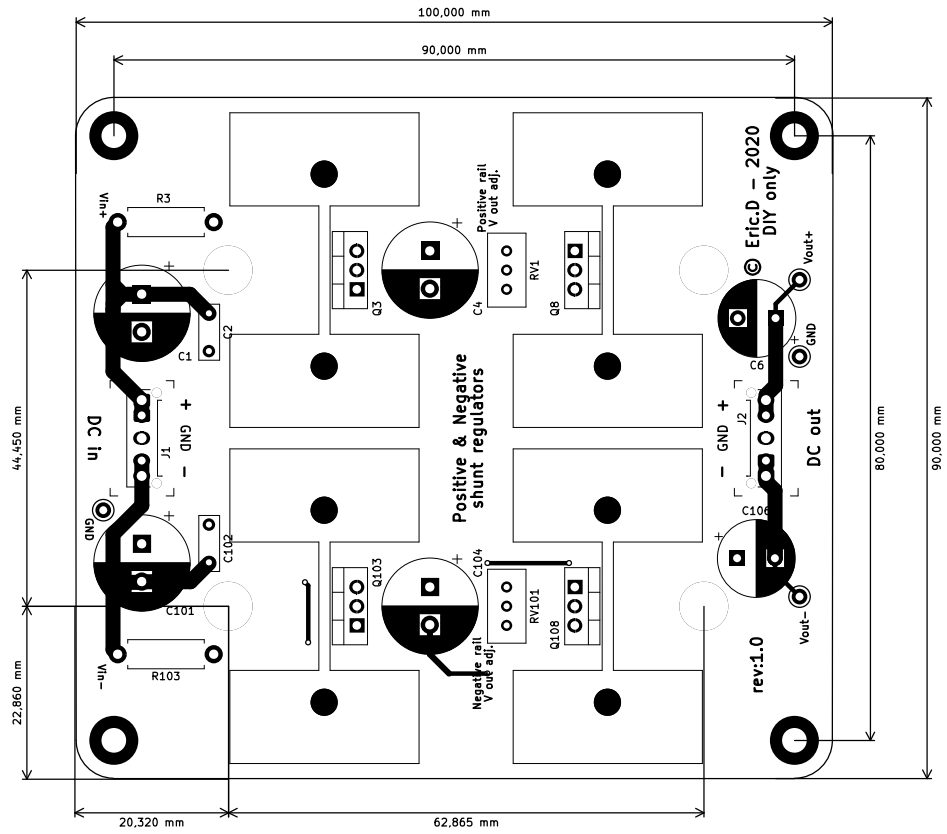
Eric.D - rev1.0a : feb12,2021

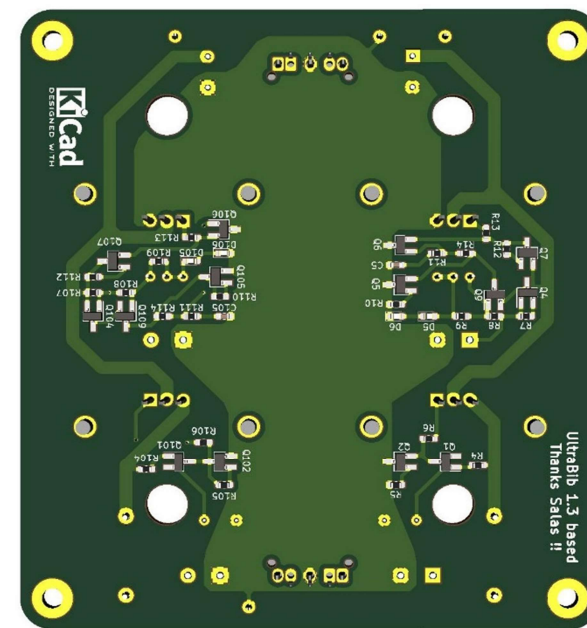
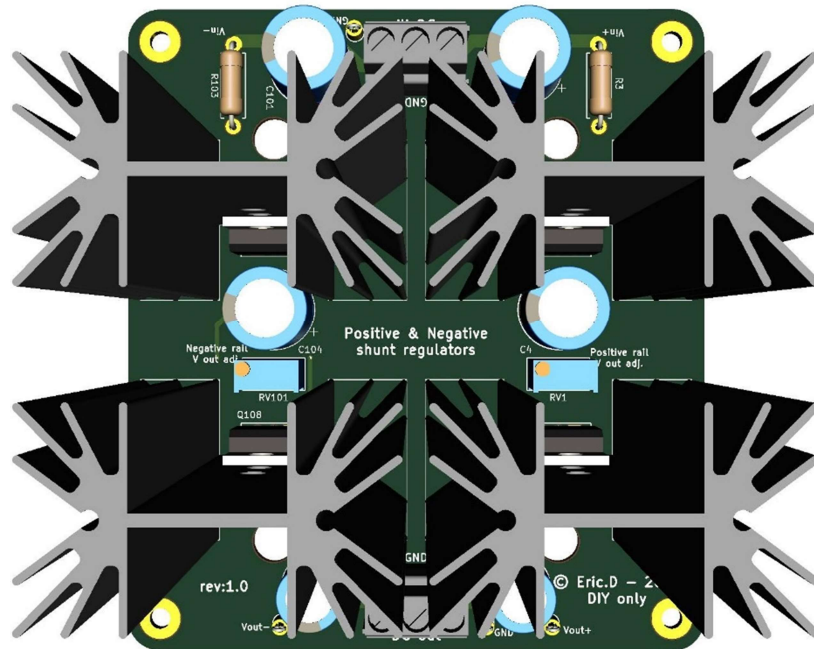
Schematic references	Value	Description,Package	Mfr P/N	Mouser P/N	Digikey P/N	Qty
Q1, Q4, Q6, Q9	BC857C	BJT PNP 45V 100mA, SOT-23-3	BC857CW,135	771-BC857CW135	BC857CLT3GOSCT-ND	4
Q101, Q104, Q106, Q109	BC847C	BJT NPN 45V 100mA, SOT-23-3	BC847CW,135	771-BC847CW135	BC847CLT3GOSCT-ND	4
Q3, Q108	IRF9610	MOSFET P-Ch, TO-220-3	IRF9610PBF	844-IRF9610PBF	IRF9610PBF-ND	2
Q8, Q103	IRF610	MOSFET N-Ch, TO-220-3	IRF610PBF	844-IRF610PBF	IRF610PBF-ND	2
Q2,Q5,Q7,Q102,Q105,Q107	2SK209GR	JFET N_Ch, SC-59	2SK209-GR(TE85L,F)	757-2SK209GRTE85LF	2SK209-GR(TE85LF)CT-ND	6
D5,D6,D105,D106	SM0603RC	red LED 2V 20mA, 0603	SM0603RC	749-SM0603RC	511-1301-1-ND	4
R3,R103	3R9	Resistors axial 1W, L9.9mm_D3.6mm_P12.70mm (for current limit ~150mA)	PR01000103908JR500	594-5073NW3R900J	PPC3.9W-1CT-ND	2
R[4:8],R[10:13],R[104:108],R[100:113]	270R	Resistors 1/16W, 1%, 0603	RR0816P-271-D	754-RR0816P-271D	RR08P270DCT-ND	18
R9,R109	75K	Resistors 100mW, 1%, 0603	MCT06030C7502FP500	594-MCT06030C7502FP5	749-1681-1-ND	2
RV1, RV101	20K	Trimmer 3/8" vertical adjust Ex:3296W/PV36W(Bourns);T93YA(Vishay);67W(BI/TT)	T93YA203KT20	72-T93YA-20K	T93YA-20K-ND	2
C1,C101	1000uF/50V	Capacitors radial D12.5mm P5mm	UVR1H102MHD	647-UVR1H102MHD	493-1111-ND	2
C2,C102	100nF/63V	Capacitors MKS2 P5mm	MKS2-.1/63/5	505-MKS2.1/63/5	1928-1656-ND	2
C4,C104	220uF/50V	Capacitors radial D12.5mm P5mm	UFG1H221MHM1TO	647-UFG1H221MHM1TO	493-10910-1-ND	2
C5,C105	680p	Capacitors COG, 0603 (see note)	C0603C681J5GAC	80-C0603C681J5GAC	399-3289-1-ND	2
C6,C106	100uF/50V	Capacitors radial D10mm P5mm	EEUFC1H101	667-EEU-FC1H101	P10323-ND	2
J1,J2,J101,J102	Conn 01x03	Terminal block 3pos P5mm (ex: Phoenix contact MKDSN)	1729021	651-1729021	277-1237-ND	2
HS1,HS2,HS3,HS4	FA-T220-xxE	Ohmite FA-T220 series Heatsink	FA-T220-51E	588-FA-T220-51E	FA-T220-51E-ND	4
TH1, TH101	4,7K/3500K	Thermistor NTC, 0603	NCP18XM472E03RB	81-NCP18XM472E03RB	use substitute	2
J1,J2,J101,J102 (substitute parts)	Conn 01x03	Molex Micro-Fit 3.0 3pos vertical header	43650-0315	538-43650-0315	WM1918-ND	2
		Molex Micro-Fit 3.0 3pos receptacle	43645-0300	538-43645-0300	WM1784-ND	2
		Molex Micro-Fit 3.0 20-24AWG female crimp terminal	43030-0007	538-43030-0007	WM1837-ND	6
		Molex Micro-Fit 3.0 18AWG female crimp terminal	43030-0038	538-43030-0038	WM13070CT-ND	
TP2,TP3,TP4,TP6	TP	Keystone test point miniature (others colours available)	5001	534-5001	36-5001-ND	4
TH1, TH101	4,7k/3590K	Thermistor NTC, 0603	B57301V2472J060	871-B57301V2472J60	495-7099-1-ND	2
LOAD resistors for standalone testing	470R	3W or higher (470R gives about 50mA load under 24V)	AC04000004700JAC00	594-AC040004700JAC00	BC3437CT-ND	2

Remark : one may choose other equivalent parts from their preferred manufacturers.

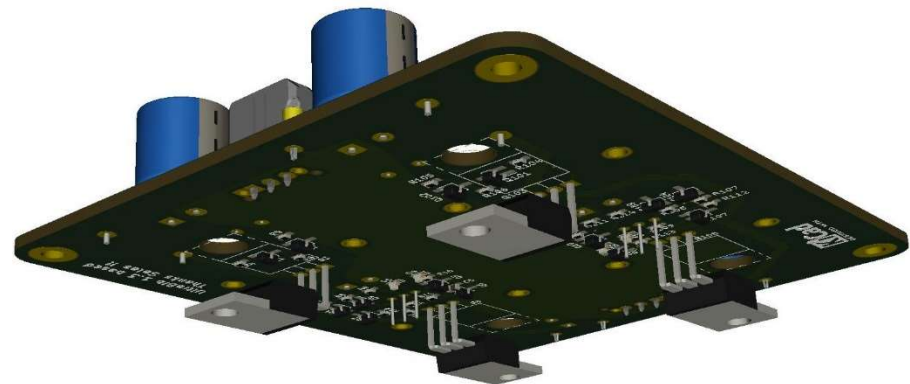
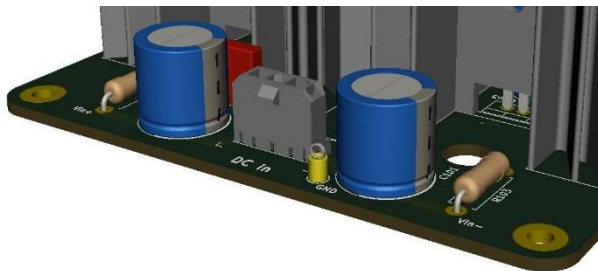
Link to Mouser basket (without the Molex Micro-Fit connectors and keystone test points):

<https://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=056d6f7bcc>





with Molex Micro-Fit 3.0 connectors:



Optional mount: power MOSfets underneath the PCB (heatsink required !)