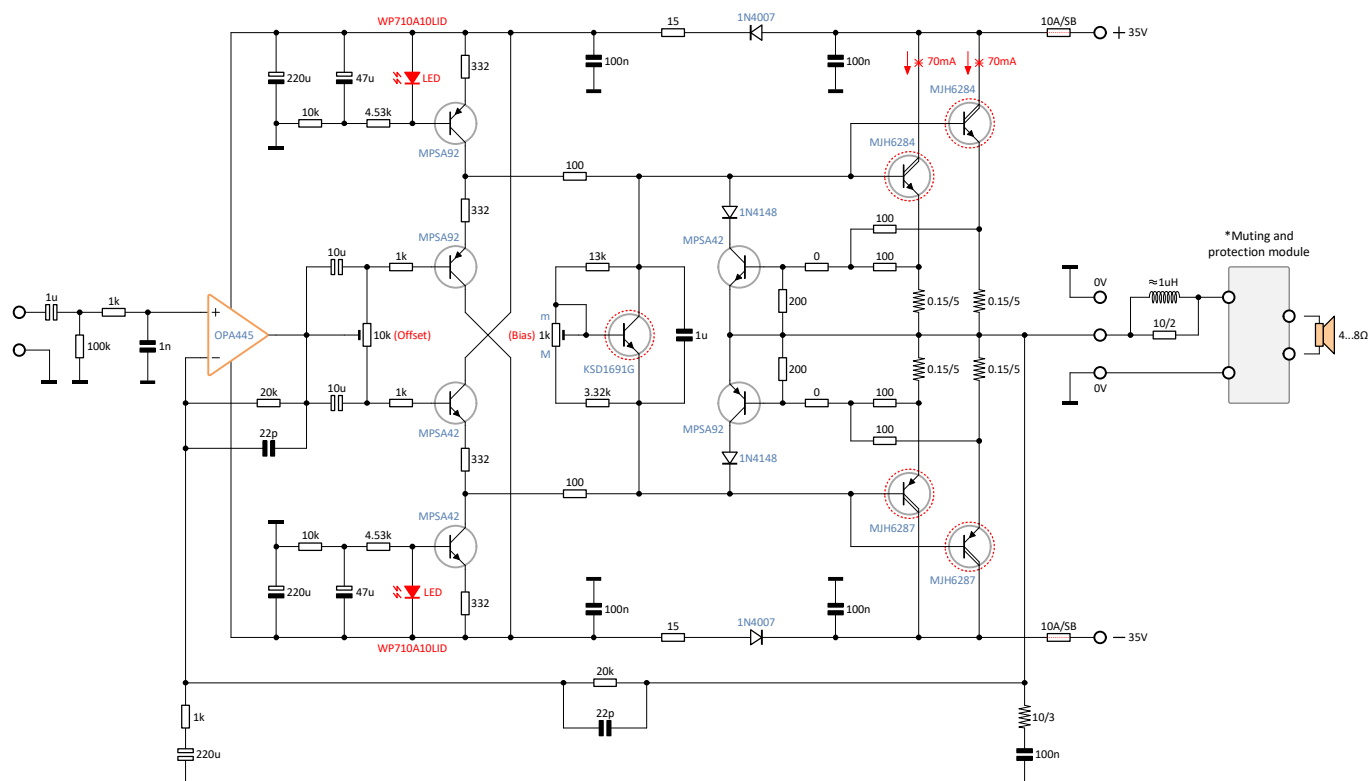
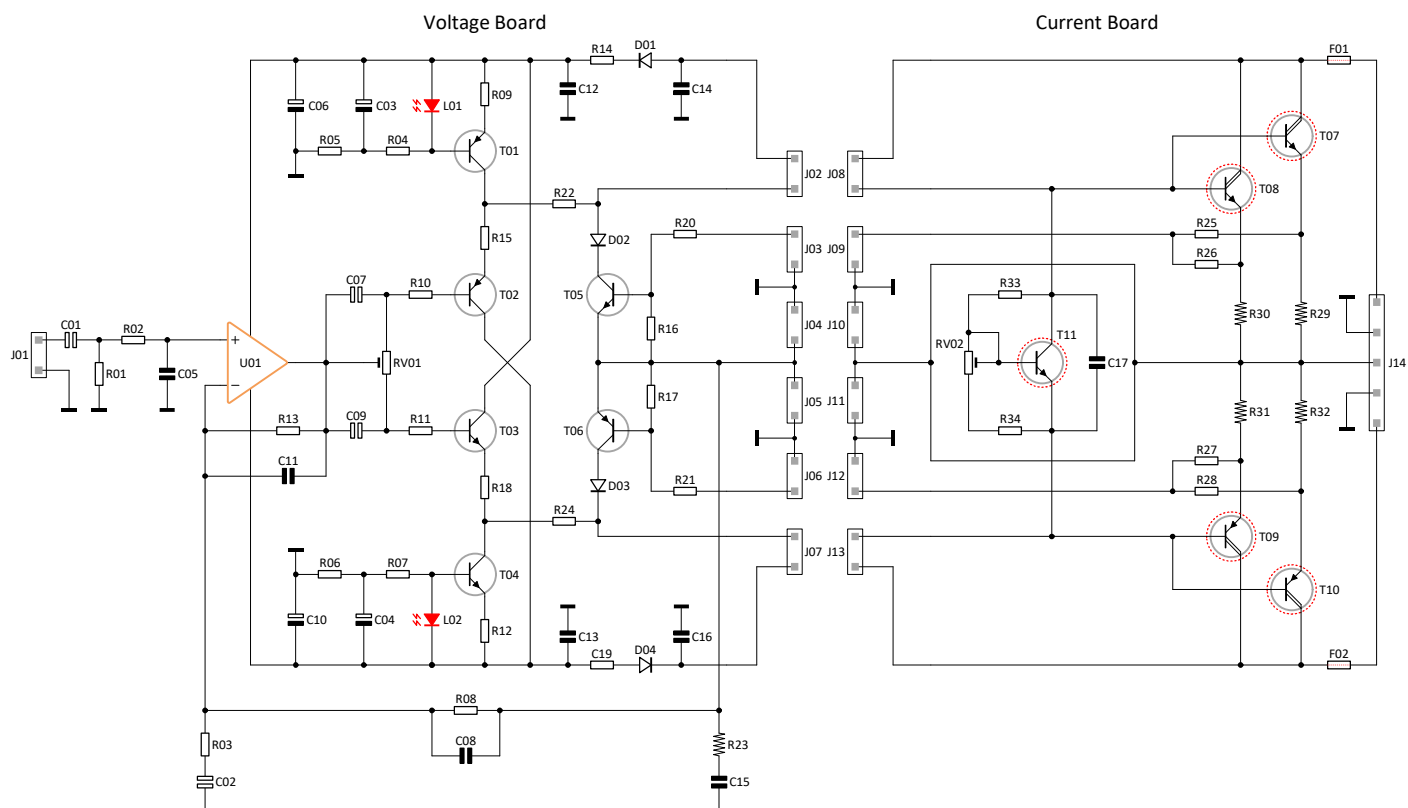
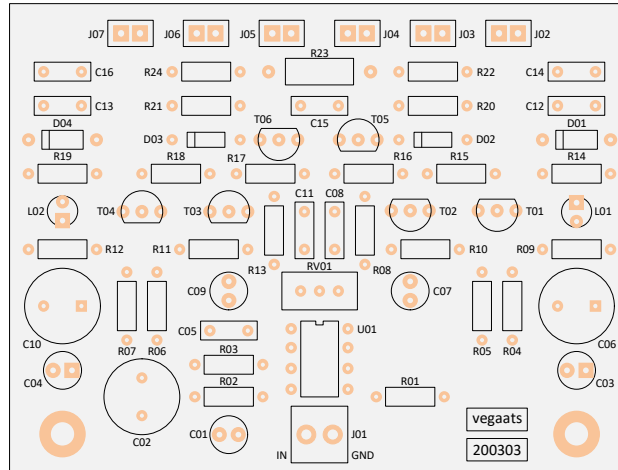
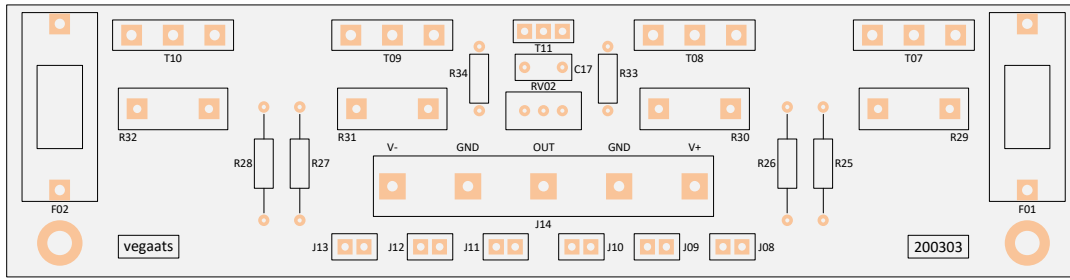


2S2A2-50W



\* I published the circuit of this module in the "Speaker Protection With An Optical Coupler" article, pages 36-40, of the January 2018 edition of Nuts and Volts magazine.





R01 = 100k, 0.25W, metal film	Yageo	MFR-25F8F52-100K
R02 = 1k, 0.25W, metal film	Yageo	MFP-25BRD52-1K
R03 = 1k, 0.25W, metal film	Yageo	MFP-25BRD52-1K
R04 = 4.53k, 0.25W, metal film	Yageo	MFR-25F8F52-4K53
R05 = 10k, 0.25W, metal film	Yageo	MFR-25F8F52-10K
R06 = 10k, 0.25W, metal film	Yageo	MFR-25F8F52-10K
R07 = 4.53k, 0.25W, metal film	Yageo	MFR-25F8F52-4K53
R08 = 20k, 0.25W, metal film	Yageo	MFR-25F8F52-20K
R09 = 332, 0.25W, metal film	Yageo	MFR-25F8F52-332R
R10 = 1k, 0.25W, metal film	Yageo	MFP-25BRD52-1K
R11 = 1k, 0.25W, metal film	Yageo	MFP-25BRD52-1K
R12 = 332, 0.25W, metal film	Yageo	MFR-25F8F52-332R
R13 = 20k, 0.25W, metal film	Yageo	MFR-25F8F52-20K
R14 = 15, 0.25W, metal film	Yageo	MFR-25FTE52-15R
R15 = 332, 0.25W, metal film	Yageo	MFR-25F8F52-332R
R16 = 200, 0.25W, metal film	Yageo	MFR-25F8F52-200R
R17 = 200, 0.25W, metal film	Yageo	MFR-25F8F52-200R
R18 = 332, 0.25W, metal film	Yageo	MFR-25F8F52-332R
R19 = 15, 0.25W, metal film	Yageo	MFR-25FTE52-15R
R20 = 0, 0.25W, carbon film	Yageo	ZOR-25-B-52-0R
R21 = 0, 0.25W, carbon film	Yageo	ZOR-25-B-52-0R
R22 = 100, 0.25W, metal film	Yageo	MFR-25F8F52-100R
R23 = 10, 3W, wirewound	Riedon	UB3C-10R1
R24 = 100, 0.25W, metal film	Yageo	MFR-25F8F52-100R
R25 = 100, 0.25W, metal film	Yageo	MFR-25F8F52-100R
R26 = 100, 0.25W, metal film	Yageo	MFR-25F8F52-100R
R27 = 100, 0.25W, metal film	Yageo	MFR-25F8F52-100R
R28 = 100, 0.25W, metal film	Yageo	MFR-25F8F52-100R
R29 = 0.15, 5W, wirewound	Yageo	SLR500JB-0R15
R30 = 0.15, 5W, wirewound	Yageo	SLR500JB-0R15
R31 = 0.15, 5W, wirewound	Yageo	SLR500JB-0R15
R32 = 0.15, 5W, wirewound	Yageo	SLR500JB-0R15
R33 = 13k, 0.25W, metal film	Yageo	MFR-25F8F52-13K
R34 = 3.32k, 0.25W, metal film	Yageo	MFR-25F8F52-3K32

RV01 = 10k, 25 turns	Burns	3296W-103LF
RV02 = 1k, 25 turns	Burns	3296W-102LF
C01 = 1u/50V, electrolytic, bipolar	Nichicon	UES1H010MDM1TD
C02 = 220u/25V, electrolytic, bipolar	Nichicon	UVP1E221MPD
C03 = 47u/35V, electrolytic	Nichicon	UVK1V470MDD1TD
C04 = 47u/35V, electrolytic	Nichicon	UVK1V470MDD1TD
C05 = 1n/400V, film	WIMA	FKS2G011001A00MSSD
C06 = 220u/63V, electrolytic	Nichicon	UVR1J221MPD
C07 = 10u/25V, electrolytic, bipolar	Nichicon	UES1E100MDM1TD
C08 = 22p/100V, ceramic	Murata	RDE5C2A220JK1H03B
C09 = 10u/25V, electrolytic, bipolar	Nichicon	UES1E100MDM1TD
C10 = 220u/63V, electrolytic	Nichicon	UVR1J221MPD
C11 = 22p/100V, ceramic	Murata	RDE5C2A220JK1H03B
C12 = 100n/100V, film	WIMA	MKS2D031001A00MSSD
C13 = 100n/100V, film	WIMA	MKS2D031001A00MSSD
C14 = 100n/100V, film	WIMA	MKS2D031001A00MSSD
C15 = 100n/100V, film	WIMA	MKS2D031001A00MSSD
C16 = 100n/100V, film	WIMA	MKS2D031001A00MSSD
C17 = 1u/50V, film	WIMA	MKS2B041001C00JSSD

D01 = 1N4007	Micro Commercial Co.	1N4007-TP
D02 = 1N4148	ON Semiconductor	1N4148
D03 = 1N4148	ON Semiconductor	1N4148
D04 = 1N4007	Micro Commercial Co.	1N4007-TP

L01 = Red LED, 1.7V, 2mA	Kingbright	WP710A10LID
L02 = Red LED, 1.7V, 2mA	Kingbright	WP710A10LID

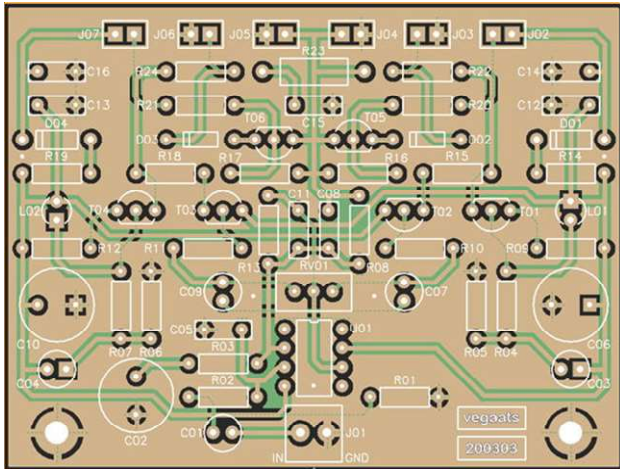
T01 = MPSA92-AP	Micro Commercial Co.	MPSA92-AP
T02 = MPSA92-AP	Micro Commercial Co.	MPSA92-AP
T03 = MPSA42-AP	Micro Commercial Co.	MPSA42-AP
T04 = MPSA42-AP	Micro Commercial Co.	MPSA42-AP
T05 = MPSA42-AP	Micro Commercial Co.	MPSA42-AP
T06 = MPSA92-AP	Micro Commercial Co.	MPSA92-AP
T07 = MJH6284	ON Semiconductor	MJH6284G
T08 = MJH6284	ON Semiconductor	MJH6284G
T09 = MJH6287	ON Semiconductor	MJH6287G
T10 = MJH6287	ON Semiconductor	MJH6287G
T11 = KSD1691G	ON Semiconductor	KSD1691GS
U01 = OPA445	Texas Instruments	OPA445AP

Fuse holders for F01-F02	Multicomp	MC000830
IC socket for U01	Mill-Max	110-13-308-41-001000
LED spacers for L01 and L02	Bivar Inc.	ELM 5-100
Header, male, J02 through J13	Sullins	PBC02SBAN
Header, female, J02 through J13	Sullins	PPPC021LFBN-RC
Terminal block, J01	Würth	691214110002
Terminal block, J14	Würth	691241810005
Thermal pads for TO247	Wakefield	CD-02-05-247

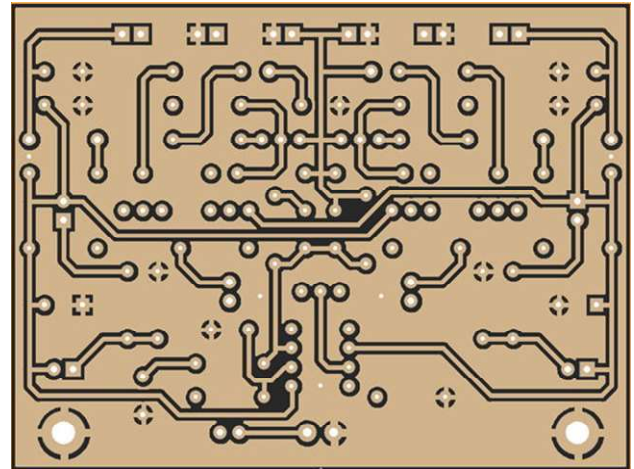
F01 = 10A, SB	Bel Fuse	5TT 10-R
F02 = 10A, SB	Bel Fuse	5TT 10-R

Most parts are from Digikey or Mouser.  
Lq (approx. 1uH) and Rq (10 Ohm/2W) are connected between the output of the power amp and the "Muting and DC protection module".

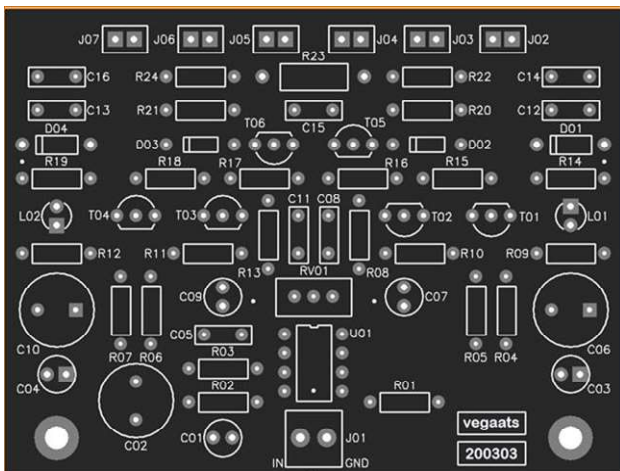
# Voltage PCB



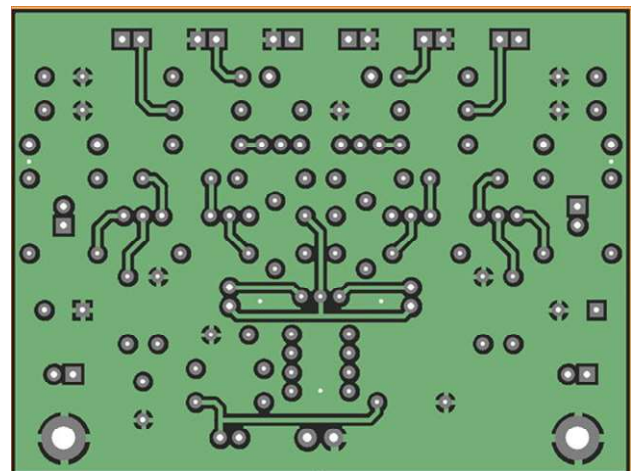
All layers



Top layer

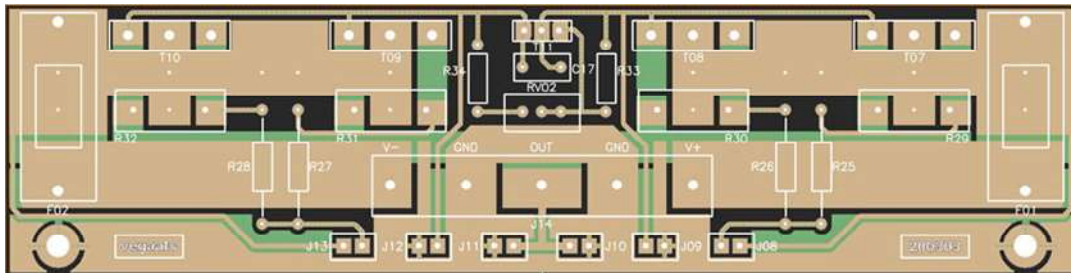


Silkscreen

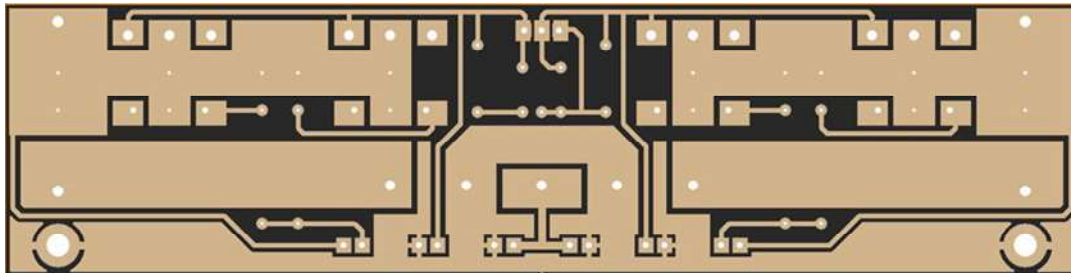


Bottom layer

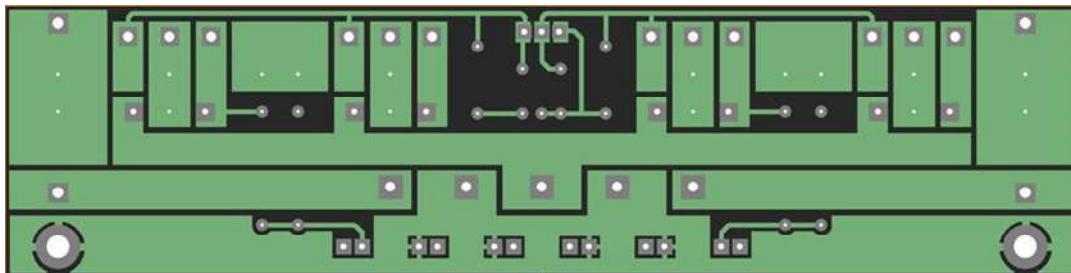
## Current PCB



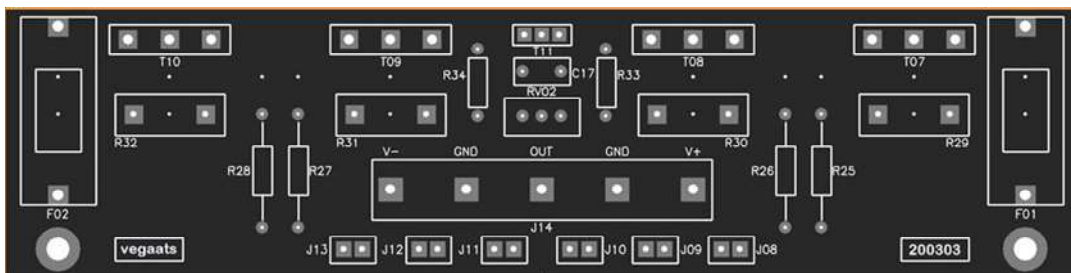
All layers



Top layer

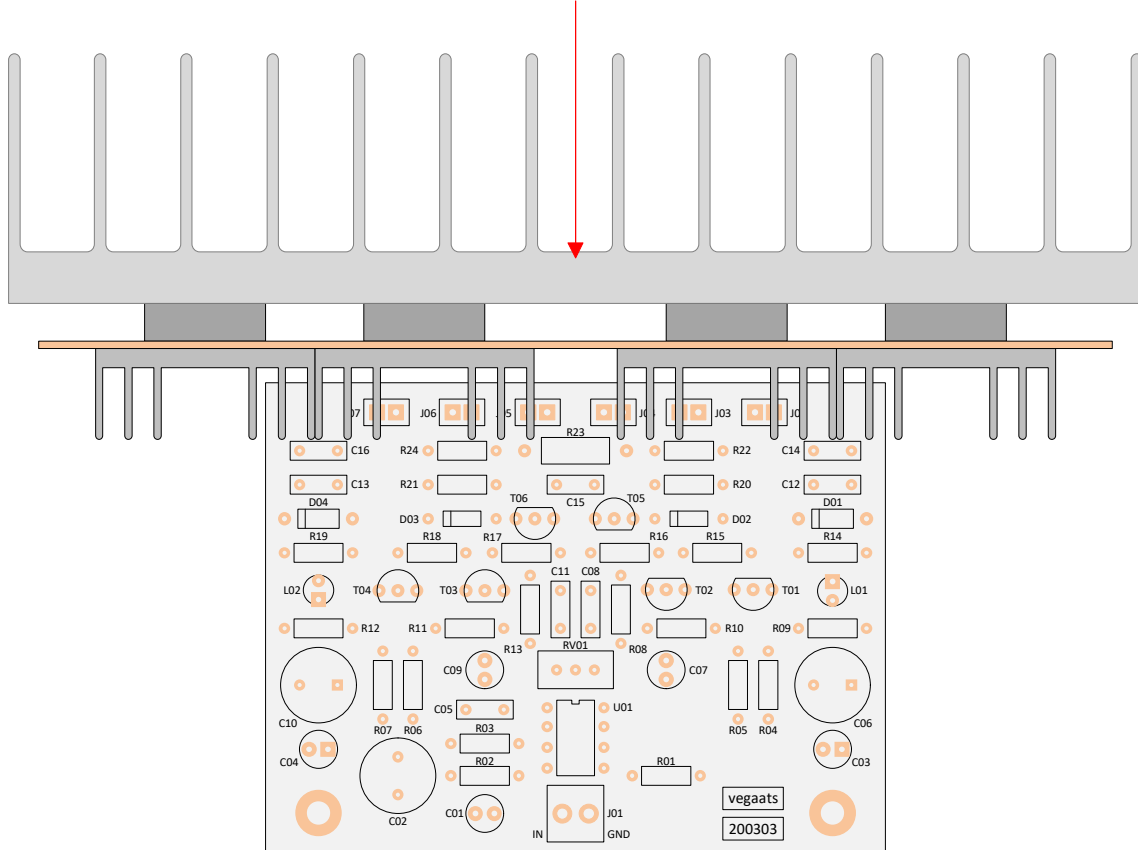


Bottom layer



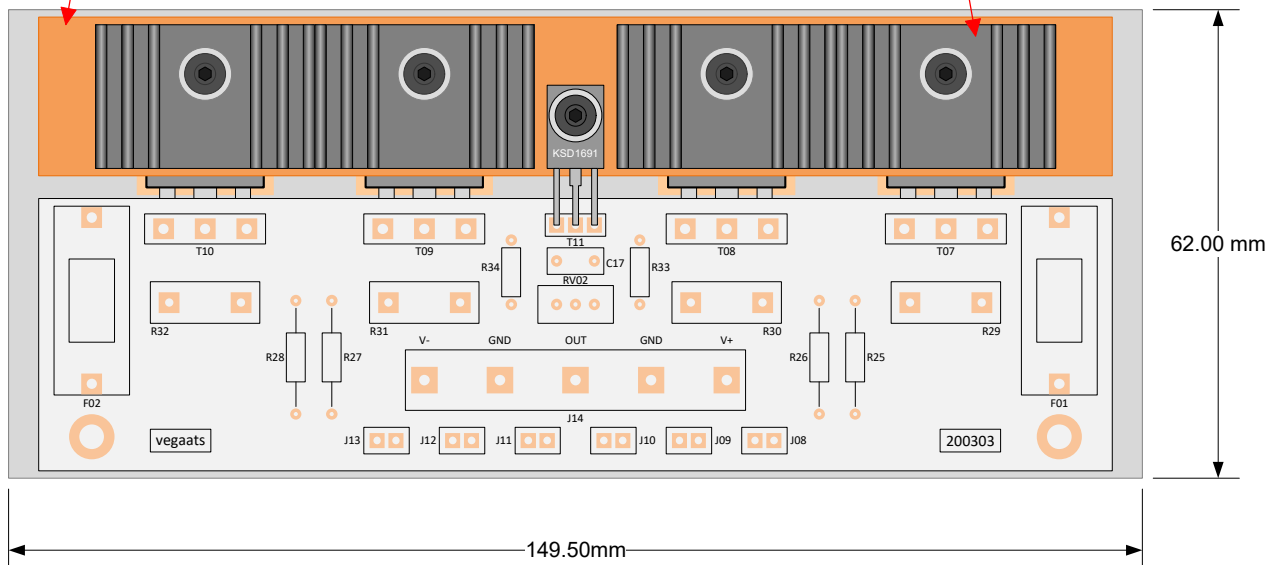
Silkscreen

5.886" wide heatsink from [www.heatsinkusa.com](http://www.heatsinkusa.com) (heatsink good for up to 10 W / 8 Ohm, continuously)

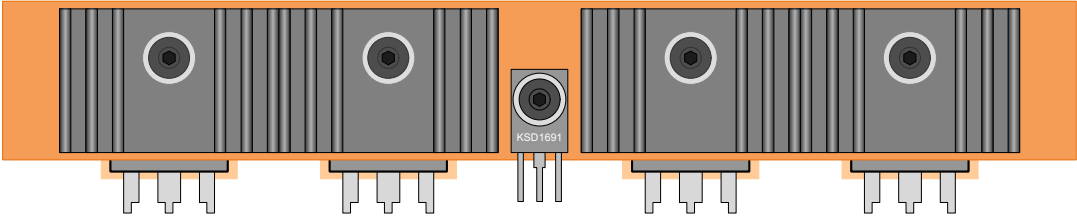
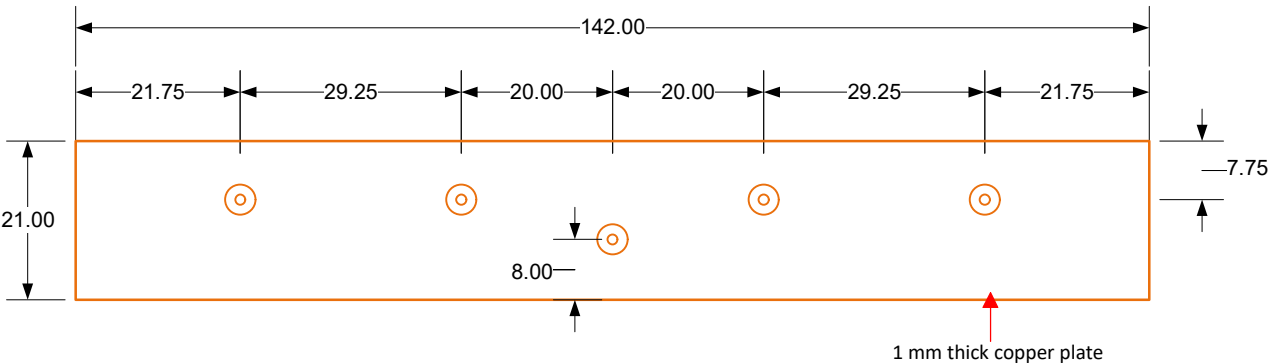


Copper heatspreader

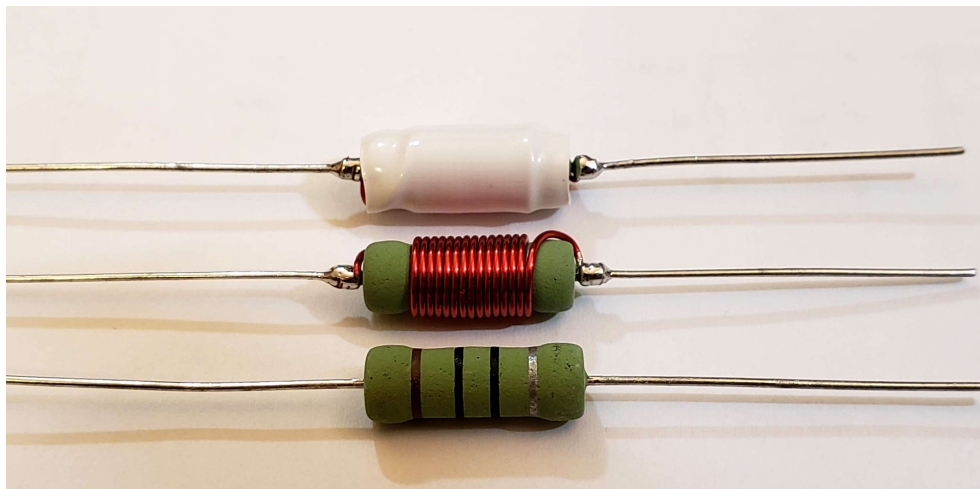
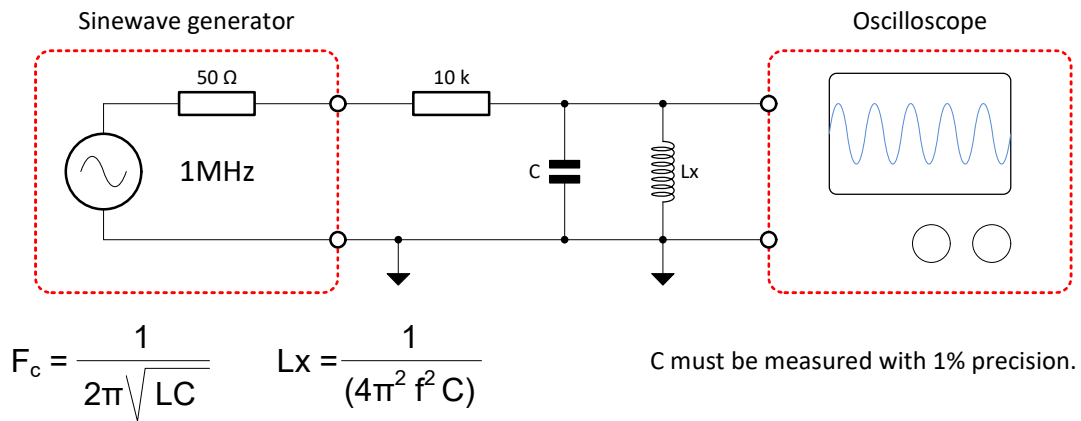
Heatsink  
(7-340-1PP-BA)



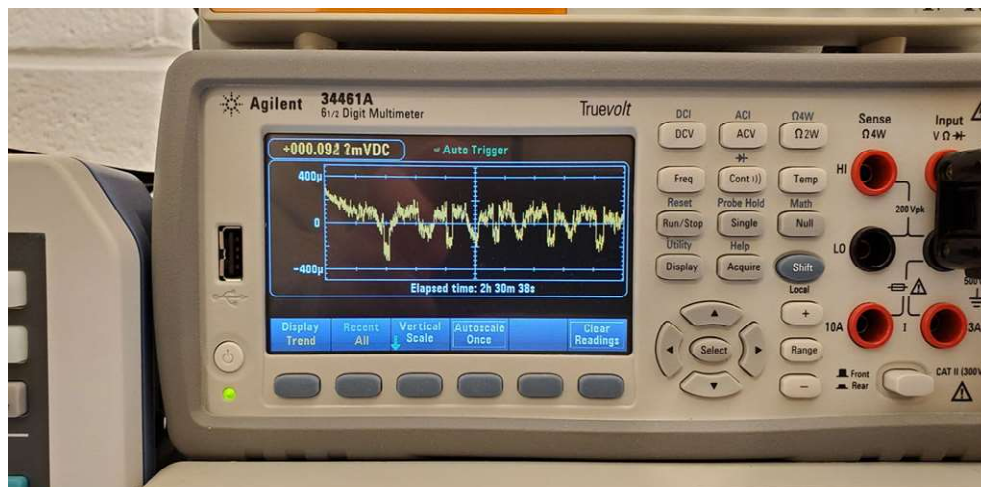
Copper heatspreader dimensions







Output inductor. About 14 turns of #22 AWG (0.644 mm diameter) solid copper insulated wire on a 10 Ohm / 2 W power resistor (OY100KE)



Offset stability over time and temperature variations.

