BOM of LiteAmp by ChocoHolic, +/-55V version, not tested, D3 updated

Component	Value	Description / Min requirements	Footprint	Comment
C1, C3	100p +/10%	100VDC, film/foil	8x5RM5	MKP or FKP preferred
C2, C5	4n7 +/-5%	50VDC, film/foil	8x7RM5	MKP or FKP preferred
C7	1n +/-5%	50VDC, film/foil	8x6RM5	MKP or FKP preferred
C4	1.5n +/-5%	50VDC, film/foil	8x6RM5	MKP or FKP preferred
C6	47p +/-10%	50VDC, film/foil	8x5RM5	MKP or FKP preferred
C8, C11, C12	47u +/- 35%	25VDC, E-cap	D6RM2.5	
C9, C10	1u +/-30%	50VDC, X7R	SM1206	
C13, C14, C17, C18, C19, C21, C27, C28	1u +/-30%	100VDC, X7R	SM1210 (or 1206)	
C15, C16	100p +/-20%	100VDC, NP0	SM1206	
C20, C22	470u +50% / - 20%	63VDC, E-cap, Allowed ripple current @ 100kHz: > 1.47A	D17RM7.5 or D13RM5	Low ESR type i.e. ELNA RJJ 470u/63V
C23, C26	0.33u +/-5%	Film/Foil, 250VDC	8x9RM5	i.e. Wima MKP2
C24, C25	0.22u +/-5%	Film/Foil, 250VDC	8x9RM5	i.e. Wima MKP2
D1, D2	Z5V6 +/-5%	0.5W	Wired axial	D2 vertical 1W or 1.3W also possible
D3		150V/1A/50ns Ultrafast & soft recovery	Wired axial	Or simply 2x MBR1100 in series
D7, D8	MBR1100	Shottky, 1A / 100V	Wired axial, vertical	
D4	BAV21		Wired axial	
D5	Z12V +/-5%	0.5W	Wired axial, vertical	1W or 1.3W also possible
D6	Z15V +/-5%	0.5W	Wired axial	1W or 1.3W also possible
L1	15uH +/-3%			T106-2, 33 turns, 1.0 CuL or 1D23A-150 (ICE)
P1	CONN_6		Pin array 6x1	
P3	CONN_12X2		Pin array 12x2	
Pot	500R	Type with at least 10 turns	Pot	All pins in one line ! Or use fix 100R
Q1, Q5	BD243A	60V / 1A / 10W	TO-220	(BD243A is oversized) Make sure to have really at least the A-types with Vceo = 60V
Q2	BD244A	60V / 1A / 10W	TO-220	(BD244A is oversized) Make sure to have really at least the A-types with Vceo = 60V
Q3	BC546C	65V / 0.1A / 0.5W	TO-92	Make sure to have a proper brand which really offers Vceo = 65V
Q4	BC556C	65V / 0.1A / 0.5W	TO-92	Make sure to have a proper brand which really offers Vceo = 65V
Q6, Q7	IRFI4019HG	Dual MosFet	TO-220 Full Pack, 5 Pins	Stick to this type.
R1, R2	18k +/-10%	0.25W	Wired axial	R2 vertical
R3, R5	1K8 +/- 1%	0.25W	Wired axial	Vertical
R4	270 +/-1%	0.25W	SMD1206	
R6	150 +/-5%	0.25W	SMD1206	
R7	27k +/-1%	0.25W	Wired axial	Vertical
R8	3k3 +/-1%	0.25W	SMD1206	
R9	180 +/-1%	0.25W	SMD1206	
R25	3k3 +/-1%	0.25W	Wired axial	Vertical

R10	2k2 +/-1%	0.25W	Wired axial	Vertical
R23	2k2 +/-1%	0.25W	Wired axial	
R11	82k +/-5%	0.25W	SMD1206	
R12	2k2 +/-1%	0.25W	Wired axial	
R13	5k6 +/-1%	0.25W	Wired axial	Vertical
R14	1k2 +/-1%	0.25W	SMD1206	
R16, R18	0R	0.25W	SMD1206	Optional
R24, R27	8k2 +/-1%	0.25W	Wired axial	R25 vertical
R28	27k	0.5W	Wired axial	
R29	10k	0.25W	Wired axial	Vertical
R30	6R8 +/-10%	0.25W	Wired axial	
R31	6R8 +/-10%	0.25W	Wired axial	
R32, R33, R36, R37	15 +/-5%	0.25W	Wired axial	
R34, R35	33 +/-10%	0.25W	Wired axial	
R38	2R2 +/-10%	3W	Wired axial, vertical	Wirewound type
U1	IRS2092		DIP-16	

Note: More narrow tolerances always allowed / appreciated.

Red: Changes vs. 40V version

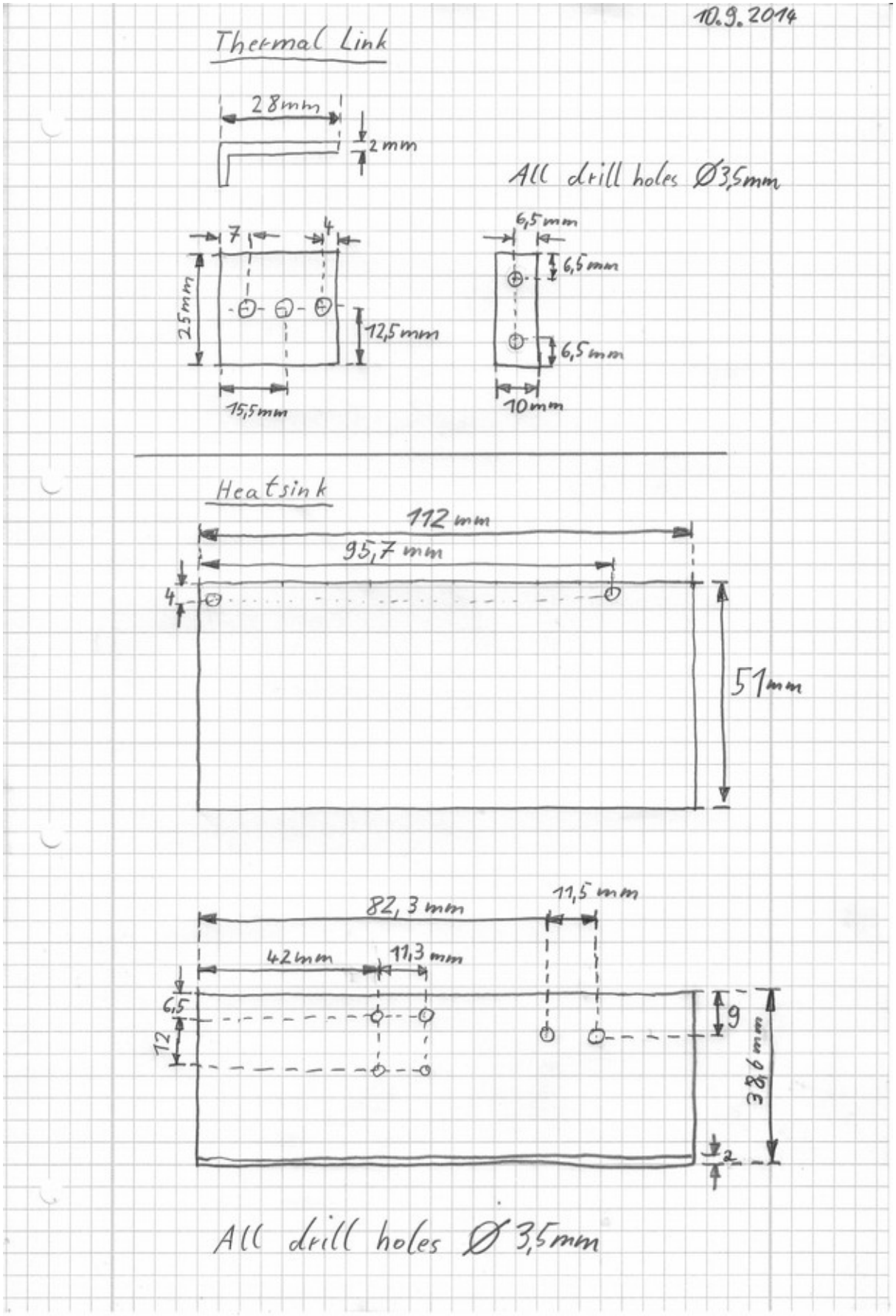
Get it going

1. Add short wire from Anode of D7 to negative pin of C11.
2. Add short wire from Anode of D8 to negative pin of C12.
3. Add auxiliary 100R/0.25W resistor from amp output to -55V rail.
4. Add series power resistors of 50...100 Ohms to your + and – 55V rail for current limitation.

==>Power up +/- 55Vsupplies. (Anything between +/-35V...+/-55V will work.)

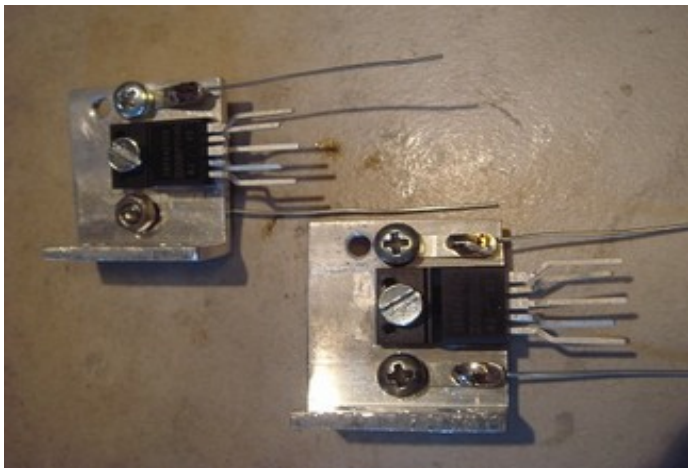
5. Measure voltage from pin 1 of U1 vs GND. Must be between 4.7VDC...5.3VDC.
6. Measure voltage from pin 6 of U1 vs GND. Must be between -4.7VDC...-5.3VDC.
7. Measure voltage across C12. Must be between 11VDC...13VDC.
8. Measure voltage across C11. Must be between 13VDC...16VDC.
9. Power off.
10. If voltage according point 5 did not fit, recheck R1, D1, Q1, C10, R3, R4, R5, Q3, Q4.
11. If voltage according point 6 did not fit, recheck R2, D2, Q2, C9, R3, R4, R5, Q3, Q4.
12. If voltage according point 7 did not fit, recheck R29, D5, C12, Q5, D3, C11, D6, D4, R27.
13. If voltage according point 8 did not fit, recheck R29, D5, C12, Q5, D3, C11, D6, D4, R27.
14. If you cannot solve to get the right voltages of points 5,6,7,8, then do not proceed.
    In this case contact ChocoHolic on Diyaudio.com.

15. Only if voltages according points 5,6,7,8 are OK proceed here.
16. Insert U1.
17. Remove both short wires and remove auxiliary 100R resistor.
18. Check if U1 is inserted.
19. Check if U1 is inserted with correct orientation. ;-)
20. Power up
21. Approx 4s after power up the self oscillation will start.
22. Adjust fs to 360kHz by using with the poti.
23. For acoustic testing you can apply music from a pre amp or MP3 player to pin 13 and/or 14 of of the 12x2 pin row. The voltage gain of the main board is just 16db, so you will not get loud music without the gain board, but for a first low volume acoustic check of the main board already this simple method is sufficient.
    If everything is right, then start up of the amp will not cause any undesired plopping of noise on the speakers. Simply 4s after power up the music will be there.
    Also turn off is free of undesired noise.
24. Power off.
25. Remove current limiting resistors in the +/- 55V rails.
26. Repeat points 20-24.
27. Go ahead with the gain board....


10.9.2014
Thermal Link
28mm
2mm
All drill holes Ø3,5mm
7
4
25mm
12,5mm
15,5mm
6,5mm
6,5mm
6,5mm
10mm
Heatsink
112 mm
95,7 mm
4
51mm
82,3 mm
11,5 mm
42mm
11,3 mm
6,5
12
9
38,6 mm
2
All drill holes Ø 3,5mm

Hints for Building:

1. Do not place C11, C12, C20, C22, L1, Q6, Q7, Q5, Q2, Q3, Q4 and U1.
2. Place all components, which are not listed in point 1.
3. Carefully preform pins of Q6 and Q7 to fit into the Grid of the PCB.
4. Mount Q6 & Q7 on the thermal link. Use thermal paste for mounting.
5. Prepare GND wires of the of the thermal link.



MosFets mount on thermal link.
Please ignore the wrong drill holes... ;-)
Correct position for GND screws is
in one line with MosFet screw.

6. Place Q6 and Q7on PCB, but solder only the center pin of each device.
(Check/make sure, that all pins including GND wires are correctly in their drill holes).
7. Screw both thermal links to the main heat sink. (Not final, no thermal paste for the moment.)
8. Align position of main heat sink, including drill holes at the 3mm PCB holes.
9. Place Q2 and Q5 in the PCB and mount them **isolated** to the main heat sink.
10. Solder accessable pins of Q2 and Q5 from top side.
11. Solder outer GND wires of thermal links.
12. Solder pin 5 (Drain 1) of Q6 and Q7 from top side.
13. Remove heat sink.
14. Properly solder all pins of Q6,Q7, Q2 and Q5 from solder side.
15. Place and solder C11, C12, C20, C22, L1, Q6, Q7, Q5, Q2, Q3, Q4 (but not U1 !).
16. Recheck all components. Value (if readable), polarity, soldering.

Picture of the completed main board

Note the heat sink in the photo is not the full size
L-shaped heat sink, but reduced size.
The reduced heat sink keeps open the soldering side for easier R&D work.
Also it allows to reduce overall height from 38.6mm to 36.6mm.
It is sufficient for 4R operation, but for 2R PA use the full sze heatsink is required.
Shown inductor is not the preferred type. Preferred T106-2.