Notes / Questions

- Which HV tap?
- If 330Vac then change caps to 500V
- Fix B+ connections wrt to the smoothing cap

Power Transformer Inputs
Toroidy
TSTA 0250/001

DC Outputs

J101 Screw_Terminal_01x02 — 0 – 275V – 330V / 0.4A — HV+, HV–
J102 Screw_Terminal_01x02 — 50V / 0.1A — LV+, LV–
J103 Screw_Terminal_01x02 — 6.3V / 7A — HeaterFil+, HeaterFil–
J104 Screw_Terminal_01x02 — 6.3V / 7A
J105 Screw_Terminal_01x02 — 6.3V / 2A — Driver+, Driver–

Sheet: PowerSupply
File: PowerSupply.sch

B+ — 360V (or 430V with 330Vac tap)
V_bias — –100V
V_driver — 15V
PowerLED — To panel–mount LED — J106 Screw_Terminal_01x02 — GNDA

Left Input

J108 Screw_Terminal_01x02 — Input — GNDA
J109 Screw_Terminal_01x02 — GNFB — GNDA

Sheet: Left
File: Channel.sch

B+B, ULB, B+, ULA, B+A, OT_Common → J112 Screw_Terminal_01x06 (*use 2x3 terminal blocks)
Bplusin — B+
V_Bias — V_Bias
V_Driver — V_Driver

Left Output Transformer
Primary Windings
PWPP30W6K6
6.6k Raa 30W

Right Input

J110 Screw_Terminal_01x02 — Input — GNDA
J111 Screw_Terminal_01x02 — GNFB — GNDA

Sheet: Right
File: Channel.sch

B+B, ULB, B+, ULA, B+A, OT_Common → J113 Screw_Terminal_01x06 (*use 2x3 terminal blocks)
Bplusin — B+
V_Bias — V_Bias
V_Driver — V_Driver

Right Output Transformer
Primary Windings
PWPP30W6K6
6.6k Raa 30W

MH101 MountingHole
MH102 MountingHole
MH103 MountingHole
MH104 MountingHole
MH105 MountingHole
MH106 MountingHole
MH107 MountingHole
MH108 MountingHole

Mounting holes

J107 Conn_01x01_Female — Earth from IEC inlet — 1 — MH110 MountingHole_Pad
*should really be a bolt through chassis by IEC inlet

Dedicated AC earth point

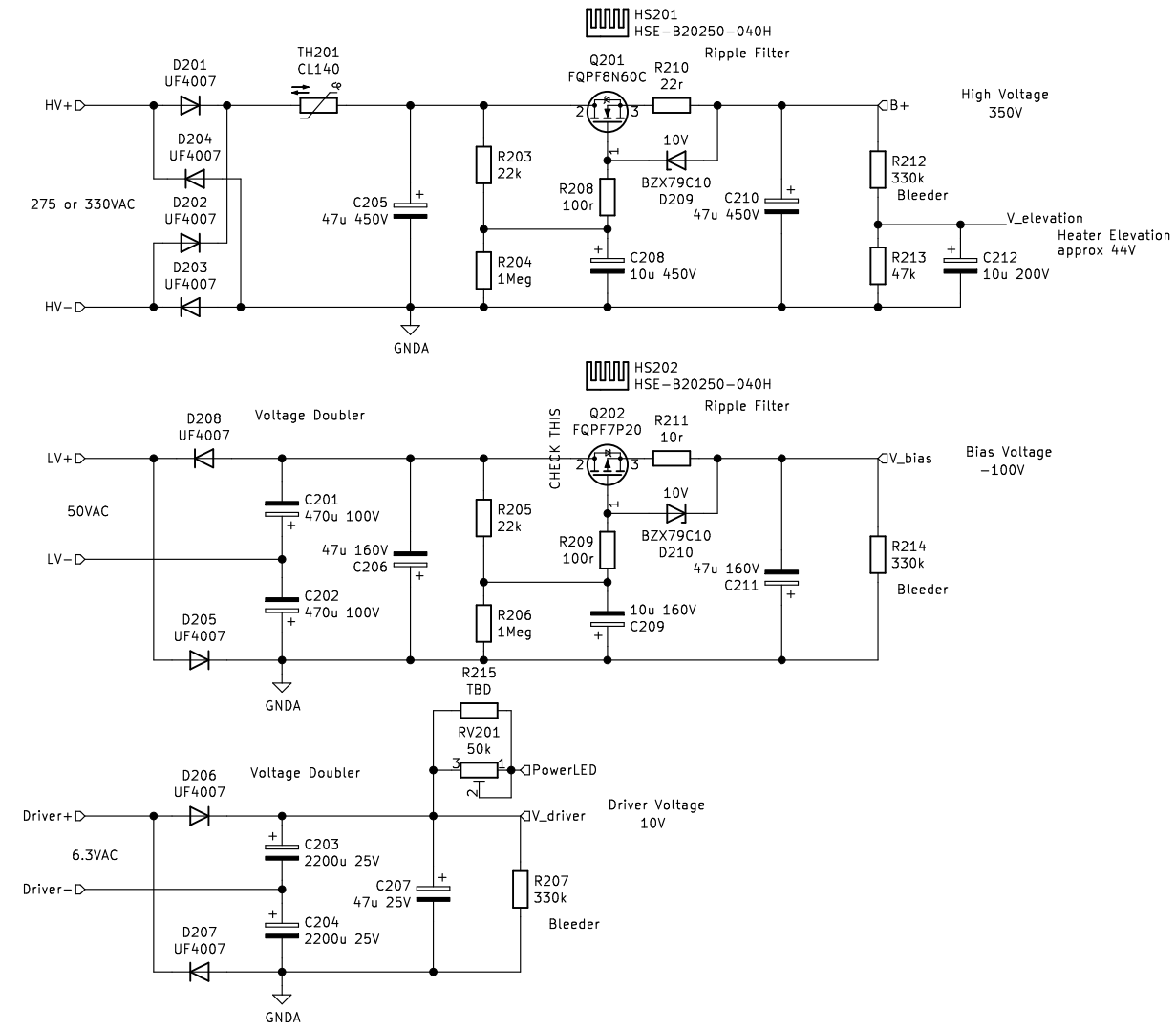
Audio ground to earth connection
MH109 MountingHole_Pad
D101 SF51–B
D103 SF51–B
SF51–B D102
SF51–B D104
R101 10r 5W
C101 100n
GNDA

Ground loop breaker

Sheet: /
File: BabyHuey.sch

Title: Baby Huey – "Engineer's Version"

Size: A4	Date: 2021–04–25	Rev:
KiCad E.D.A. kicad (5.1.12–1–10_14)		Id: 1/4

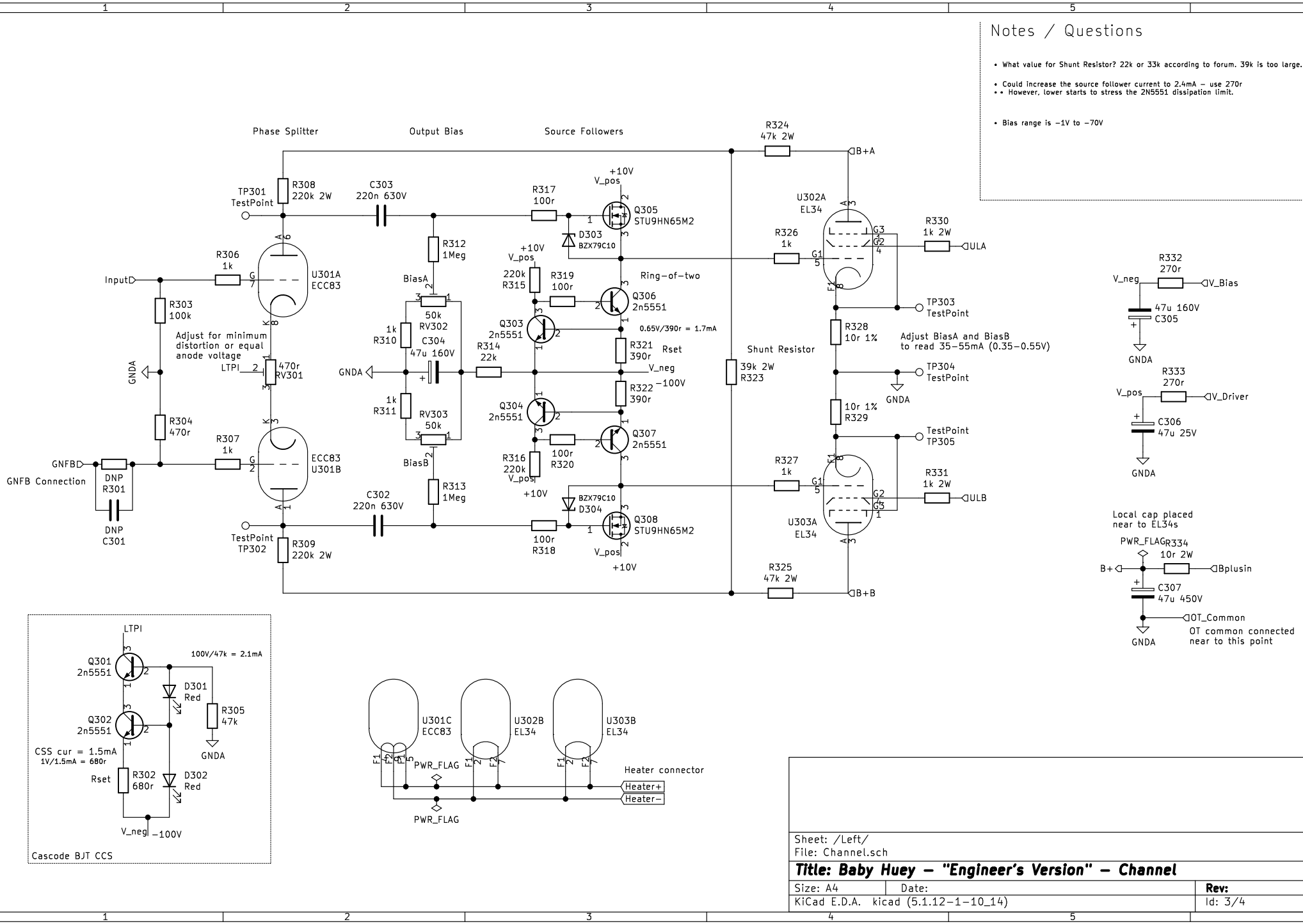


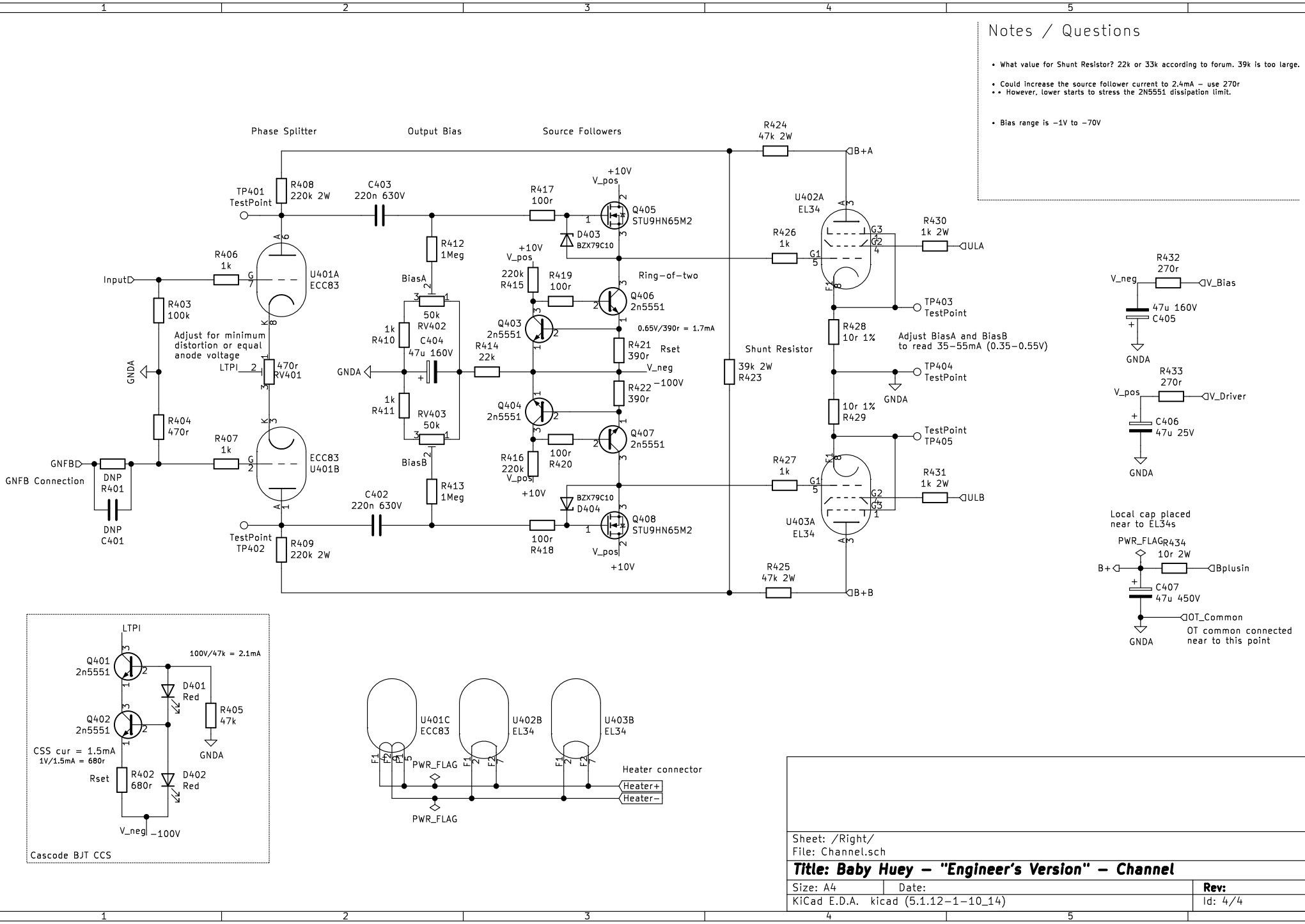
Notes

* Both FETs are encapsulated in plastic
- no isolation pad / shoulders needed
- use heat transfer pad / paste

The regulator gives protection to inrush
Max V across the 22r resistor is V_Z - V_GS = 10 - 4 = 6
Max current is 6/22 = 270mA

Sheet: /PowerSupply/		
File: PowerSupply.sch		
Title: Baby Huey - "Engineer's Version" - Power Supply		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.12-1-10_14)		Id: 2/4


Notes / Questions
• What value for Shunt Resistor? 22k or 33k according to forum. 39k is too large.
• Could increase the source follower current to 2.4mA – use 270r
• • However, lower starts to stress the 2N5551 dissipation limit.
• Bias range is –1V to –70V
Phase Splitter
Output Bias
Source Followers
Input
TP301 TestPoint
R308 220k 2W
C303 220n 630V
R306 1k
U301A ECC83
R303 100k
Adjust for minimum distortion or equal anode voltage
LTPI
470r RV301
GNDA
R304 470r
GNFB
GNFB Connection
DNP R301
DNP C301
R307 1k
ECC83 U301B
TestPoint TP302
R309 220k 2W
C302 220n 630V
R312 1Meg
BiasA
50k RV302
1k R310
C304 47u 160V
1k R311
RV303 50k
BiasB
R313 1Meg
+10V V_pos
R317 100r
Q305 STU9HN65M2
D303 BZX79C10
220k R315
R319 100r
Ring–of–two
Q306 2n5551
Q303 2n5551
0.65V/390r = 1.7mA
R314 22k
R321 390r Rset
V_neg
R322 390r –100V
Q304 2n5551
Q307 2n5551
R316 220k
100r R320
BZX79C10 D304
Q308 STU9HN65M2
100r R318
R324 47k 2W
B+A
U302A EL34
R326 1k
R330 1k 2W
ULA
TP303 TestPoint
R328 10r 1%
Adjust BiasA and BiasB to read 35–55mA (0.35–0.55V)
Shunt Resistor
39k 2W R323
TP304 TestPoint
10r 1% R329
TestPoint TP305
R327 1k
R331 1k 2W
ULB
U303A EL34
R325 47k 2W
B+B
R332 270r
V_Bias
47u 160V C305
R333 270r
V_Driver
C306 47u 25V
Local cap placed near to EL34s
PWR_FLAG
R334 10r 2W
B+
Bplusin
C307 47u 450V
OT_Common
OT common connected near to this point
LTPI
Q301 2n5551
100V/47k = 2.1mA
D301 Red
R305 47k
Q302 2n5551
CSS cur = 1.5mA
1V/1.5mA = 680r
Rset
R302 680r
D302 Red
V_neg –100V
Cascode BJT CCS
U301C ECC83
U302B EL34
U303B EL34
PWR_FLAG
Heater connector
Heater+
Heater–
Sheet: /Left/
File: Channel.sch
Title: Baby Huey – "Engineer's Version" – Channel
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.12–1–10_14)
Id: 3/4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Output Bias
Source Followers
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R408 220k 2W
C403 220n 630V
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R403 100k
Adjust for minimum distortion or equal anode voltage
LTPI
470r RV401
GNDA
R404 470r
GNFB
GNFB Connection
DNP R401
DNP C401
R407 1k
ECC83 U401B
TestPoint TP402
R409 220k 2W
C402 220n 630V
R412 1Meg
BiasA
50k RV402
1k R410
C404 47u 160V
1k R411
RV403 50k
BiasB
R413 1Meg
R417 100r
+10V
V_pos
Q405 STU9HN65M2
D403 BZX79C10
220k R415
R419 100r
Ring−of−two
Q406 2n5551
Q403 2n5551
0.65V/390r = 1.7mA
R414 22k
R421 390r
Rset
V_neg
R422 390r
−100V
Q404 2n5551
Q407 2n5551
R416 220k
100r R420
BZX79C10 D404
Q408 STU9HN65M2
100r R418
R424 47k 2W
B+A
U402A EL34
R426 1k
R430 1k 2W
ULA
TP403 TestPoint
R428 10r 1%
Adjust BiasA and BiasB to read 35−55mA (0.35−0.55V)
Shunt Resistor
39k 2W R423
TP404 TestPoint
10r 1% R429
TestPoint TP405
R427 1k
R431 1k 2W
ULB
U403A EL34
R425 47k 2W
B+B
R432 270r
V_Bias
47u 160V C405
R433 270r
V_Driver
C406 47u 25V
Local cap placed near to EL34s
PWR_FLAG
R434 10r 2W
B+
Bplusin
C407 47u 450V
OT_Common
OT common connected near to this point
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PWR_FLAG
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Sheet: /Right/
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