

# Top Cap Improvements

*Mono Bill's Topcap*

*A Triode Dick Mashup*

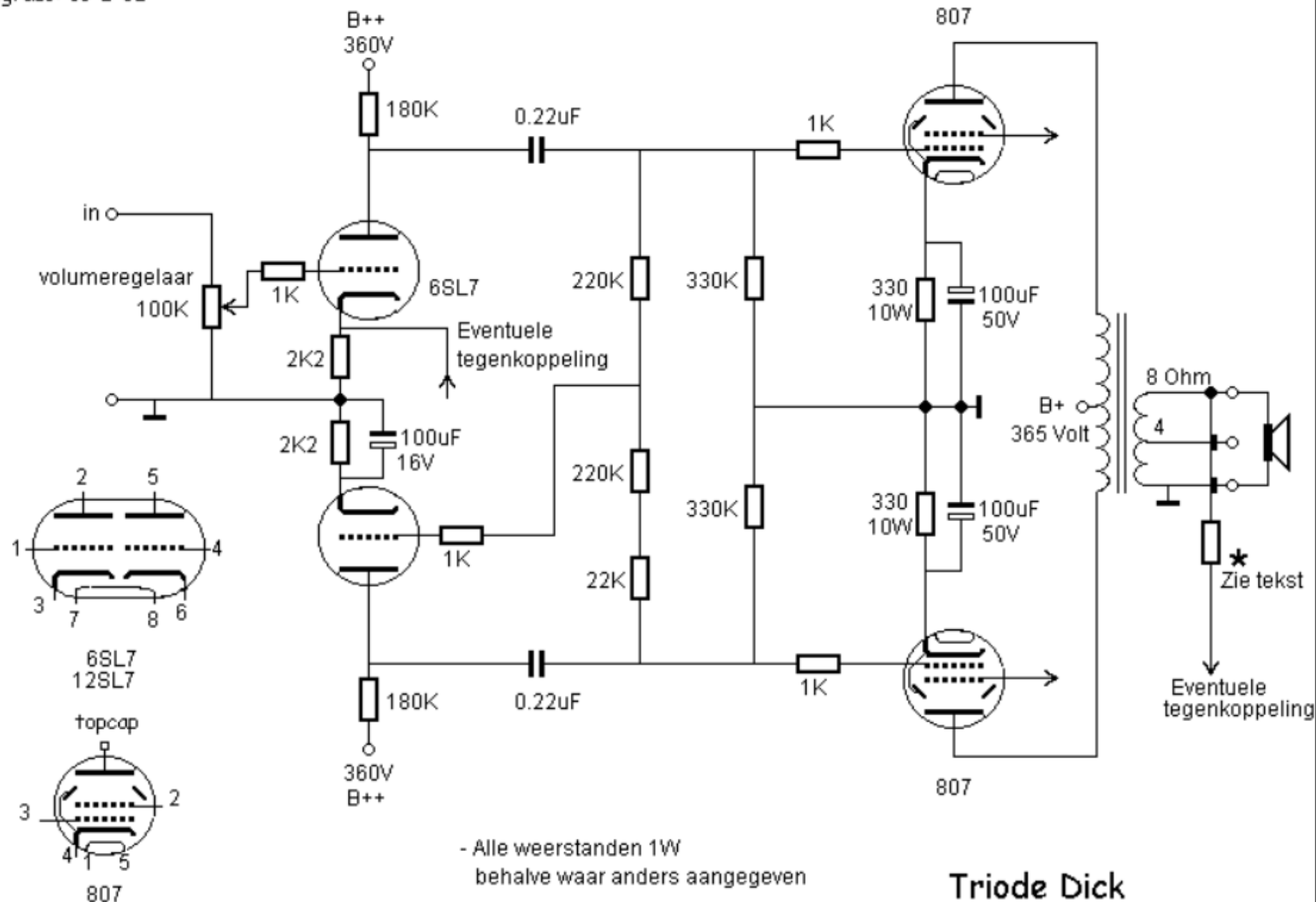


# Project Objectives

- Make large improvement to Topcap monoblocks
- Use Triode Dicks Mono Bill II circuit as template
- Use triode strapped PP
- Drastically reduce THD
- Swap out 5-pin sockets to some that allow 5933 tubes (sockets flush or proud of AL plate)
- Redesign gain stage to 6SN7 with plenty of current

# Topcap 807 Push Pull versterker.

Upgrade: 13-2-02



Select a Tube: 6SL7

Print this Graph!

Check full list of [available tubes](#)

Operating mode:

- ☐ Ultralinear  
☐ Pentode  
☒ Triode

PP/SE:

- ☐ PP ☒ SE

V+ (V):

365

Grid Bias  
Voltage (V):

-2.10

Quiescent Operating  
Point:

I<sub>q</sub>(mA):

0.96

V<sub>q</sub>(V):

193.10

Output Power  
(W):

at max g<sub>1</sub>:0.03

at g<sub>1</sub>=0:0.03

at class A/A<sub>2</sub>:0.08

at headroom:0.03

Load (Ohm):

- ☒ Resistive  
☐ Reactive

180000

Next stage AC  
Impedance (Ohm):

330000

HD%:

2nd:1.42 3rd:2.34 4th:0.03

THD:2.74

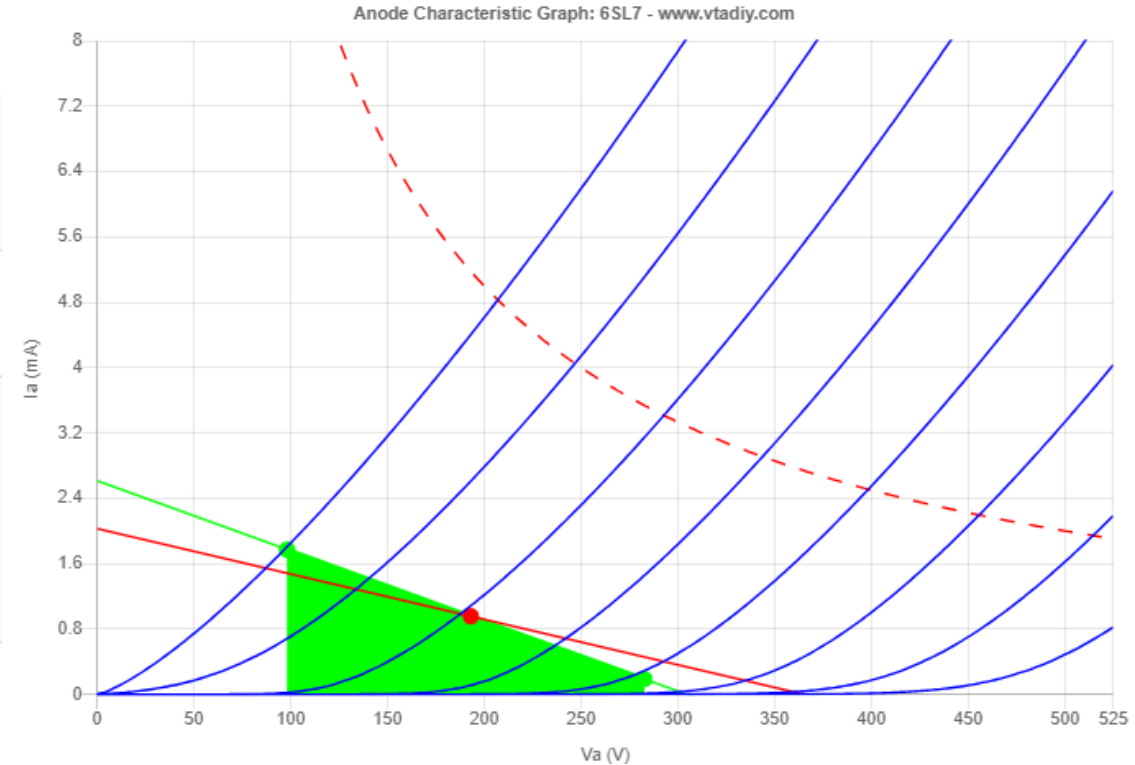
Screen Voltage (V):

UltraLinear tap (%):

0

Out. headroom (+/-V):

95



$$2.1\text{V} \div 0.00096\text{A} = 2,187.5\Omega$$

Use 2.2KΩ R<sub>K</sub>

What is Designed for Topcap.  
-Not enough grid swing and  
high distortion numbers

Select a Tube: 6SN7

Print this Graph!

Check full list of available tubes

Operating mode:

☐ Ultralinear

☐ Pentode

☒ Triode

PP/SE:

☐ PP

☒ SE

V+ (V):

365

Grid Bias Voltage (V):

-3.35

Quiescent Operating Point:

Iq(mA):

1.52

Vq(V):

91.40

Output Power (W):

at max g1:0.01  
at g1=0:0.01  
at class A/A2:0.21  
at headroom:0.01

Load (Ohm):

☒ Resistive

☐ Reactive

180000

Next stage AC Impedance (Ohm):

330000

HD%:

2nd:1.10 3rd:0.11 4th:0.01  
THD:1.11

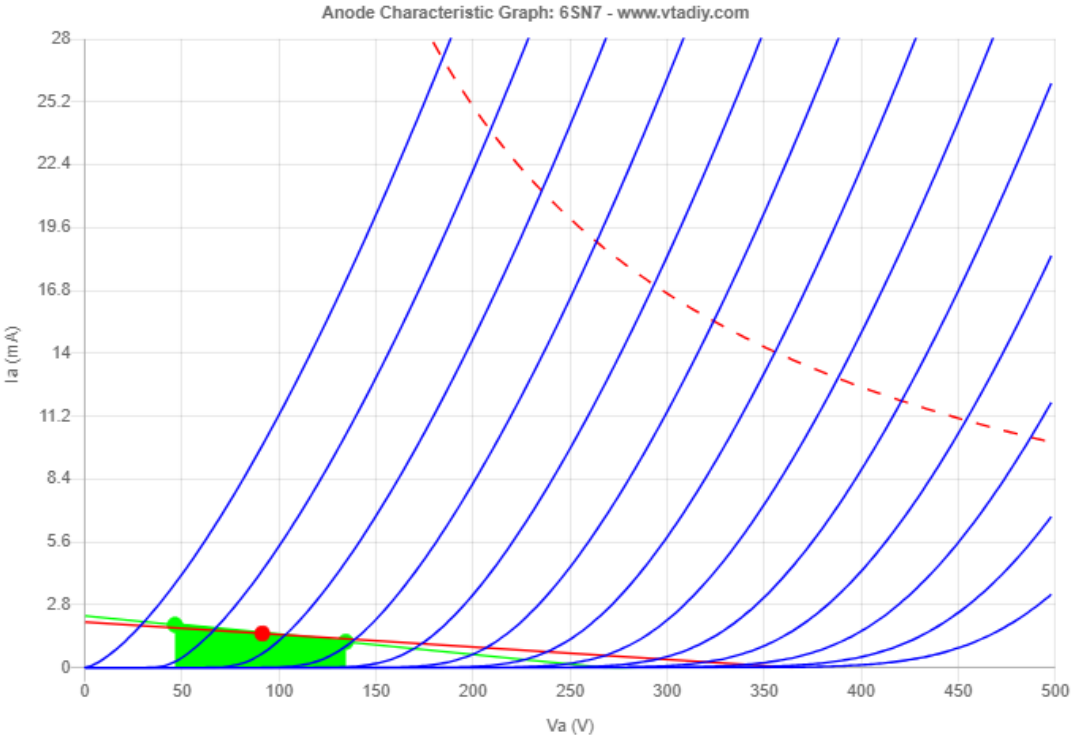
Screen Voltage (V):

UltraLinear tap (%):

0

Out. headroom (+/-V):

45



$3.35\text{V} \div 0.00152\text{A} = 2,203.94\Omega$   
Use 2.2K $\Omega$   $R_K$

What I’m Currently Using  
- Enough grid swing and better distortion numbers

Select a Tube: 807

Print this Graph!

Check full list of [available tubes](#)

Operating mode:

- ☐ Ultralinear  
☒ Pentode  
☐ Triode

PP/SE:

- ☒ PP ☐ SE

V+ (V):

371

Grid Bias  
Voltage (V):

-20.76

Quiescent Operating  
Point:

I<sub>q</sub>(mA):

62

V<sub>q</sub>(V):

371.00

Output Power  
(W):

at max g1:23.18  
at g1=0:23.18  
at class A/A2:19.92  
at headroom:21.00

Load (Ohm):

- ☐ Resistive  
☒ Reactive

10368

Next stage AC  
Impedance (Ohm):

HD%:

2nd:0.00 3rd:9.01 4th:0.00  
THD:9.01

Screen Voltage (V):

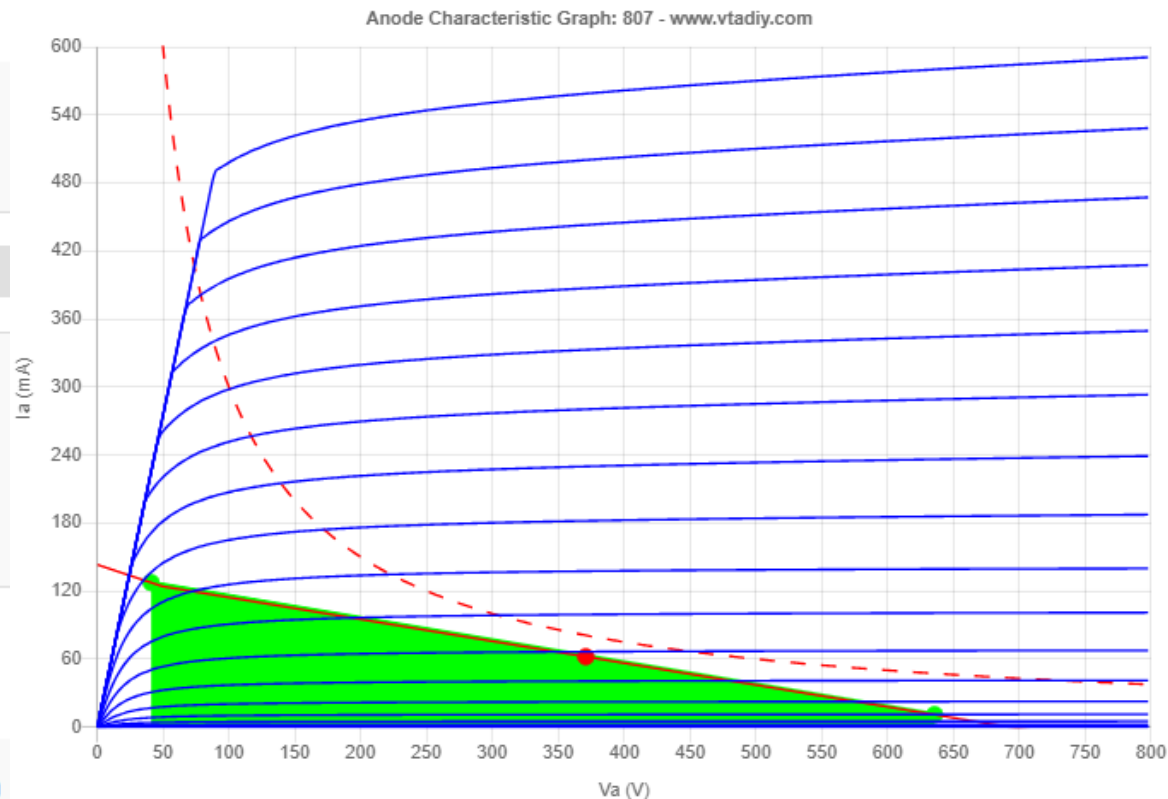
291

UltraLinear tap (%):

40

Out. headroom (+/-V):

330



What is Designed for  
Topcap

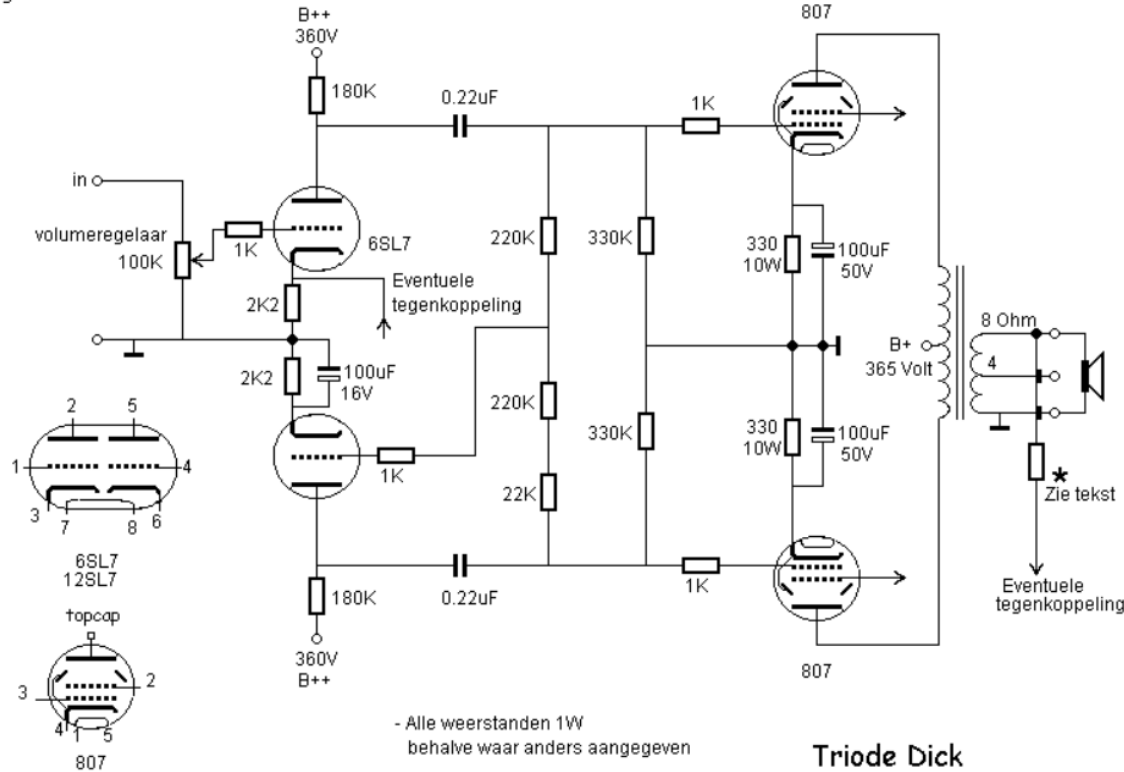
$$20.76\text{V} \div 0.062\text{A} = 334.83\Omega$$

Use 330Ω R<sub>k</sub>

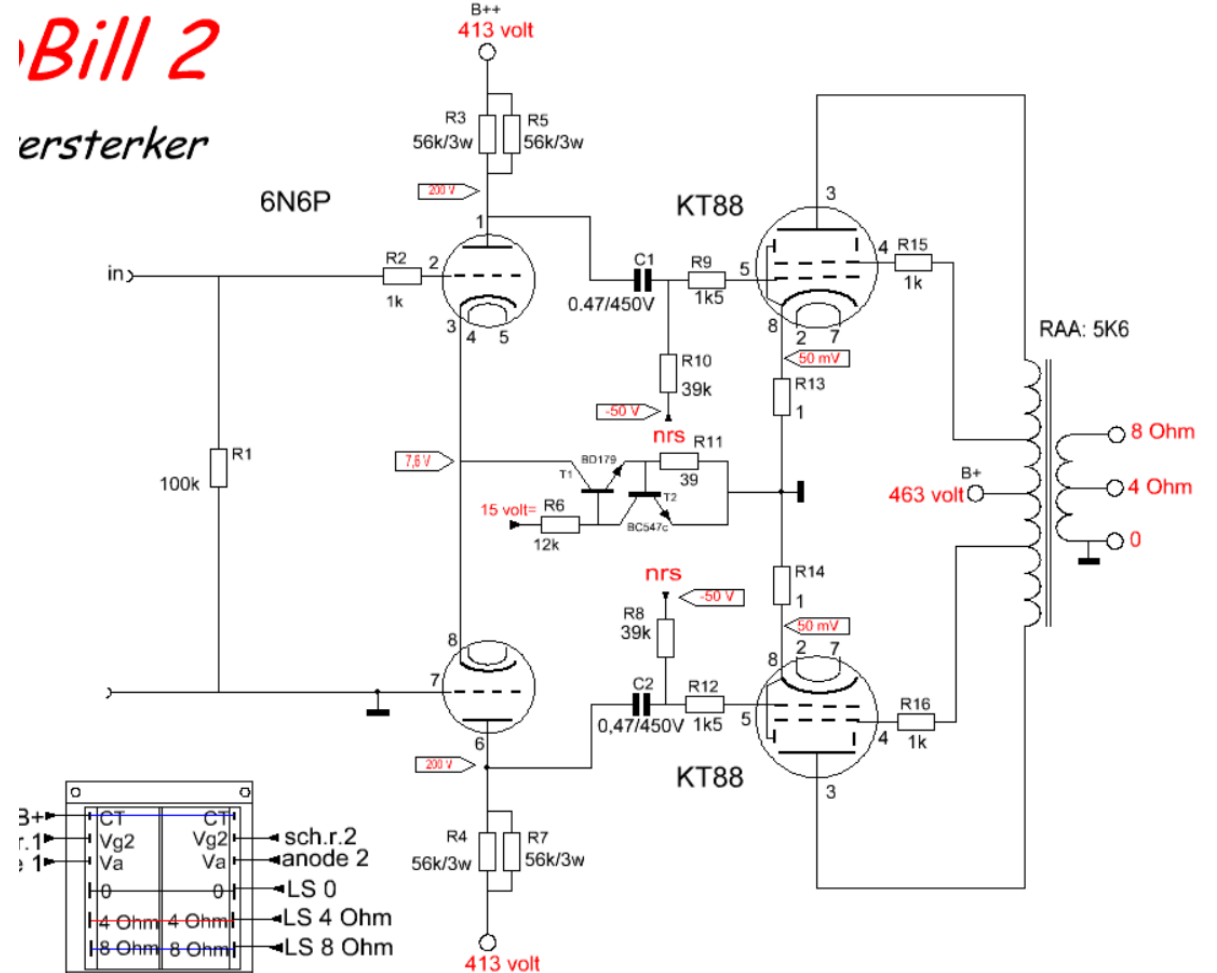
# Use Mono Bill 2 circuit in Topcap – “Bill’s Topcap”

## Topcap 807 Push Pull versterker.

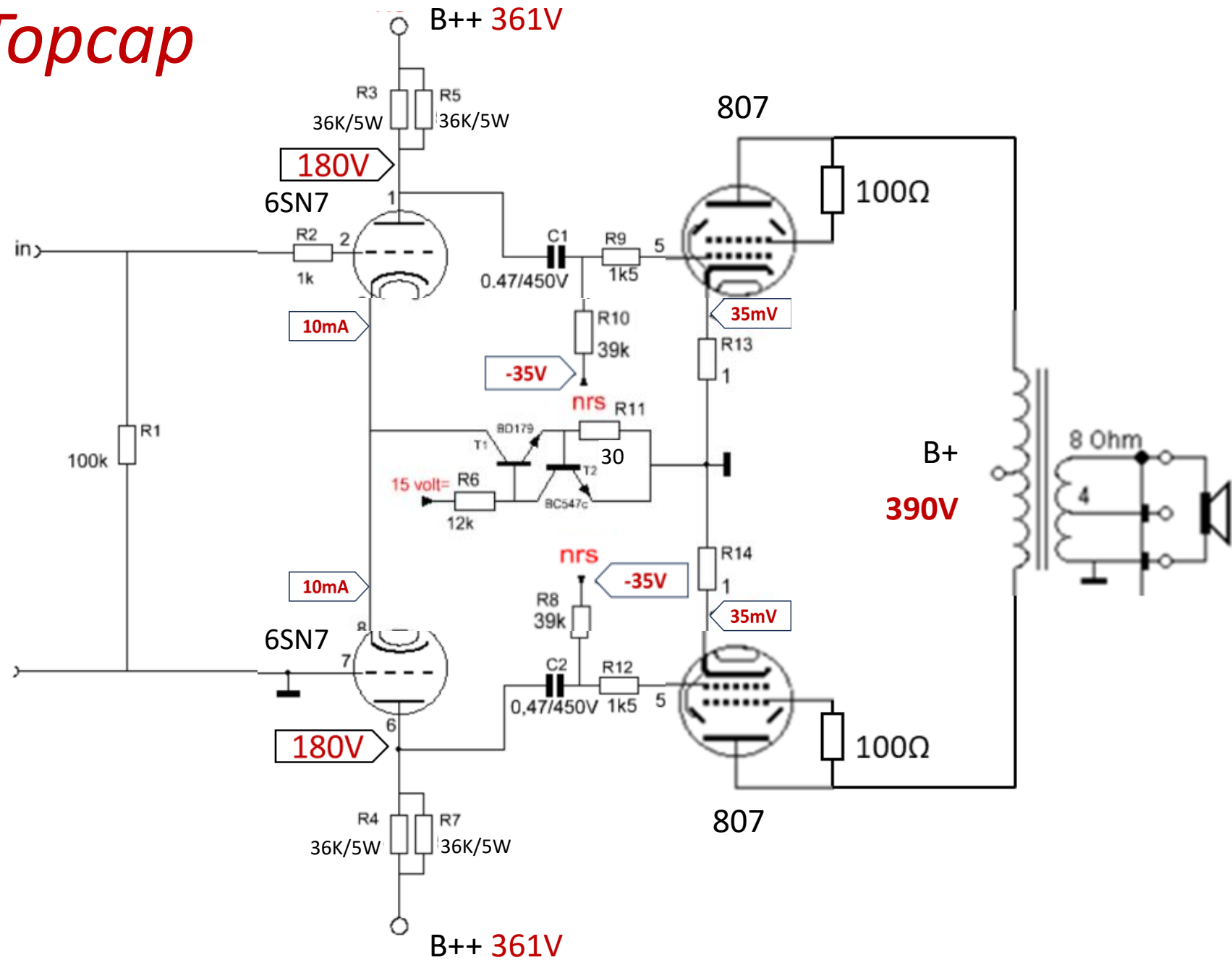
Upgrade: 13-2-02



## Bill 2 versterker



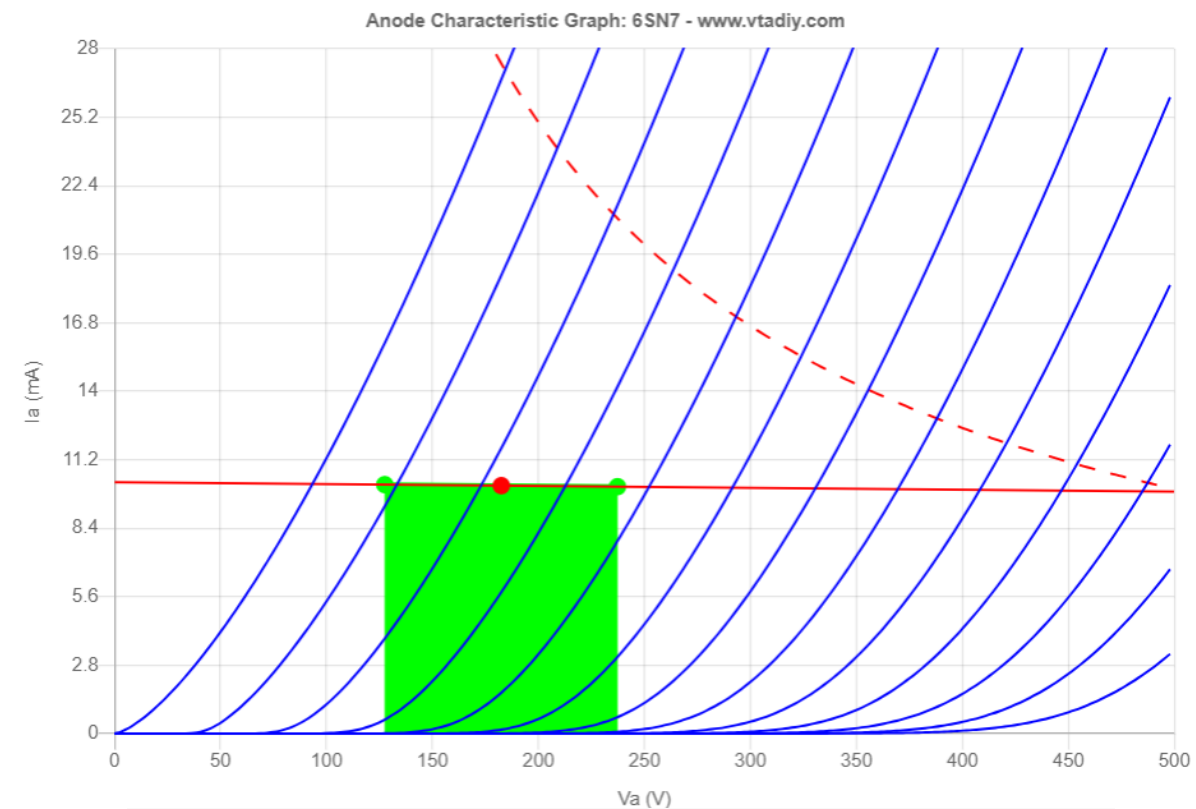
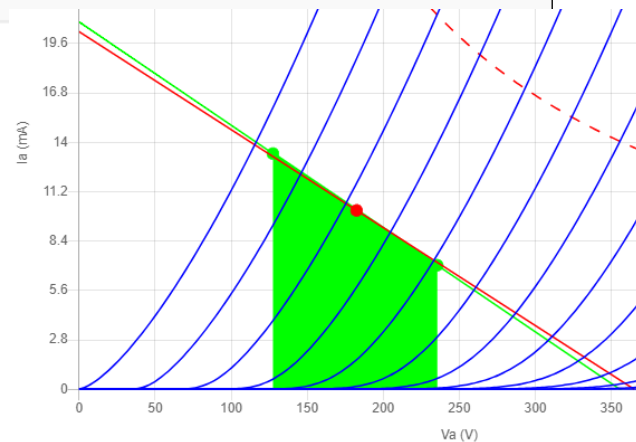
# *Mono Bill's Topcap*



Select a Tube: 6SN7 Print this Graph! Check full list of available tubes

Operating mode:	<input type="radio"/> Ultralinear <input type="radio"/> Pentode <input checked="" type="radio"/> Triode	PP/SE:	<input type="radio"/> PP <input checked="" type="radio"/> SE
V+ (V):	182.5	Grid Bias Voltage (V):	-4.48
Quiescent Operating Point:	Iq(mA): 10.14 Vq(V): 182.50	Output Power (W):	at max g1:0.00 at g1=0:0.00 at class A/A2:66.80 at headroom:0.00
Load (Ohm):	<input type="radio"/> Resistive <input checked="" type="radio"/> Reactive		
	1300000		
Next stage AC Impedance (Ohm):		HD%:	2nd:0.09 3rd:0.01 4th:0.00 THD:0.09

Screen Voltage (V):	
UltraLinear tap (%):	0
Out. headroom (+/-V):	55



V+ (V):	365	Grid Bias Voltage (V):	-4.48
Quiescent Operating Point:	Iq(mA): 10.14 Vq(V): 182.5	Output Power (W):	at max g1:0.12 at g1=0:0.12 at class A/A2:0.92 at headroom:0.08
Load (Ohm):	<input checked="" type="radio"/> Resistive <input type="radio"/> Reactive		
	18000		
Next stage AC Impedance (Ohm):	330000	HD%:	2nd:0.90 3rd:0.10 4th:0.01 THD:0.90

Check full list of [available tubes](#)

PP/SE: ☒ PP ☐ SE

Grid Bias  
Voltage (V): -35.15

Output Power (W): at g1=0:11.17  
at class A/A2:13.00  
at headroom:11.04

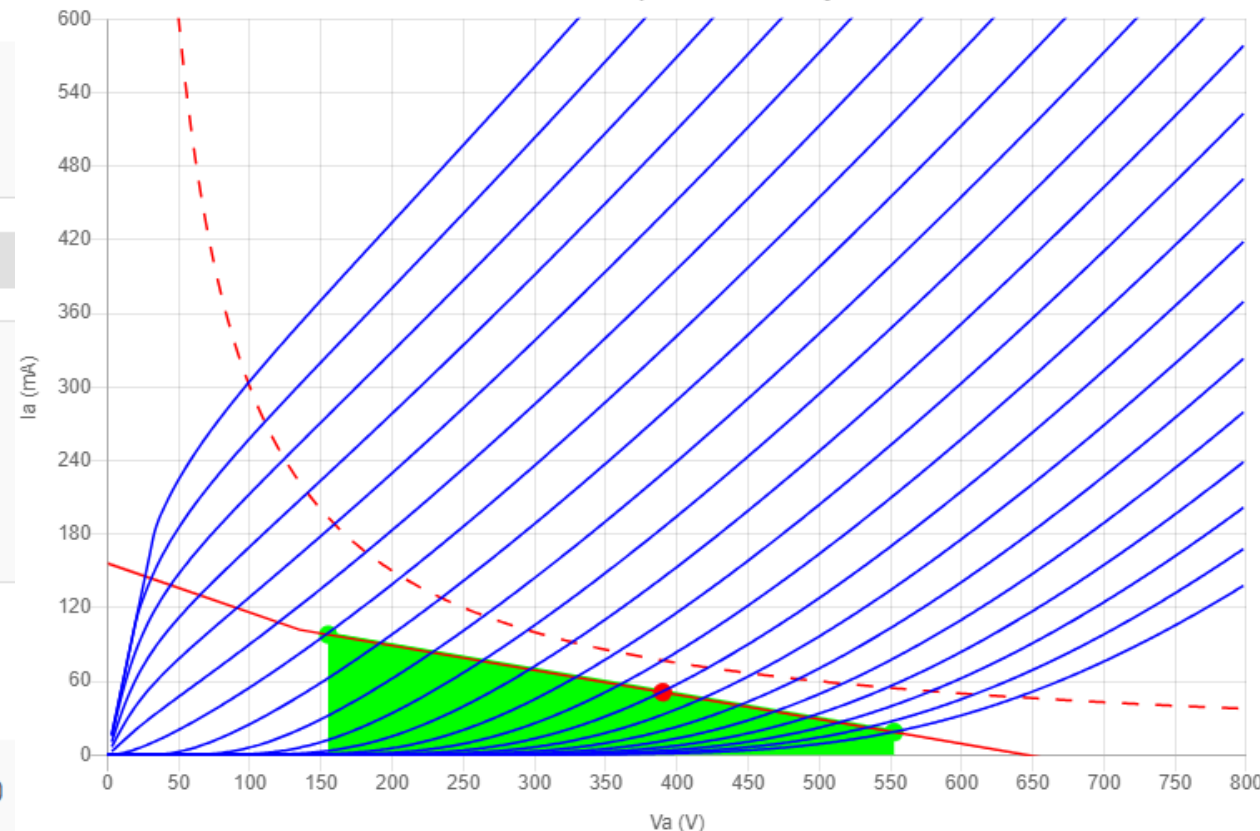
Next stage AC Impedance (Ohm):

HD%: 2nd:0.00 3rd:0.23 4th:0.00  
THD:0.23

UltraLinear tap (%): 40

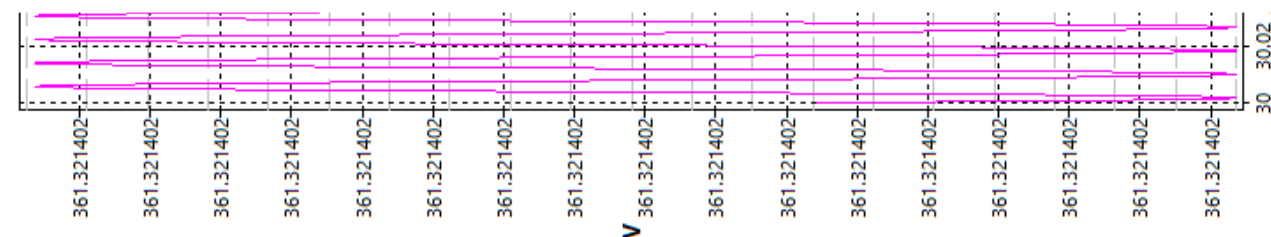
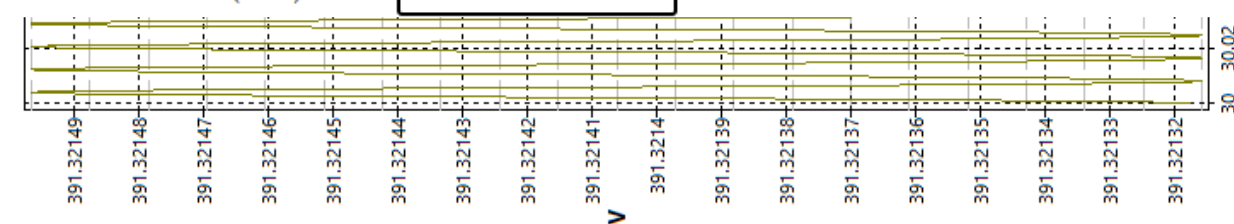
The diagram illustrates a power supply circuit with the following components and stages:

- Full-wave (VT):** A transformer (T1, 334V, 45Ω) connected to a full-wave rectifier (D1, GZ34-JJ).
- C Filter:** A capacitor (C1, 40μF, 50mΩ) connected in parallel with the rectifier output.
- LC Filter Section:** An inductor (L1, 8H, 60Ω) connected in series with the output.
- RC Filter Section:** A resistor (R1, 160Ω) connected in series with the output.
- Current Tap:** A current tap (I1, 102mA) connected in parallel with the output.
- RC Filter Section:** A resistor (R2, 1.5kΩ) connected in series with the output.
- Load:** A load (I2, 20mA) connected in parallel with the output.




TRIODE CONNECTION ( Plate and Screen Strapped):†

Max. Plate Voltage	400 volts*
Max. Plate Dissipation	25 watts*
Max. Signal DC Plate Current	125 mA*



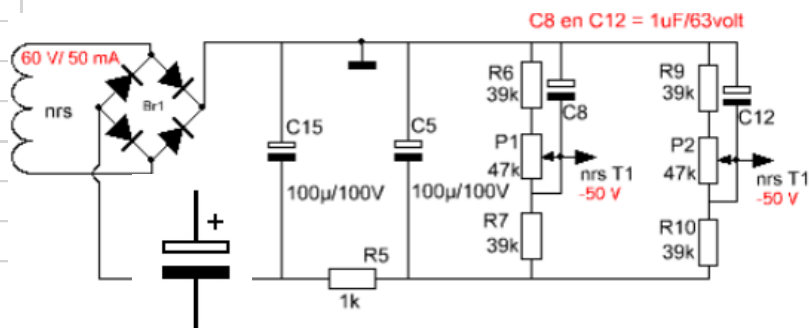
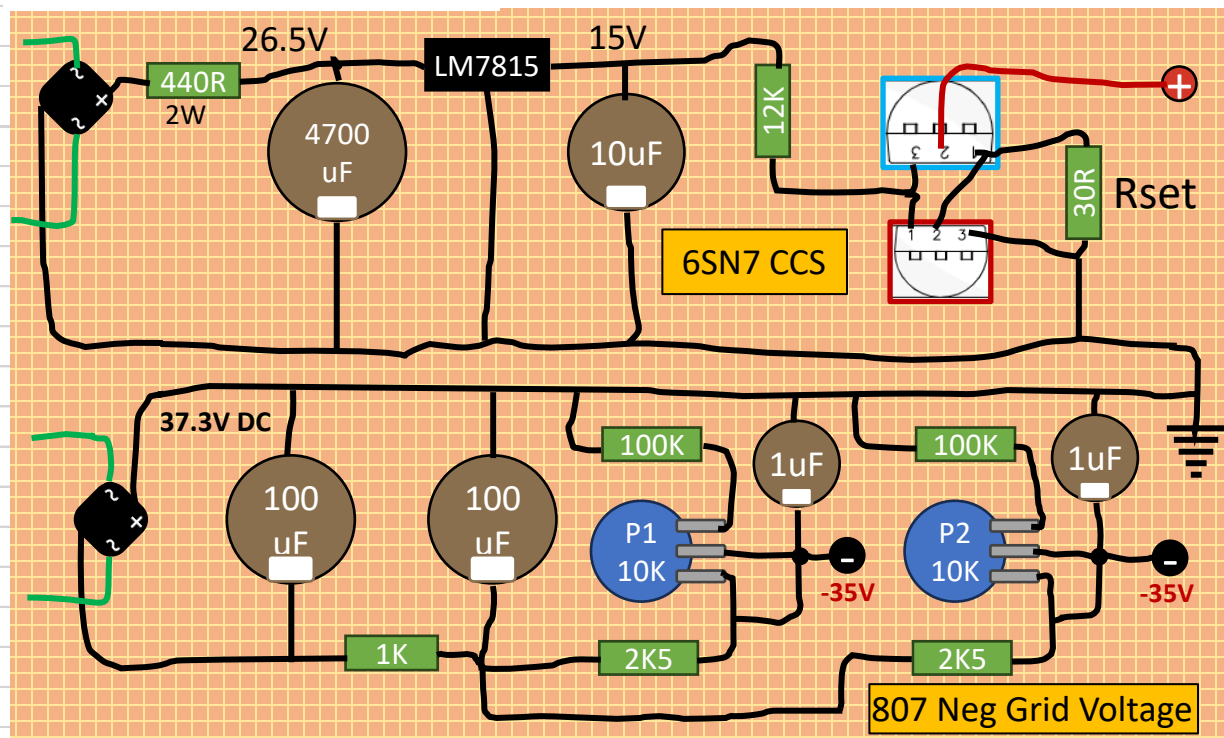
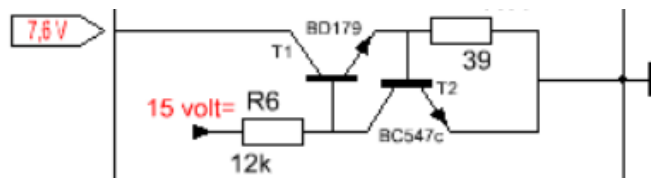
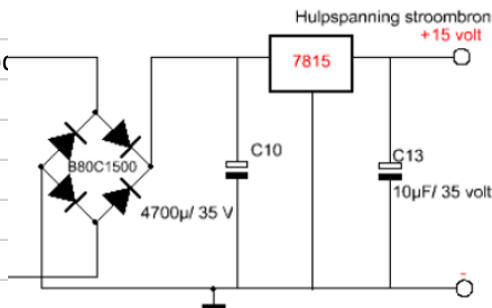


**Negative mark**

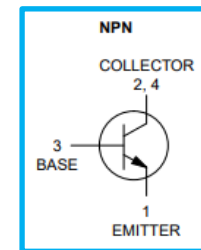


The diagram shows a circular component with a central crosshair. A black arc on the left side is labeled 'Negative mark' with an arrow pointing to it. The component has two internal features: a grid-like pattern on the left and a circular feature with a '+' sign on the right. Below the grid is a '-' sign, and below the '+' feature is a '-' sign.

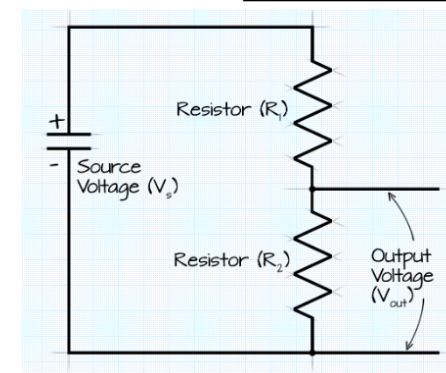
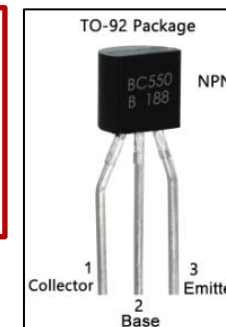
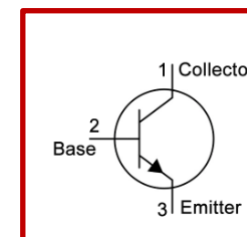
Rset	Current	Current per triode
15 Ohm	40.0mA	20.0mA
16 Ohm	37.5mA	18.8mA
17 Ohm	35.3mA	17.6mA
18 Ohm	33.3mA	16.7mA
19 Ohm	31.6mA	15.8mA
20 Ohm	30.0mA	15.0mA
21 Ohm	28.6mA	14.3mA
22 Ohm	27.3mA	13.6mA
23 Ohm	26.1mA	13.0mA
24 Ohm	25.0mA	12.5mA
25 Ohm	24.0mA	12.0mA
26 Ohm	23.1mA	11.5mA
27 Ohm	22.2mA	11.1mA
28 Ohm	21.4mA	10.7mA
29 Ohm	20.7mA	10.3mA
30 Ohm	20.0mA	10.0mA
31 Ohm	19.4mA	9.7mA
32 Ohm	18.8mA	9.4mA
33 Ohm	18.2mA	9.1mA
34 Ohm	17.6mA	8.8mA
35 Ohm	17.1mA	8.6mA
36 Ohm	16.7mA	8.3mA
37 Ohm	16.2mA	8.1mA
38 Ohm	15.8mA	7.9mA
39 Ohm	15.4mA	7.7mA
40 Ohm	15.0mA	7.5mA
41 Ohm	14.6mA	7.3mA
42 Ohm	14.3mA	7.1mA
43 Ohm	14.0mA	7.0mA
44 Ohm	13.6mA	6.8mA
45 Ohm	13.3mA	6.7mA



## BD179/BD237G



## BC547c/BC550CBU



37.5	Volt <sub>rs</sub> (V)
7500	ohms ( $\Omega$ )
105000	ohms ( $\Omega$ )

