

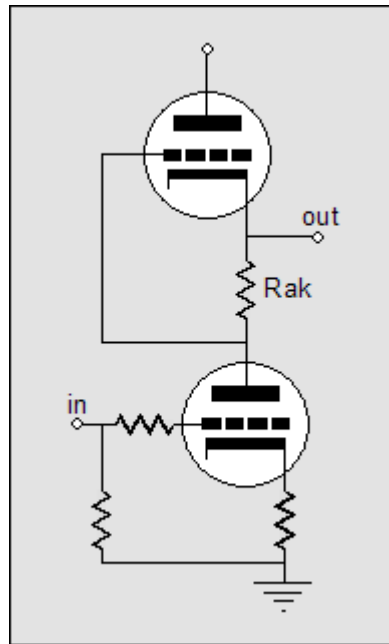
SRPP on Steroids

12 February 2005

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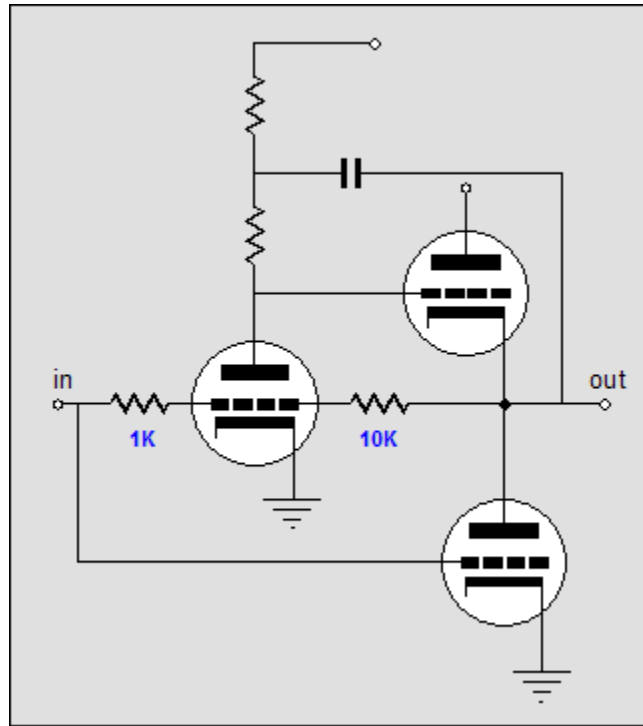
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TCJ My-Stock DB



SRPP translated again

Where have these blogs been going? We started with the [White cathode follower](#), then the [Taylor amplifier](#), then the Taylor source follower, then the [Macaulay amplifier](#), and then the [Broskie-Macaulay amplifier](#), each defining a signpost on the same road. The idea behind all these seemingly different circuits is that a push-pull amplifier can be made that uses the same polarity output devices, but dispenses with the need for a phase splitter by sensing the current flow through a primary output device to derive the needed drive signal for the other output device.



The Murray amplifier (Above) looks like it might be located on the same road; but once again, looks deceive, as both output devices finds their drive signal from the same input, no inverse reflecting the other output device's current.

On the other hand, there is a circuit that can legitimately be found along this road: the SRPP. It is also a push-pull amplifier that cheats the system, by doing away with a phase splitter.

I have displayed how to make **transistor-based SRPP** circuit, but now it's time to supercharge the SRPP and translate it from vacuum to silicon. But let's make our translation in easy steps.

TCJ My-Stock DB [DEMO DATABASE]

Part Type: Diode

Name: 1N4007

Brand: Fairchild

Group: Generic Rectifier

Style: DO-41

Vendor: Jameco

Vendor Part ID: 36011

Project: No Project

Project Part ID: ?

Quantity: 100

Condition: New

Value per item: .029

Paid per item: .029

Total Value: \$2.90

Status: Keep

Location: Bin 17

Comments: 1A / 1000V

Clear All Accept Part

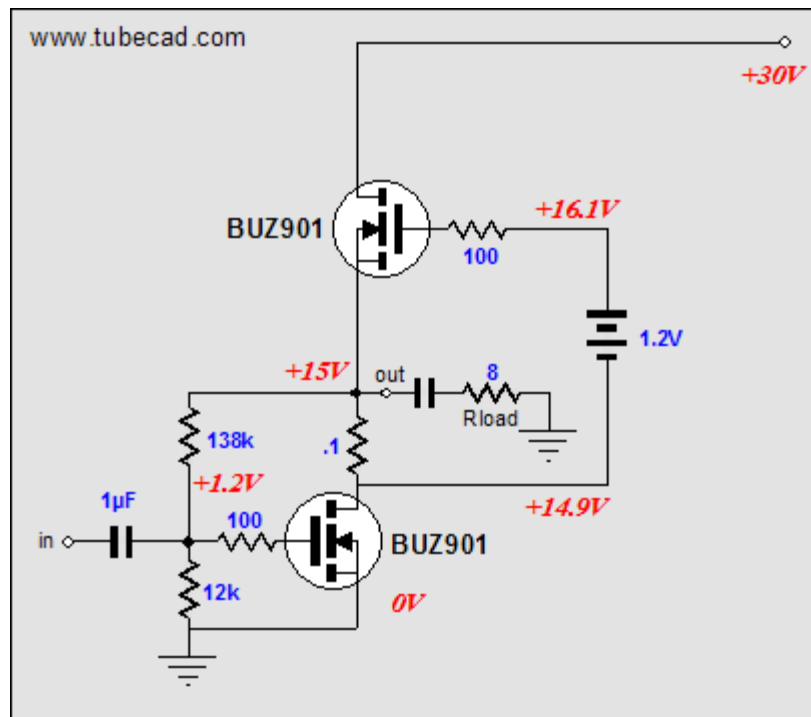
Edit Lookup Database

Total Items = 251 Total Value = \$2,032.24 Filter

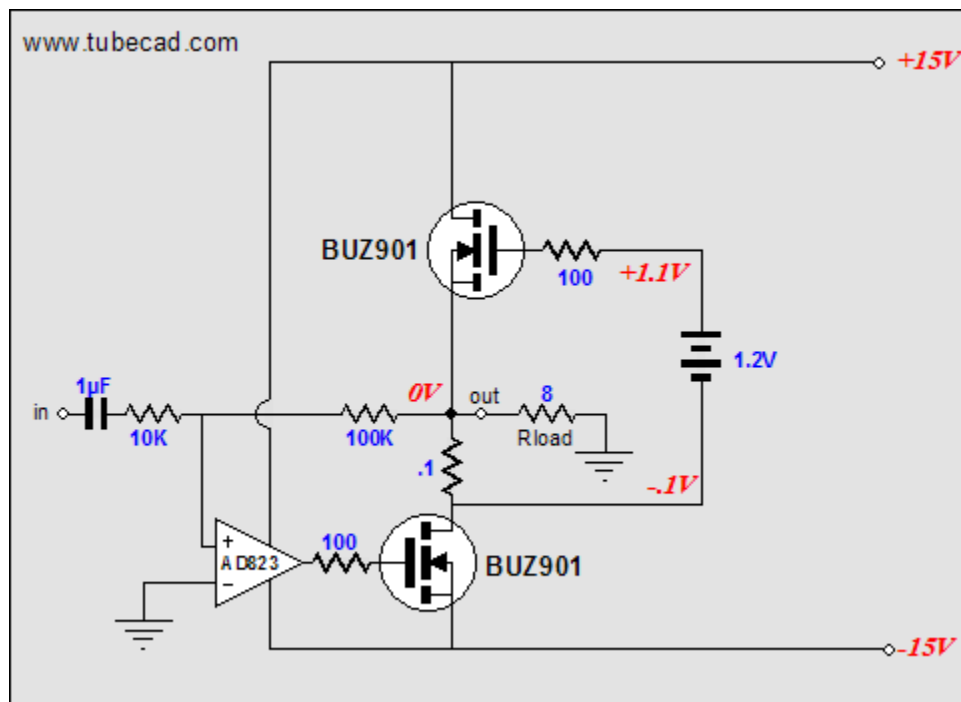
TCJ My-Stock DB [Demo Database] [1491 - RCA]

Type	Tube	Tube	Tube
Name	5887WA	5891	6L34
Brand	GE	RCA	Mullard
Group	Trode	Trode	Penode
Style	9-Pin Min.	Octal	9-Pin Min.
Vendor	Antique Electronic Supply	Swap Meet	Swap Meet
Vendor Part ID	NA	NA	NA
Project	Line Amplifier	No Project	Power Amplifier
Project Part ID	NA	NA	V5
Quantity	4	3	5
Condition	NOB	NOB	NOB
Value	\$6.50	\$28.00	\$25.00
Paid	\$3.50	\$28.00	\$1.00
Total Value	\$26.00	\$150.00	\$100.00
Status	Keep	Sell	Keep
Location	Box 3	Box 3	Box 1
Comments	Tested	Nice tube, should see what they are going for on ebay	Might be worth a bit more!

Total Items = 246 Total Value = \$2,074.86 Filter = F



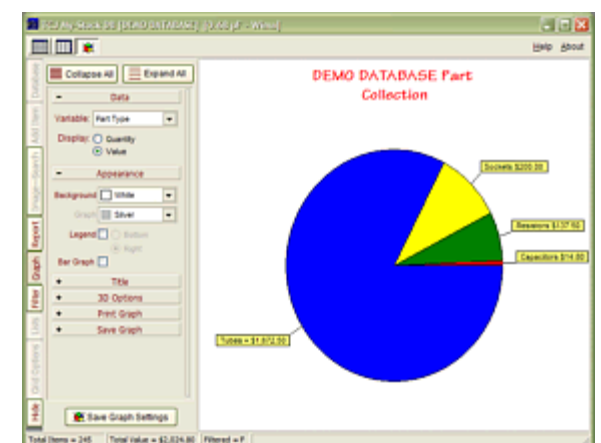
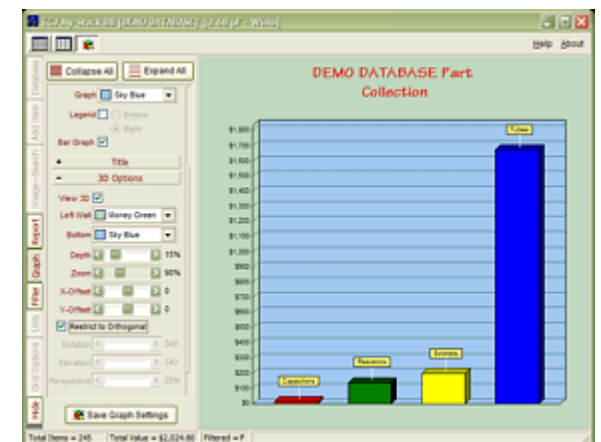
The circuit above is a MOSFET-based SRPP. As the amplifier stands, it will not easily translate into a working amplifier without first carefully matching the output MOSFETs. Second, the amplifier will not offer a low output impedance, as it falls somewhere between being a current amplifier and a voltage amplifier, with an output impedance of 23 ohms. So, the next step is to clean up the bottom output device's output.



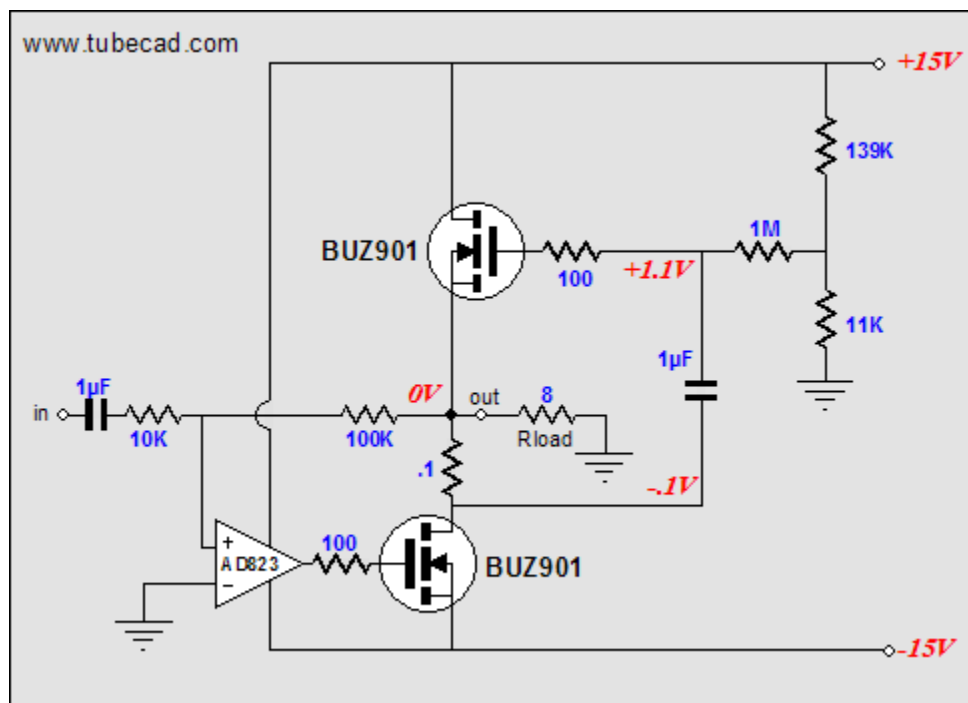
The OpAmp's feedback loop encompasses the bottom MOSFET, greatly lowering its distortion and output impedance. The OpAmp also sets the DC

Part	Quantity	Part Name	Value	Brand	Vendor
Capacitor	4	1.5µF MKP	1.5µF	Vishay	Esay
Resistor	25	1 ohm	1ohm	Shale	Esay
Tube	3	2A3	2A3	BGA	Electronic Plus Market
Tube	7	6AB4	6AB4	Ampex	Electronic Plus Market
Tube	4	6BL7	6BL7	Sylvania	Esay Meet
Tube	4	6BD7	6BD7	Sylvania	Jark TV Repair
Tube	3	6X4	6X4	Ampex	Esay Meet
Tube	11	6SL7	6SL7	Tung-Sol	Jark TV Repair
Tube	3	6AV6	6AV6	Defontron	Esay Meet
Tube	15	6SL7	6SL7	Sylvania	Esay Meet
Tube	22	12AT7	12AT7	National	Esay Meet
Tube	11	12AT7	12AT7	Ampex	Esay Meet
Resistor	8	100 ohm	100ohm	Vishay	Electronic Plus Market
Resistor	13	4800 ohm	4800ohm	Vishay	Parts Connection
Tube	5	6BE7	6BE7	Tung-Sol	Esay Meet
Tube	4	6BD7	6BD7	GE	Amique Electronic Supply
Tube	3	6BE7	6BE7	RCA	Esay Meet
Tube	5	6L6	6L6	Mullard	Esay Meet
Socket	100	PCB Socket	PCB Socket	Esay	Esay

Part Type	Part Name	Quantity	Brand	Vendor
Capacitor	0.01µF	4	Vishay	Esay
Resistor	1 ohm	25	Shale	Esay
Tube	2A3	3	BGA	Electronic Plus Market
Tube	6AB4	7	Ampex	Electronic Plus Market
Tube	6BL7	4	Sylvania	Esay Meet
Tube	6BD7	4	Sylvania	Jark TV Repair
Tube	6X4	3	Ampex	Esay Meet
Tube	6SL7	11	Tung-Sol	Jark TV Repair
Tube	6AV6	3	Defontron	Esay Meet
Tube	6SL7	15	Sylvania	Esay Meet
Tube	12AT7	22	National	Esay Meet
Tube	12AT7	11	Ampex	Esay Meet
Resistor	100 ohm	8	Vishay	Electronic Plus Market
Resistor	4800 ohm	13	Vishay	Parts Connection
Tube	6BE7	5	Tung-Sol	Esay Meet
Tube	6BD7	4	GE	Amique Electronic Supply
Tube	6BE7	3	RCA	Esay Meet
Tube	6L6	5	Mullard	Esay Meet
Socket	PCB Socket	100	Esay	Esay

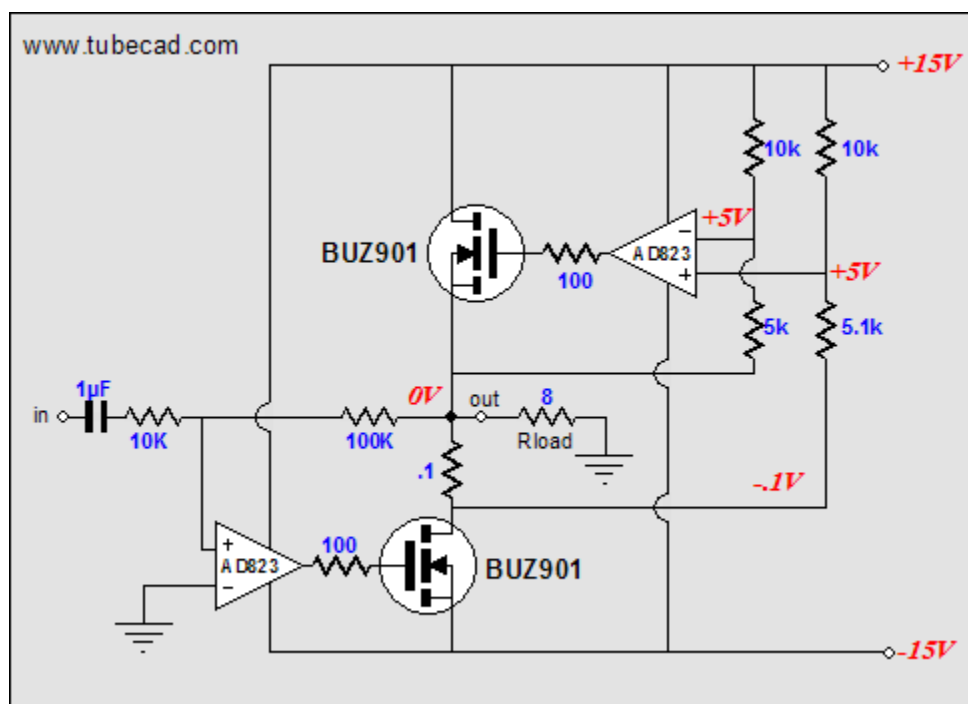


offset, which is important in this directly coupled amplifier. The next step is to eliminate the battery.

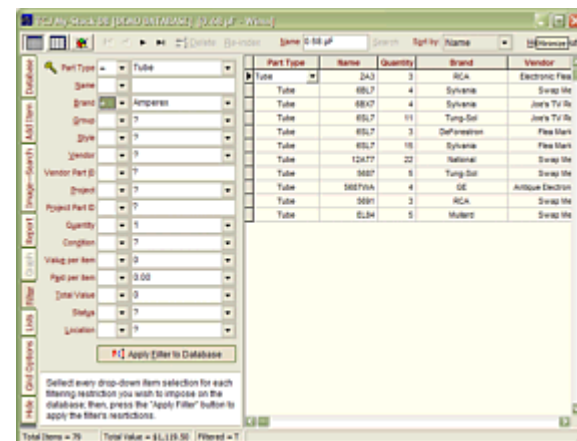


The OpAmp keeps the output centered at ground and the top MOSFET sets the idle current, via the two-resistor voltage divider that DC references its gate. One interesting feature of this circuit is that the sense resistor's value can readily be changed without also changing the idle current.

The last step is to bolster the top MOSFET by giving it its own OpAmp.



We have arrived. The SRPP has been translated and supercharged. The two



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OpAmps ensure low distortion and output impedance, while maintaining a low DC offset and a steady idle current.

Conclusion

No, this is not my proposal of what a perfect amplifier should look like, but rather a filling in of an obvious hole in our array of amplifiers on the same theme. How would the amplifier sound if built? Probably, fairly good, but I am only guessing. But if you decide to give it test drive, please share your results with us.

//JRB

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