

COMPLEMENTARY COMPOUND PUSH PULL POWER AMPLIFIER FOR WIDE FREQUENCY BAND APPLICATIONS

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Abstract—At present the design which is existing related to push pull amplifier is using complementary compound CMOS pair that will increase the efficiency of the amplifier for radio frequency communication system .the improved design works with a less power consumption and for a larger band frequency up to zeta Hz and around 1v input supply .The improved design has a correct temperature stability and the gain of voltage is also high with low inductor value around pico henry .this is done using cadence virtuoso tool of 180nm CMOS nano technology

Keywords—frequency response, compound cmos pair, push pull amplifier distortion and temperature stability.

I. INTRODUCTION (HEADING 1)

A power amplifier which is also called as large signal amplifier is a initial element for any type of radio frequency communication system. The output load has a large power so that it can drive large power devices. The working principle of class B amplifier is used for implementing push pull amplifier. use of class B amplifier has a large efficiency and the distortion is reduced to the larger extend. The important properties of CMOS technology are it Hz low static power and high noise immunity. The improved voltage of low input voltage signal which is operated at greater frequency band has resulted with no distortion. A major understanding for the scientists about power amplifier are done by studying different topology like transistor cascading , RC coupled transistor, Darlington pair etc. These have enhanced the marked due to having better efficiency along with the high band range. here the design is done using RKTG pair.

II. COMPLEMENTARY COMPOUND PAIR

the implementation gives the power amplifier with complements pair of CMOS technology. This has a very good response that enhances the band of signal with less power consumption with the less power consumption with the less input power supply.it make use of pair of two NMOS and two PMOS transistor. When the configuration contains a NPN

derives and PNP output device, Then device act as a simple NPN transistor.

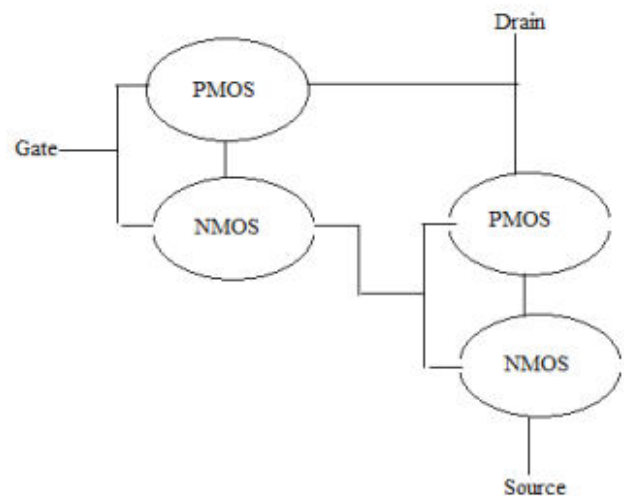


Fig 1.Model of complementary compound pair

III. EXPLAINATORY CIRCUIT

A disturbance and glitches will be detected by non linearity of the dynamic characteristic is removed by the push pull class B power amplifier. The two CMOS INVERTERS ARE PPLACE IN series and the voltage diver biasing is done with the 100Kohm load

The obtained result of the configuration has a narrow band up to KHz .so it is also used as tuned amplifier to output load is build by the complementary compound pair with less value of inductor and resistor for a values varying for inductor then there will be large low cut off frequency with the design developed.

So this developed circuit is very helpful for wide band large signal amplification is it has a high stability inn temperature ,low output noise at larger frequency.

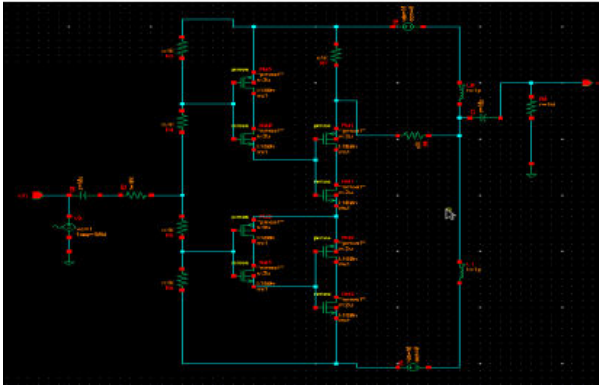


Fig2. Exploratory circuit of Complementary Compound Push Pull amplifier

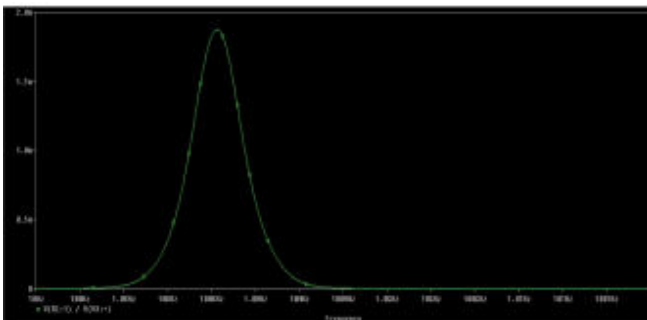


Fig3.AC analysis of CMOS push pull amplifier

IV SIMULATION RESULT

The frequency response shows that for a small range of frequency that is from Khz to Mhz used for frequency turning purpose.while the proposed circuit can be used particularly for ultra high frequency band from Khz to Zhz.



Fig4.AC analysis of explanatory circuit of complementary push pull amplifier.

The transient analysis is as shown is done with respect to input and output proves that the ampliofier has low disturbance at the output port and also has less power consumption with input power supply 1V.

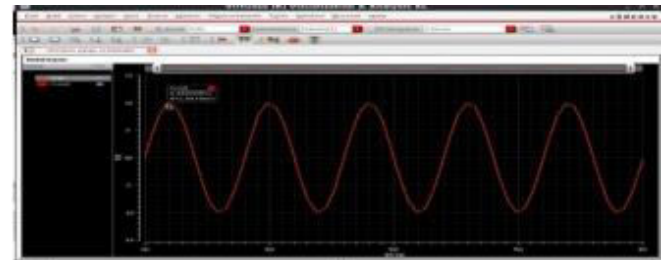


Fig5. Transient analysis of proposed complementary push pull amplifier

the power obatined is saved upto uW by having low voltage of 1V supply.this has its impact on its gain and frequency band both.the simulated noise analysis has a output noise,input noise and transfer function noise.

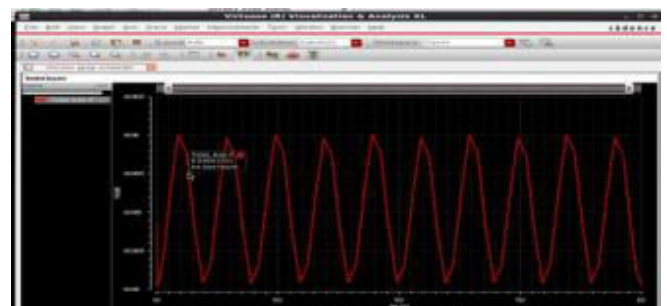


Fig6.Power consumption in proposed amplifier.

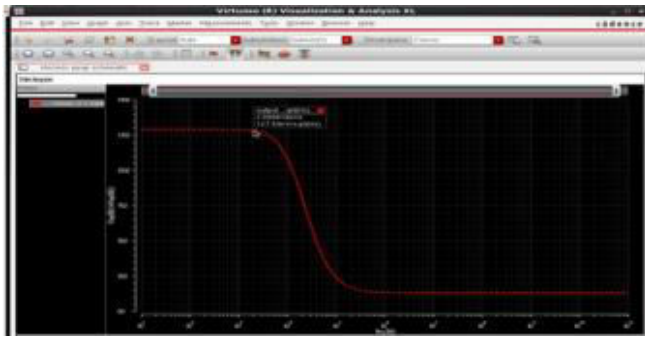


Fig7. Output noise analysis of proposed amplifier.

V CONCLUSION

The obtained results shows that the study done on complementary compound push pull amplifier is very effective for ultra wide band approximately 574Zhz for low input voltage of 1V,with inductor 1Ph and high output load of 1Mhz.with further investigation helps to study other parameters having high Q-CMOS inductor instead of passive inductor of the proposed power amplifier for high gain of voltage also having less power consumption and high frequency.

VI REFERENCES

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