Abstract

The proposed buffer achieves low offset and high slew rate in proposed circuit NMOS folded cascode operation amplifier is used instead of rail to rail operation amplifier, use of only NMOS folded cascode operation amplifier reduces the number of MOS used in circuit and using auto zero negative feedback will provide full swing for positive and negative feedback polarity pixel, and to decrease the offset a current distributed load is used which increases DC gain of operational amplifier and as DC gain increases it reduces offset voltage and increases slew rate with same bias current used in folded and summing stage of operational amplifier. The proposed circuit is simulated and verified in LT-spice and Microwind simulation tool using 350nm CMOS TSMC foundry with 3.3 V supply voltage the offset calculated is around .2mV and slew rate is 14V/µs.

References

1. Ming-Wei Hsu and Chern-Lin Chen“A Cost-Effective Offset Cancellation Structure for
Low Offset and High Slew Rate Buffer amplifier for LCD Application

1. LCD Source Driver*978-1-4799-3432-4/14/$31.00 ©2014 IEEE.
   low-offset push-pull output buffer with current positive feedback for a 10-bit LCD source driver,”
5. Chih-Wen Lu, “High-Speed Driving and Compact High- Speed Low-power Rail-to-Rail
   Class-B Buffer Amplifier for Small- and Large-size LCD Applications,” accepted by IEEE Journal
   of Solid-State Circuit.
6. Ming-Chan Weng and Jiin-Chuan Wu, “A Compact Low- Power Rail-to-Rail Class-B
8. D. J. R. Cristaldi, S. Pennisi, and F. Pulvirenti, Liquid Crystal Display Drivers: Techniques and
    power-efficient 3 V CMOS rail-to-rail input/output operational amplifier for VLSI cell libraries,”
13. C.-W. Lu and K. Hsu, “A high-speed low-power rail-to-rail column driver for AMLCD
14. Y. S. Son, J. H. Kim, H. H. Cho, J. P. Hong, J. H. Na, D. S. Kim, D. K. Han, J. C. Hong,
    Symp. on VLSI Circuits, June 2007, pp. 148–149.
16. P.-C. Yu and J.-C. Wu, “A class-B output buffer for flat-panel-display column driver,”
17. C.-W. Lu and C. L. Lee, “A low-power high-speed class-AB buffer amplifier for
    flat-panel-display application,” IEEE Trans. Very Large- Scale Integr. (VLSI) Syst., vol. 10, no. 4,
18. M.-C. Weng and J.-C. Wu, “A compact low-power rail-to-rail class-B buffer for LCD
19. T. Itakura and H. Minamizaki, “A two-gain-stage amplifier without an on-chip miller
Low Offset and High Slew Rate Buffer amplifier for LCD Application


Index Terms

Computer Science  Circuits and Systems

Keywords

LCA, Buffer Amplifier