

A NOVEL MEMS CHARGE-PUMP CIRCUIT

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Abstract—This paper presents a novel MEMS charge-pump circuit design and simulation for PLL applications. The proposed circuit increases switching speed , minimizes power consumption and reduces the static Charge and Charge injection cancellation. The Advanced Design System (ADS) ,from Agilent Technologies are used in the proposed structure for high frequency applications. The use of electrostatic MEMS switches is attractive because of its advantages, such as very low power consumption ,low insertion loss and high isolation. This paper introduces a use of special design MEMS as a charge pump circuit, replacing the GaAs FET switch with MEMS switch. The proposed charge pump circuit can generate higher output voltage with 66.3% improvement when compared with the charge pump using MOS devices

Keywords— MEMS, PLL, charge-pump, GaAs FET switch , MEMS switch

BIOGRAPHIES



Mazhar B. Tayel was born in Alexandria, Egypt on Nov. 20th, 1939. He was graduated from Alexandria University Faculty of Engineering Electrical and Electronics department class 1963. He published many papers and books in electronics, biomedical, and measurements. Prof. Dr. Mazhar Basyouni Tayel had his B.Sc. with honor degree in 1963, and then he had his Ph.D. Electro-physics degree in 1970. He had this Prof. degree of elect. and communication and Biomedical Engineering and systems in 1980. Now he is Emeritus Professor since 1999. From 1987 to 1991 he worked as a chairman, communication engineering section, EED BAU-Lebanon and from 1991 to 1995 he worked as Chairman, Communication Engineering Section, EED Alexandria. University, Alexandria Egypt, and from 1995 to 1996 he worked as a chairman, EED, Faculty of Engineering, BAU-Lebanon, and from 1996 to 1997 he worked as the dean, Faculty of Engineering, BAU - Lebanon, and from 1999 to 2009 he worked as a senior prof., Faculty of Engineering, Alexandria. University, Alexandria Egypt, finally from 2009 to now he worked as Emeritus Professor, Faculty of Engineering, Alexandria University, Alexandria Egypt. Prof. Dr. Tayel worked as a general consultant in many companies and factories also he is Member in supreme consul of Egypt. E.Prof. Mazhar Basyouni Tayel.



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