Abstract

This paper presents an efficient DC to DC converter for on chip circuitry which gives high-energy conversion quality using CMOS Driver-Receiver Pair for Low-Swing Signaling. The efficiency has increased due to the use of power FETs, which are able to switch at high frequency more efficiently than power bipolar transistors, which incur more switching losses and require a more complicated drive circuit. The proposed schemes perform better than the other schemes in terms of power consumption, delay, and energy delay product. Moreover, the proposed scheme requires no reference voltages, and multiple threshold voltage processes. In addition the other key advantages of the proposed signaling schemes is that they require only one power supply and threshold voltage, hence significantly reducing the design complexity. This proposed work also takes care of the relative reliability benefits of the proposed signaling techniques through a signal-to-noise ratio (SNR) analysis.
The Performance and Analysis of an Efficient Model of DC to DC Converter for on Chip Circuitry using a Low Power DC-DC Converters.

- Thomas D. Burd, Trevor A. Pering, Anthony J. Stratakos and Robert W. Brodersen, A Dynamic Voltage Scaled Microprocessor System
- Surin Khomfoi and Leon M, Tolbert Multilevel Power Converters.
- iann-Jong Chen and Che-Min Kung, A New On-Chip All-Digital Three-Phase Full-Bridge dc/ac Power Inverter With Feed forward and Frequency Control Techniques.
- Eric Vagnon, Pierre-Olivier Jeannin, Jean-Christophe Crbier, and Yvan Avenas, A Bus-Bar-Like Power Module Based on Three-Dimensional Power-Chip-on-Chip Hybrid Integration.
- Youssef Ounejjar, Kamal Al-Haddad, and Luc-And Grgoire, Packed U Cells Multilevel Converter Topology: Theoretical Study and Experimental Validation
- Trescases, Member, IEEE, Aleksandar Prodic, Member, IEEE, and Wai Tung Ng, Senior Member, vol. 58, no. 1, January 2011 Digitally Controlled Current-Mode DCDC Converter IC Olivier IEEE IEEE Transactions on Circuits and Systems I: Regular papers.
- IEEE, and Philip K. T. Mok, Senior Member, IEEE Design and Implementation of Fully Integrated Digitally Controlled Current-Mode Buck Converter
- Biswajit Maity and Pradip Mandal, A High Performance Switched Capacitor-Based DC-DC Buck Converter Suitable for Embedded Power Management Applications.
- Sangsu Park, Jungho Shin, Salvatore Cimino, Seungjae Jung, Joonmyoung Lee, Seonghyun Kim, Jubong Park, Wootae Lee, Myungwoo Son, Byunghun Lee, Luigi Pantisano, and Hyunsang Hwang, vol. 32, No. 12, December 2011, Feasibility Study of Mo/SiOx/Pt

Index Terms

Computer Science

Power Electronics

Keywords

Complementary metal oxide semiconductor (CMOS) Signal to noise ratio (SNR)
Threshold voltage
Buck converter