Abstract

ADC (Analog to Digital Converter) is a device which converts analog values into digital numbers; analog values usually are in the form of voltages. Flash ADC, also called parallel ADC, is used where maximum sampling rate is required. Although this is the fastest ADC but its main disadvantage is that it consumes a lot of area and also dissipates a large amount of power because it is formed of a series of comparators which are connected with priority encoder. In this paper to overcome these disadvantages, the number of comparators are reduced by using multiplexers to generate the reference voltage which are designed with a new technique called GDI and by using this, a 3-bit flash ADC is designed by completely modifying the analog and digital parts. This architecture is then compared with the CMOS based ADC and TG based ADC. This architecture uses only 3 comparators for a 3-bit ADC. This 3-bit ADC is designed and simulated in Mentor Graphics Pyxis schematic tool with 1.8 V supply voltage and 180 nanometer technology.


**Index Terms**

Computer Science  
Power Systems

**Keywords**
MUX, TG, GDI, ADC, DAC