

3 bit Flash ADC using ROM-based Encoder

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Abstract—Analog To Digital Converters (ADC) are used in modern high performance telecommunication systems. The fastest ADC is the flash architecture. Also called the parallel Analog to Digital converter, this circuit is the simplest to understand. It is formed of a series of comparators, each one comparing the input signal to a unique reference voltage. The comparator outputs connect to the inputs of a priority encoder circuit, which then produces a binary output. In this design we implement a ROM(Read Only Memory) -based encoder for ADC, which is the fastest encoder.

Index Terms—ADC, ROM

I. CIRCUIT DETAILS

The circuit consists of 7 resistors and 7 comparators, for a 3 bit ADC. The encoder converts the comparator outputs into a coded word format. This process converts a analog voltage value into a digital word format.

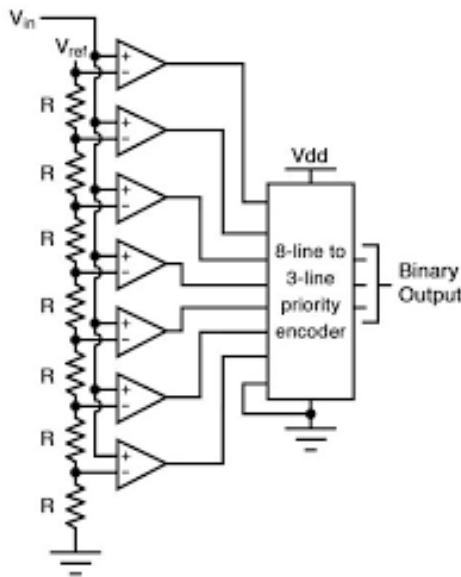


Fig. 1. 3 bit Flash ADC

In this circuit instead of using 8-to-3 priority encoder, we will be implementing this encoding using a ROM-based encoder. ROM-based encoder is the fastest encoder among all encoders. The encoder can be implemented with both logic gates and CMOS gates.

REFERENCES

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Identify applicable funding agency here. If none, delete this.

A. ROM-based method

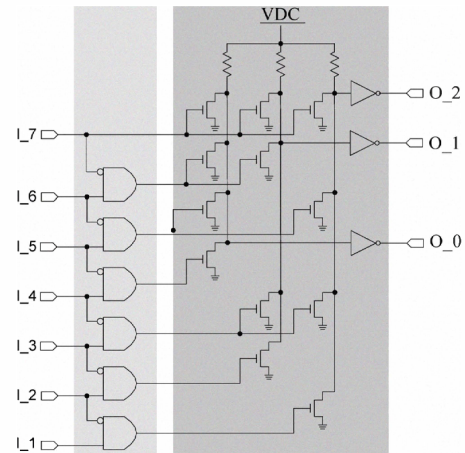


Fig. 1 ROM-based encoder

Fig. 2. ROM-based encoder

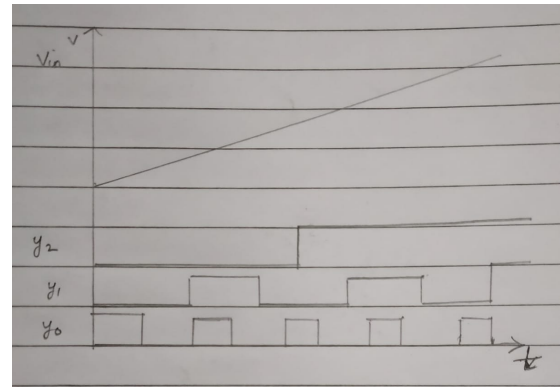


Fig. 3. Reference waveform

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