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divyasree\_4bitflashtype\_adc

# Design of 4bit flashtype adc

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Flash type ADC is the fastest among all ADC's. It requires only one clock cycle for conversion. It is also called as parallel or simultaneous type ADC. It contains comparators connected in serially where each comparator compares the  $V_{ref}$  at each and every node with the given input voltage. The comparators are connected to the priority encoder circuit, which then results in a binary output.

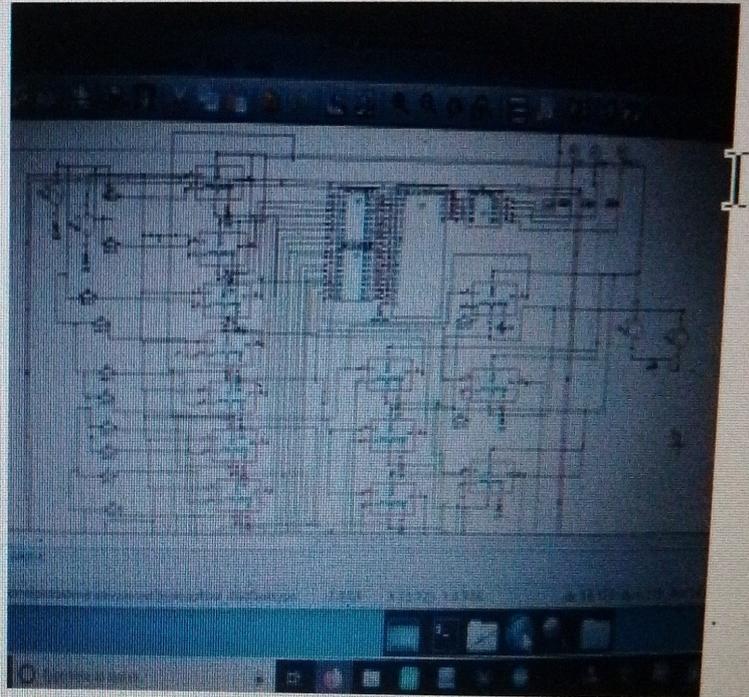
**Keywords:** Priority encoder, comparator.

## 1. Reference circuit details

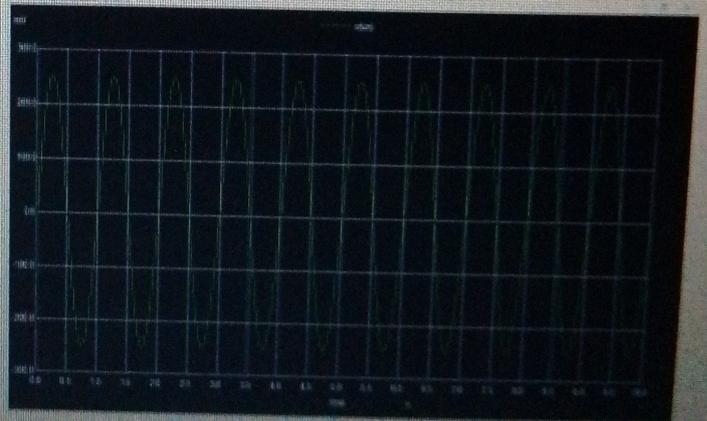
4bit flash type ADC consists  $(2^n - 1)$  15 comparators,  $(2^n)$  resistors and one priority encoder.  $V_{ref}$  is applied to total network with respect to ground. Voltage drop across each resistor with respect to ground will be integer multiples of  $V_{R/LG}$ .  $V_{in}$  is applied to the non-inverting terminal of comparator. The same voltage drop found across each resistor from bottom to top is applied to the comparator's inverting terminal from bottom to top. Simultaneously, all the comparators compare the input external voltage to the voltage drops present at the corresponding input terminal, which means, the operation of comparison takes place by parallelly. The

code, which relates to the high priority input which has 1. Hence, the output of priority

## Implimented circuit Diagram



## Implimented waveforms



## Reference papers

1. G. S. Chakrabarti, "A 4-bit Flash ADC", *IEEE Transactions on Circuits and Systems*, vol. 28, no. 1, pp. 1-10, 1981.

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