Design and Implementation of CMOS Schmitt Trigger Using eSim Tool

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Abstract- Portable electronic devices have extremely low power requirement to maximize the battery lifetime.Various devices circuit architectural level technique have been implemented to minimize the power consumption. supply voltage scaling has a significant impact on the overall power dissipation. The Schmitt Trigger is a comparator circuit that incorporates positive feedback. Schmitt triggers are extensively used in digital as well as analog systems to filter out any noise present in a signal line and produce a clean digital signal. The design and simulation are performed by Schmitt trigger using eSim Tool.

KEYWORDS: CMOS VLSI Schmitt trigger, Power consumption, CMOS Technology

- **INTRODUCTION**

A Schmitt trigger is a comparator circuit with hysteresis implemented by applying positive feedback to the non-inverting input of a comparator or differential amplifier. A Schmitt trigger uses two input different threshold voltage levels to avoid noise in the input signal. The action form this dual-threshold is known as hysteresis.The Schmitt trigger give proper results even if the input signal is noisy.It uses two threshold voltage;one is the upper threshold voltage (VUT) and the second is lower threshold voltage(VLT). The output of the schmitt trigger remains low until the input signal crosses VUT. Once the input signal cross this limit VUT, the output signal of the schmitt trigger remains high until the input signal is below the level of VLT.
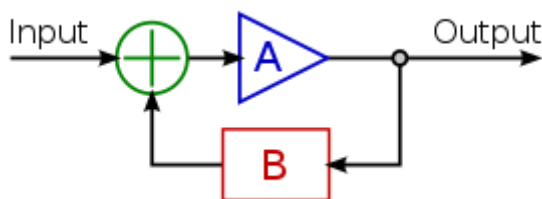
Fig(1):- Reference Block Diagram of Schmitt Trigger

In the first case, the input voltage is high. In this condition, the Pn transistor is ON and the Nn transistor is OFF .And it creates a path to ground. Therefore,the output of the CMOS Schmitt trigger will be zero.
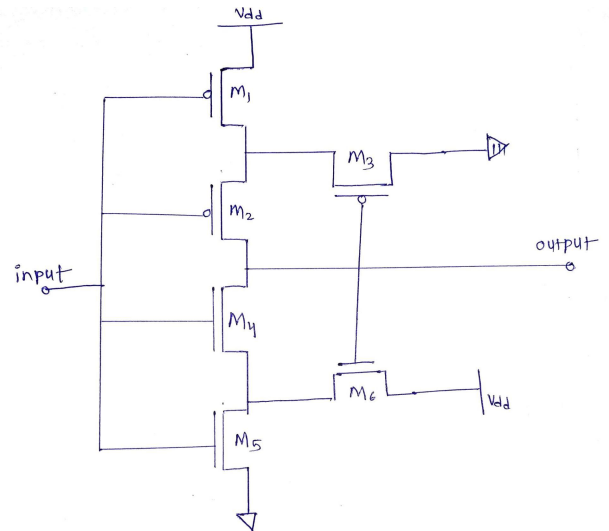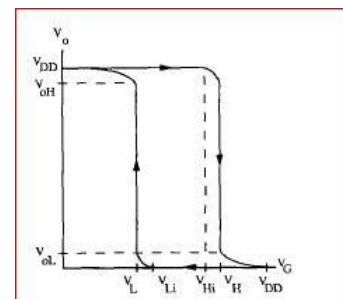

Fig(2): CMOS Schmitt Trigger

Fig(3):- Reference output waveform of Schmitt trigger

- **Reference:-**

[1] Rahi, Pranay Kumar, et al. "Design and simulation of CMOS Schmitt trigger." *IJISET International Journal of Innovative Science, Engineering & Technology* 3.8 (2016): 486-489.