A FAST AND LOW POWER VOLTAGE LEVEL SHIFTER FOR DUAL SUPPLY APPLICATIONS

In recent years, the Level shifters are used to resolve the voltage incompatibility between various parts of the system. This includes wide range of applications. Level shifters are used in Secure Digital (SD) cards, Subscriber Identification Module (SIM) cards, Compact Flash (CF) cards, Audio codes and Universal Asynchronous Receiver/Transmitters (UARTs). Level shifters are used to provide correct voltage level for each component in digital circuits. A voltage Level shifting circuits are needed to convert the lower logic levels into the higher ones to provide correct voltage levels for the next digital blocks. In order to overcome this, the degradation of the overall performance of the circuit, there is a need for level shifters with minimum propagation delay, power consumption, and silicon area.

The states of the art of level shifters are able to reduce dynamic and short circuit power consumption of digital circuits by reducing the power supply voltage. The reduction in the power supply voltages increases the propagation delay. To overcome this, Dual supply architectures with level shifters are introduced in which a low voltage is supplied for the blocks on the noncritical paths while a high supply voltage is applied to the analog and the high speed digital blocks. In this method, delay decreases but power consumption and area increases.

In the proposed work, a fast and power-efficient voltage level shifting circuit capable of converting extremely low levels of input voltages into high output voltage levels in order to have more power saving in the low supply blocks. The proposed level shifters also reduce high input voltages to the extremely low input voltages in order to reduce static power consumption. This proposed method is targeted to achieve minimum delay and power consumption of which is less compared to the states of the art implementation.