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DIE TO DIE AND WITHIN DIE PROCESS VARIATION REDUCTION TECHNIQUE

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ABSTRACT

In this paper an analog adaptive body bias (A-ABB) circuit has been proposed. The A-ABB circuit is used to mitigate the impact of die-to-die (D2D) and within-die (WID) parameter variations. The main advantage of using this analog adaptive body bias technique is the circuit overhead. The A-ABB circuit provides lower overhead as compared to other biasing circuits. This circuit provides other advantages including circuit yield and also the speed, the dynamic power and the leakage power. The A-ABB circuit is derived using a sensing circuit to sense the value of the threshold voltage. This sensing circuit provides an approximation of the value of the voltage that is the varied due to die to die and within die process variation. After the sensing circuit a block of amplifier circuit is used in order to obtain the appropriate output value of the circuit. An analog control of the circuit is maintained through the amplifier circuit and maintains required body biasing voltage. In this circuit on-chip amplifier circuit is used. The simulation result of the following circuit can be calculated directly from the circuit or implementing the A-ABB circuit on some other basic circuit or even using Microprocessor

KEYWORDS*:* D2D, WID, A-ABB, Sensing Circuit, Circuit Yield, Dynamic Power