A

Dissertation

On

**Dynamic Power Optimization of 1-Bit CMOS Full Adder Using Genetic Algorithm**

Submitted in Partial fulfillment of the requirement

For the award of Degree of

**MASTER OF TECHNOLOGY**

**(VLSI DESIGN & EMBEDDED SYSTEM)**

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**CERTIFICATE**

*This is to Certify that the major project work entitled,* “**Dynamic Power Optimization of 1-Bit CMOS Full Adder Using Genetic Algorithm**”submitted by **Meharban Singh (06/VLSI/2k10)** *in partial fulfilment of the requirements for the award of degree of* **Master of Technology** *in* **VLSI Design and Embedded System** *at* **Delhi Technological University** *is an original work carried out under my supervision and has not been submitted for the award of any other degree to the best of my knowledge and belief.*

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**ABSTRACT**

With every passing day, integrated circuits are gaining importance, the size of components is reducing and the number of elements that can be fabricated on a single chip has increased many folds in the past decade.

With the ongoing globalization and technology the power requirements of mankind are rising at an extremely high rate.

Here we are making an attempt to optimize the power consumed by VLSI circuits. The circuit under consideration is a simple full adder implemented using CMOS technology. The circuit utilizes 28 transistors and runs on a high frequency in the range of MHz. The circuit has three inputs (A,B & C) and two outputs(Sum and Carry)

We have implemented Genetic algorithm to solve the given problem. The thesis is mainly divided in to two portions. In the first half we try to find out the maximum and minimum acceptable values and other constraints on which power depends. We utilized the Cadence, Virtuso- 4 software to manually find these values.

In the second half the values obtained in previous step are utilized to create the initial population. We define the fitness function and other necessary parameters. MATLAB applies the genetic algorithm and finds us an optimum solution. Since Genetic algorithm is heuristic in nature it might not give us the ideal result but surely the outputs are reasonably good.

**INDEX**

Chapter-1, INTRODUCTION 1

1.1 Motivation 1

1.2 Literature Review 1

1.3 Objective 3

Chapter – 2, OPTIMIZATION 4

2.1 Introduction 4

2.2 Finding the Best solution 4

2.3 What is Optimization 5

2.4 Categories of Optimization 6

2.4.1 Trial-and-error optimization 7

2.4.2 Single variable and multiple variable optimizations 7

2.4.3 Static and Dynamic optimization 7

2.4.4 Discrete or Continuous variables Optimization 8

2.4.5 Constrained and Unconstrained Optimization 8

2.4.6 Random and Minimum seeking Optimization 8

Chapter-3, FULL ADDER CIRCUIT 10

3.1 What is a Full Adder ? 10

3.2 How does a full adder work? 11

3.3 CMOS Full Adder 11

Chapter-4, GENETIC ALGORITHM 14

4.1 Introduction to GA 14

4.2 Two Basic Types of Genetic Algorithms 16

4.2.1 Simple Genetic algorithm 16

4.2.2 Steady State Genetic Algorithm 17

4.3 Basic Terminology of Genetic Algorithm 18

4.3.1 Chromosomes 18

4.3.2 Encoding 18

4.3.3 Fitness 18

4.3.4 Crossover 18

4.3.5 Mutation 19

Chapter- 5, POWER DISSIPATION 20

5.1 Sources of Power Dissipation in CMOS 20

5.1.1 Static Power 20

5.1.2 Dynamic power 21

Chapter – 6, TOOLS USED 25

6.1 Cadence 25

##### 6.1.1 Features of Cadence Design Environment 25

6.1.2 Cadence Virtuoso 26

6.2 MATLAB 27

6.2.1 Key Features of MATLAB 27

## 6.2.2 Developing Algorithms using MATLAB 28

# 6.2.3 Global Optimization Toolbox 28

## 6.2.4 Genetic Algorithm Solver 29

Chapter – 7, POWER OPTIMIZATION USING GENETIC ALGORITHM 32

7.1 Introduction to Work 32

7.2 Procedure Followed 33

Chapter- 8, SIMULATIONS RESULTS 35

8.1 One Bit CMOS Full Adder 35

8.2 Output Waveform for carry, when capacitance = 1pF 37

8.3 Output waveform for sum, when capacitance = 1pF 38

8.4 Output waveform for carry, when capacitance = 3.5 pF 39

8.5 Output waveform for sum, when capacitance = 2.3 pF 40

8.6 Parametric analysis of carry 41

8.7 Parametric analysis of sum 41

8.8 Output waveform for cap above 2.3 pF for sum & 3.5 pF for carry 43

8.9 Output waveforms when sum and carry have the same capacitance 43

8.10 Output Waveform when we vary the Frequency 47

CHAPTER – 9, FINAL RESULTS 49

9.1 Results from Genetic Algorithm 49

9.2 Comparison between results 52

CHAPTER – 10, CONCLUSION AND FUTURE SCOPE 53

10.1 Conclusion 53

10.2 Future Scope-Power 53

**LIST OF FIGURES**

Fig 2.1Diagram of a function or process that is to be optimized. …….06

Fig 2.2 Six categories of optimization algorithms. ……………………...06

Fig 3.1 Full adder circuit using logic gates. . …………………………...10

Fig 3.2 Truth table of Full Adder. . …………………………………….....11

Fig 3.3 1- bit CMOS Full Adder implemented in Cadance. …..……......12

Fig 3.4 Waveform of CMOS Full Adder. …………………………..….....13

Fig 4.1 Explanation of Genetic Algorithm. …………………………..…..15

Fig 4.2 Flow chart of Simple Genetic Algorithm. …………………….....16

Fig 4.3 Flow chart of Steady State Genetic Algorithm. ………………...17

Fig 5.1 Explanation of Static Power. …………………………..…………20

Fig 5.2 Equivalent circuit of charging & discharging……………………22

Fig 6.1 Design flow in Cadence Design Environment. …………………26

Fig 6.2 MATLAB Genetic toolbox…………………………..…………….30

Fig 8.1 1- bit CMOS Full Adder implemented in Cadance. ……………35

Fig 8.2 Waveform of CMOS Full Adder. …………………………..…….36

Fig 8.3 Waveform for Carry, c = 1pF. …………………………..………..37

Fig 8.4 Waveform for Sum, c = 1pF. …………………………..…………38

Fig 8.5 Waveform for Carry, c = 3.5 pF. …………………………..……..39

Fig 8.6 Waveform for Sum, c = 2.3 pF. ……………...…………..………40

Fig 8.7 Waveform for Parametric Analysis of Carry. …………………...42

Fig 8.8 Waveform for Parametric Analysis of Carry. …………………...42

Fig 8.9 Waveform for Sum, c > 2.3 pF. …………………………..……...43

Fig 8.10 Waveform for Carry, c > 3.5 pF. …………………………..……..44

Fig 8.11 Waveform for Sum and Carry when c =1 pF. …………………..45

Fig 8.12 Waveform for Sum and Carry when c =2.355 pF. ……………..46

Fig 8.13 Waveform for Parametric Analysis of Sum and carry. ………...46

Fig 8.14 Waveform representing the lower bound for frequency. ………48

Fig 8.15 Waveform representing the upper bound for frequency. ……...48

Fig 9.1 Optimized Values of Power using Genetic Algorithm …………50

Fig 9.2 Execution of Genetic Algorithm …………………………..……...51

Fig 9.3 Execution of Genetic Algorithm- Multi Object…………………...51