

# Study and Improvement of Single-Stage Power Factor Correction

## Techniques

### Table of Contents

#### CHAPTER 1 INTRODUCTION

1.1 Background	1
1.2 Review of Power Factor Correction Technique	3
1.3 Motivation and Objectives	10
1.4 Outline	11

#### CHAPTER 2 GENERAL STUDY OF INTEGRATED SINGLE-STAGE POWER FACTOR CORRECTION CONVERTERS

2.1 Introduction	12
2.2 General Structure of Integrated $S^2$ -PFC Converters	13
2.3 Necessary Condition of $S^2$ -PFC Converters	21
2.4 Summary	34

#### CHAPTER 3 STUDY AND IMPROVEMENT OF CCM CURRENT SOURCE SINGLE-STAGE POWER FACTOR CORRECTION CONVERTER

3.1 Introduction	36
3.2 Circuit Intuition and Design Consideration of Current Source $S^2$ -PFC Converter	37
3.3 Improved Current Source $S^2$ -PFC Converter with Low-Frequency Auxiliary Switch	57
3.4 Summary	70

#### CHAPTER 4 COMPARISON BETWEEN CCM TWO-STAGE AND SINGLE-STAGE POWER FACTOR CORRECTION CONVERTERS

4.1 Introduction	72
4.2 Comparison Between CCM Two-Stage and Single-Stage Power Factor Correction Converters	73
4.3 Summary	91

CHAPTER 5 CONCLUSIONS	92
-----------------------	----