

ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to my advisor, Professor Dr. Wanlop Surakamponorn, for accepting me to be his advisee and to MVLSI laboratory and introducing to the interesting field of analogue integrated circuit design. Moreover I would like to thank for his support and many ideas that help me with work on this thesis over the years. His advice on technical matters was invaluable, and his guidance on my research was critical to the research's success. I would also like to express my sincere appreciation to both Assoc. Professor Dr. Kiattisak Kumwachara and Assoc. Professor Dr. Worapong Tangsrirat for their extensively useful suggestions and valuable advises. Also, Professor Dr. Nobuo Fujii for his valuable advises and support during my short-term research at Tokyo Institute of Technology, Japan. During these almost seven years at the MVLSI laboratory, I would like to thank all members: specially Amorn Jiraseree- amornkul, Chalermpan Fongsamut, Pattra Pienchop, Boonchai Boonchoo, Katesuda Klahan and Supanuch Oon-ob, who have discussion, technical supports and similarly helped me in various other ways. Furthermore, I would like to thank the examination committees for their valuable advises to complete my thesis.

I am grateful to the Thailand Research Fun (TRF) which provided financial assistance to the undertaken project through the Royal Golden Jubilee Ph.D. Program (Grant No.PHD/0107/2546) and the Senior Research Scholar Program grant number RTA4680003. Also, the partial support during my research period at Tokyo Institute of Technology, Japan, offered by Association of International Education, Japan (AIEJ) is acknowledged. In addition, the Faculty of Engineering and Research Center for Communication and Information Technology (ReCCIT) are also acknowledged.

Special thanks to my dear, Urawan Chanket for always care, always be beside me and cheered me up during work on this thesis. In addition, it is certainly not feasible to thank all my friends in this space, have also been great friends and also cheered me up for a long time.

Finally, it is absolutely true that none of this Ph.D. would have been possible without the love and supports of my family: my parents, Somjai and Pornpen, and my brothers, Nopporn and Piyachart. Their love and over support in everyway, I would not be where I am today without their contributions and the foundation that they have provided throughout the years.

Khanittha Kaewdang