

BORANG PENGESAHAN STATUS TESIS[^]

JUDUL: **INTERGRATED CIRCUIT CLASS/TAPE/PACKING SYSTEM FOR SEMICONDUCTOR COMPANY (IC CTP)**

SESI PENGAJIAN: **2006/2007**

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[^] Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)



**INTERGRATED CIRCUIT CLASS/TAPE/PACKING SYSTEM for
SEMICONDUCTOR COMPANY (ICCTP)**

NG CUI LING

This report is submitted in partial fulfillment of the requirement for the Bachelor of
Information and Communication Technology (Database Management)

FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2006

ADMISSION

I admitted that this project title name of

**INTERGRATED CIRCUIT CLASS/TAPE/PACKING
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DEDICATION

To my beloved parents, your love and support are my greatest inspiration.

To my friends, for your sacrifices, encouragement, and support.

To my lecturer, for being receptive and critical, and challenging me to be a better student.

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ABSTRACTS

The Integrated Circuit Class/Tape/Packing (IC CTP) system is a consolidation program written by the researcher using Visual Basic (VB) language. The system is used at the End of Line (EOL) of the semiconductor company. The system is used to print the start class lot, Discreet Classification (DC), Reels, packing and end lot label. At class side, the operator will use the system to get the start class lot label. When the class process completed, the operator will used system to print out the DC label which stated the hold back lot status. At taping side, the lot will start to tape into reels. The operator will scan the taping data into the system to get the Reels label. Then, operator will scan in the packing data into system into the system to get the packing label before pack the lot. After that, the operators will use the system to clear the lot at machine and get the end lot label. Besides, the supervisor can add or modify IC type data here. The engineer can get the engineering report by using the query in the system. The supervisor and engineer must be registered before can access to these options. The database administrator will have the authority to add or delete user data. The waterfall methodology is used as a methodology in developing the project where designs are created, evaluated, and refine with the results of the testing at each cycle feeding into the design focus of the next cycle.

ABSTRAK

Sistem *Integrated Circuit Class/Tape/Packing* (IC CTP) adalah program pengubahsuaian yang tulis daripada pengajian dalam bahasa pengaturcara *Visual Basic* (VB). Sistem ini digunakan untuk process dalam kilang *semiconductor*. Sistem ini digunakan untuk cetakkan *start class lot*, *Discreet Classification (DC)*, *Reels*, *packing and end lot* tiket. Terdapat lapan prosés utama dalam system ini, iaitu: pengelasan IC, pembungkusan produk IC, pengabungan baki IC, mencetak semula produk tiket IC yang terbaru, mendaftar, memperbaiki data jenis IC, meluluskan data IC yang telah diubah atau baru daftar, menghasilkan report bulanan atau mingguan dan mngubahsuai/ menambahkan pengguna data ke dalam pangkalan data. Sistem in terdapat empat pengguna iaitu, pekerja biasa, juruteknik, supervisor dan pengurus pangkalan data. Methodologi *waterfall* digunakan dalam membangunkan projek ini disebabkan methodologi ini adalah elemen yang penting bagi pembangunan secara berulang di mana pembangunan ini disediakan, dikaji dan diperbaiki dari keputusan pengujian yang diperolehi dari satu fasa ke fasa pembangunan yang berikut.

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LIST OF ABBREVIATIONS

1. ICCTP Integrated Circuit Class/Tape/Packing
2. QD Quantity Deficiency
3. VI Visual Inspection
4. DC Discreet Classification
5. PSM Project Sarjana Muda.
6. DFD Data Flow Diagram
7. FDD Functional Dialogue Diagram
8. ERD Entity Relationship Diagram
9. TVI Testing Visual Inspection
10. GUI Graphic User Interface
11. QA Quality Assurance
12. CMFPAK-6P One of the type of IC

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CHAPTER I

INTRODUCTION

1.1 Project Background

This system is developed for the class, tape and packing process for the Integrated Circuit (IC) product. The previous program was written in Fox Pro programming language. Therefore, the consolidation program was proposed since the previous program has many disadvantages. The consolidation program is to convert the existing program written in Fox Pro programming language to Visual Basic (VB) language. The main purpose is the VB language has the 2D Barcode printing features. The system consists of three processes. The processes are Class, Tape and Packing. The Class process is the process to classify the IC and define the holdback lot and print out the DC Label. Then, the Tape process is done to tape the IC into the reels, the user will scan the data into the system to print out the Reels Label and Packing label to stick on the Reels and carton box.

The system also contains the function of Reclamation lot forming, Reprint option, Supervisors Options, Data retrieve and Engineering Data. The Reclamation lot forming used to regenerate the new lot no from the balance stock. The Reprint options allowed the user reprint current Label. The Data retrieve is used to print the label. The Supervisor Options is allow updating and registering the new type IC. The Engineering data is to generate the report about the reclamation lot, class yield lot and packed IC.

1.2 Problem Statement(s)

The existing program of IC Class/Tape program was written in Fox Pro programming language. There are many disadvantages in the current system compared with the program writing in VB language. The existing program does not support the features of 2D Barcode printing. The database is not efficient as it is quite an old approach and not many people could maintain the program.

Working in DOS could give a hard time to search and access the programs. Fox Pro database is easily corrupted and this is one of the major problems in the current system. Programming codes in the existing system are quite complicated and confusing, so it is hard to maintain.

The lost of data and information would easily happened due to corrupted Fox Pro database. This could cause loss of time and money. The capacity storage of the Fox Pro database is also quite limited and hard to access rather than Microsoft SQL Server 2000 database. Anyone could change the data on the table itself and this could leads to manipulation of data by the user.

By converting the existing program to Visual Basic is the best solution. So, most of the problem faced could be overcome easily. The Microsoft SQL Server 2000 is more reliable and there is no manipulation of data among users or others due to the internal security system. This consolidation system is more user-friendly compare to the existing program. This new program would help in increase the production and decreased the human error. If there are any changes in the system, the other programmer could modify or maintain it easily.

1.3 Objectives

The features below will be assimilated into the System at the end of the project.

- The system would validate and not accept any incorrect data scheme.
- The administrative option, engineer option and supervisor option are secure by password and access level.
- This system is capable for checking all the data sources from one phase to another phase before execute.
- The user can reprint the current start class lot label, DC label, reels label and packing label without waste of label and user time to re-enter the data into the program.
- Provide the error message for users' error in order to make this system more users friendly.
- This system is more efficient, in term of user interface, reliability, consistency, minimal data redundancies, easier to maintain, and one step ahead in system technology.
- With the used of Microsoft SQL Server 2000 database, data will be more secure and accuracy compare to Fox Pro database.
- Reclaiming the lots function also used to combine the lot based on one type IC.
- Increasing the productivity of IC and minimizing the cost maintenance of the system.

1.4 Scopes

This program is developed for the engineer, supervisor and line operators and it consists of eight main modules.

- **Module 1: IC Classification**

The user starts to class the lot in the machine, then scan in the data for the start lot. After the machine has completed the classification process, the user will scan in the final defect quantity of each bin into the system. The system will check the hold back criteria for each Bin data. The DC Label will print out after the user completed scans the end lot data. The DC Label has the remark to state the hold back status for that lot IC. The remark can be none, high defect holdback, yield less than 95%, summation yield less than 92%, QD holdback and so on.

- **Module 2: IC Taping and Packing**

This form is used when the IC is going to tape in that machine. There are three kind of label of this system like:

- i.) **Reel label**

The Reels Label included the QA Sample, TVI Sample, Japan Sample Label and Confirmation Label.

- ii.) **Packing Label:**

The 2D barcode in the packing label contain the information like type no, lot no, week code, wafer lot no, booking part name, part no, box quantity, reels quantity and so on.

iii.) End Lot Label

This End Lot Label printed when there is no more same type IC need to continue for taping.

- **Module 3: Reprint Current label**

This screen allows the user to print the current start class lot label, DC Label, Reels Label and Packing Label.

- **Module 4: IC Reclamation Lot Forming**

This function is used to combine the lot and print the reclaim lot label which is same type and have 3 different week code within six months.

- **Module 5: Approve new type of IC**

The engineer only with valid access level can approve the type which registered by the supervisor.

- **Module 6: Register new type of IC**

There are four options for this module: ADD, UPDATE, VIEW and EDIT of the type IC data. After the data has been modified or added, the email will send to the engineer for approval type.

- **Module 7: Generate Report**

The engineer can view the reclamation lot and class yield report here. The engineer can view the reclamation lot has been generated. Beside, the engineer can view the class yield data of each lot by machine no or type no. And export the

report to the excel file and print. The engineer can view the pending for approval status of each new type and approve it.

- **Module 8: Register new user**

This function is done by the administrative. The administrative can add, update and delete the user data in the database.

1.5 Project significance

The system allows access to the database for four types of users: Engineer and above, Supervisor, Operator and database administration staff. The system offers a range of services.

i. Engineer and above Access

- Generate the Class Yield Report
- Generate the Reclamation lot forming Report
- Approval of the registration for new type IC.
- Export Print the report
- Change user password

ii. Supervisor Access

- Update and add new type of IC
- Reprint the Reels and Packing Label
- Change user password

iii. Database Administration Staff Access

- Add/update/delete user data
- Change user password

iv. Operator Access

- Print Class, Reels, Packing and Reclaim Label
- Reprint current label

1.6 Conclusion

The objective and scope of the system has been identifies. It is also provide basic idea on what are going to achieve at the end of the project, and what are the limitation of the project.

The world enters new millennium; many conversion systems have done between old version programming to an advance programming language. Thus, this system has been proposed to consolidate the exiting program. This system come out with some enhancement feature like email application and view engineering data.

The next chapter will focused on comparing and choosing the best solution to improve or overcome the problems that occurs in the current system.