**Shanghai IC High Skilled Talent Training Base**

**Shanghai Silicon Intellectual Property Trading Center Co., Ltd**

**Mirco-chip interface circuit simulation and test**

**Training and enrollment brochures**

1. Training object

1、Personnel engaged in integrated circuit design, manufacturing and other related industries(including fresh master's graduates).

2、Personnel engaged in IC packaging, testing and other related industries

3、Personnel engaged in PCB design, PCB manufacturing, smart card, equipment materials, system design and other related industries

1. Training objectives

1、Master the basic knowledge of chip interface circuit, and be able to use simulation tools to complete common circuit simulation

2、Master the Ibis modeling method of chip interface circuit model, and be able to use modeling tools to complete chip IBIS modeling and package parameter extraction

3、Master the test, verification and application of chip interface circuit IBIS model, and master the basic knowledge of signal integrity

1. Training features

1、Those who pay attention to the combination of theory and practice, focus on practical training skills, combine complete basic theory training, and guide practical training with reference to the verification process of front-line companies

2、Detailed explanation of theoretical knowledge, including basic specification explanation, circuit structure analysis, as well as the most popular modeling methods, EDA tools and application scenarios in the industry

3、The practical operation cases are sufficient, closely combined with the teaching materials and close to the actual needs of the company, so that the participants can be competent for various common interface circuit modeling after the training.

1. Training teachers
* Jason Hu has 14 years of experience in chip interface circuit modeling and SI/PI/EMI system simulation, and is proficient in modeling at all levels such as chip, package and PCB. He has participated in the research and development of many mainstream servers, notebooks, digital homes and mobile phone systems, and has been responsible for the modeling and Simulation of high-speed interfaces of computer CPU, communication chip and mobile phone chip. The high-speed interfaces involved include DDR2 / 3 / 4, lpddr2 / 3 / 4, PCIe Gen2 / 3, USB2 / 3, Mipi and HDMI. At the same time, he has rich training experience and has provided technical support and training in modeling and Simulation for more than 20 well-known companies at home and abroad
1. Syllabus

Training unit 1 chip interface circuit model and spice introduction

theoretical teaching content

1.1.1 type of chip interface circuit model

1.1.2 Introduction to the development of spice description language

1.1.3 Introduction to the basic morphology of SPICE language

1.1.4 Introduction to basic units of SPICE circuit

1.1.5 introduction to device definition of SPICE circuit

1.1.6 introduction of excitation source of SPICE circuit

1.1.7 introduction of device model of SPICE circuit

1.1.8 Introduction to analysis type statement of SPICE circuit

1.1.9 introduction to control statement and option statement of SPICE circuit

1.1.10 introduction of output format description statement of SPICE circuit

1.1.11 introduction to characteristic analysis statement of SPICE circuit

1.1.12 introduction to the characteristic control statement of SPICE circuit

1.1.13 summary and advanced

content of skill training

1.2.1 Spice programming of passive device model

1.2.2 Calling spice programming of S parameter model

1.2.3 spice programming for ideal transmission line

1.2. 4 subcircuit spice programming

1.2. 5 IBIS model calling spice programming

Modeling of training unit 2 chip interface circuit model Ibis

Main contents of training

2.1 theoretical teaching content

2.1.1 Introduction to IBIS model

2.1.2 chip interface circuit modeling process and method

2.1.3 Introduction to IBIS model types

2.1.4 I / O circuit structure

2.1.5 common I / O logic circuits

2.1.6 high speed parallel interface

2.1.7 high speed serial interface

2.1.8 IBIS waveform curve

2.1.9 general properties of IBIS documents

2.1.10 types of chip packaging structure

2.1.11 chip package parasitic parameter RLC

2.1.12 header and end of IBIS file

2.1.13 pin RLC of IBIS file

2.1.14. Diff pin and drive capability selection of IBIS files

2.1.15 introduction to general rules for IBIS documents

2.1.16 T2b IBIS modeling demonstration

2.2 content of skill training

2.2.1 IBIS model extraction of single ended input circuit

2.2.2 IBIS model extraction of single ended output circuit

2.2.3 IBIS model extraction of single ended I / O circuit

2.2.4 Parameter extraction of chip packaging model

2.2.5 IBIS model extraction of Pseudo differential I / O circuit

2.2.6 IBIS model extraction of 6 true differential LVDS output circuit

Training unit 3：Test verification and signal integrity basis of chip interface circuit Ibis

Main contents of training

3.1 theoretical teaching content

3.1.1. Flow and method of chip interface circuit simulation test

3.1.2 Introduction to communication system knowledge

3.1.3 Introduction to signal types

3.1.4 Introduction to signal operation

3.1.5 introduction to signal quality standards

3.1.6 signal integrity concept

3.1.7 introduction to on die power network

3.1.8 Introduction to power system modeling

3.1.9 power system analysis

3.1.10 introduction to SI / PI simulation tool

3.2 content of skill training

3.2.1 perform IBIS and Spice verification analysis on single ended input circuit

3.2.2. IBIS and Spice verification analysis of single ended Output circuit

3.2.3. IBIS and Spice verification analysis of single ended I / O circuit

3.2.4. the Pseudo differential I / O circuit is verified and analyzed by IBIS and Spice

3.2.5 verify and analyze the true differential LVDS output circuit with IBIS and spice

1. Training plan

1. Total online training hours: 24 Theoretical Courses and 56 practical training courses, a total of 80 hours.

2.Online course format: integrated circuit design training cloud platform. The course viewing cycle is 3 months, including the use time of training account for 1 month.

Offline courses: 8 class hours per day on weekends for 10 weeks, and postponed on holidays.

3. Opening time: online courses are open at any time, unlimited number of people; offline courses enrollment begins when classes were full.

1. Contact information

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\*Please refer to the Chinese version for the contents of enrollment brochures!

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