

IPC CID+ Advanced Designer Certification Outline

Day 1

1. Design Considerations

- 1.1 Board Material Properties
- 1.2 Plating Characteristics for Conductors and Holes
- 1.3 Surface Finish and Treatment Characteristics
- 1.4 Solder Mask/Coating Material Properties and Compatibility
- 1.5 Homogeneous Material Performance Capability
- 1.6 Assembly Test Implementation
- 1.7 Test Point/Land Pattern Feature Differentiation
- 1.8 In-Process Test Coupons
- 1.9 Highly Accelerated Stress Testing Evaluations
- 1.10 Management Tools and Techniques for Product Quality Life Cycle Tracking

Mini-Quiz and Discussion **Lunch**

2. Printed Board Characteristics

- 2.1 Design Standards to meet Fabrication and Assembly Goals
- 2.2 Fabrication Equipment Board Size Limitations
- 2.3 Printed Board Length to Width Relationships
- 2.4 Board from Panel Excising Requirements
- 2.5 Copper Balancing Effects on Printed Board Fabrication
- 2.6 Printed Board Thermal Management Requirements
- 2.7 Controlled Expansion Constructions Using Special Cores
- 2.8 Physical Board Dielectric Parameters
- 2.9 Non-Standard Mechanical Outline (Case) Integration
- 2.10 Individual Board Tooling Considerations
- 2.11 Panelization Strategy for Manufacturing Processes
- 2.12 Blind and Buried Vias

Mini-Quiz and Discussion

Day 2

3. Electrical Parameters

- 3.1 Electrical Clearance and Dielectric Spacing
- 3.2 Power and Ground Routing Techniques
- 3.3 Conductor Carrying Capacity vs. Temperature Rise
- 3.4 Layout Approaches for Cross Talk Minimization
- 3.5 Shielding Requirements to Prevent Signal Emissions
- 3.6 Test Evaluations for EMI Emission/Susceptibility
- 3.7 General Principles of Impedance Control
- 3.8 Signal Integrity Analysis

Mini-Quiz and Discussion **Lunch**

4. COMPONENT AND ASSEMBLY ISSUES

- 4.1 Component Comparison Between Area Array and Peripherals
- 4.2 Component Mounting Strategies
- 4.3 Component Assembly Strategy and Sequence Analysis
- 4.4 Component Mounting Shock and Vibration Requirements
- 4.5 Evaluation of Component Attachment Method

5. DIMENSIONING AND DOCUMENTATION

- 5.1 Material List Development
- 5.2 Printed Board Tolerance Analysis (Manual vs. Automation Evaluation)
- 5.3 Document to Facilitate Design to Fabrication Interface
- 5.4 Printed Board & Assembly Data Format Standardization
- 5.5 Assembly, Repair & Modification Tools and Techniques

Mini-Quiz and Discussion

Day 3

CERTIFICATION TESTING BEGINS INDIVIDUAL REVIEW OF EXAMINATION WITH INSTRUCTOR/DISCUSSION/FEEDBACK ADJOURNMENT