Stencil Design and Design for Manufacturability (DFM) Overview

Presentation: Stencil Design and Design for Manufacturability (DFM) Overview

Presenter: Joe Belmonte

Duration: 90 Minutes

Presentation Description:

Stencil Design
The solder paste printing process is considered the most critical process in a SMT Manufacturing Operation. One of the key factors in the solder paste printing process is stencil design. This presentation will discuss how to design stencils that will maximize the solder paste printing process and minimize soldering defects.

Presentation Outline
1. Why the printing process is critical to the SMT Operation’s Performance
2. Stencil aperture design
3. Area ratio and aspect ratio
4. Stencil design software “StencilCoach”

Design for Manufacturability (DFM) Overview
The Design for Manufacturability (DFM) Process is the most critical process in determining if a particular product will achieve its quality, cost, performance, and time to market goals. More importantly how well we design our products to maximize quality, minimize cost and cycle time and how well we develop, optimize, and control our manufacturing processes will determine how well we satisfy our customers which will determine if our business will profit and grow. A well developed and controlled Design for Manufacturability Program is a key factor in satisfying our customers.
With the increasing trends to outsource the assembly of electronic products, the gap between the product development organization and the product manufacturing organization is continuing to increase both geographically and organizationally. Design for Manufacturability must include a detailed understanding of the processes that will be used to build the product, how the processes are developed, how the processes are controlled, and how continuous improvement is accomplished. The organizations with good design for manufacturability systems understand that manufacturing issues must be considered as early in the product design process as possible.

All product development organizations use sophisticated computer aided design (CAD) tools to design their products. These tools have the capability to insure most of the critical design rules and guidelines are adhered too. Factors such as component pad size, component spacing, board edge clearance, fiducial size number and location, etc. are built into the CAD design tool. These factors are critical to the manufacturability of a printed circuit board design. We will discuss these critical design rules; however, DFM is much more than insuring the printed circuit board design rules are obeyed. We will discuss ALL of the factors that must be considered, understood, and optimized to insure we are producing products that will deliver the maximum value to our customers.

This workshop will define Design for Manufacturability and discuss several of the key factors in the DFM Process

**Presentation Outline**

1. Definition of Design for Manufacturability
2. Customer Rights and Expectations
3. Functional Responsibilities of DFM
4. Concurrent Engineering
5. Early Supplier Involvement
6. Defining a Process and Process Characterization
   a. Eight steps to Process Characterization
7. Six-sigma and Statistical Thinking
8. Understanding and Controlling Process Variation
9. Inspection and Test Planning
10. Evaluating Printed Circuit Board Designs
11. Conclusion and Summary
12. Questions and Answers
Who Should Attend?

This course is intended for Manufacturing, Process, Design, Test and Quality Engineering personnel that are directly responsible for product design, manufacturing, and quality. Many of the topics discussed in this course must be understood by product design and manufacturing since they are the individuals most responsible for insuring customers are satisfied with their products and services...