MINCO

New Flex Project Worksheet

The drawing for a flex circuit will be used both to estimate costs and to build the circuit. As such, accuracy of this documentation is critical. The drawing must address materials, physical description, and testing--CAD files alone are not sufficient for products in high reliability markets.

For best results, assemble the following materials before submitting the project to Minco:

Notes:
- ☐ Notes should cover:
    - o   required specifications
    - o   materials
    - o   testing
    - o   clarification of views
    - o   electrical requirements
    - o   copper plating and final finish
    - o   assembly details
- ☐ Notes are the best place to include amendments to specification requirements and part specific quality expectations.

Circuit views:
- ☐ There should be at least be one view that shows:
    - o   overall size
    - o   required dimensions
    - o   tolerance needs
    - o   established datums
    - o   assembly needs
- ☐ Multiple views may be needed as complexity increases.
- ☐ Because the circuits are made of flex materials, a simple tolerance block is frequently not sufficient for a part that is both fully functional in use and producible.
- ☐ Geometric dimensioning and tolerancing (GD&T) is highly recommended.
- ☐ Views from the opposite side may be useful.
- ☐ Isometric views may be needed when forming is required.

Stackup:
- ☐ For complex circuits with multiple layers, isolated cutaways/exposures, and multiple stiffeners, a stackup view of materials helps clarify requirements.
- ☐ The stackup can detail required material thicknesses more effectively than an extended specification callout in the notes.
- ☐ Complex circuits may require multiple cross sectional views if materials are non-uniform throughout the entire circuit.

Bill of materials:
- ☐ If the circuit includes items such as components and connectors, a Bill of Materials (BOM) should include these details.
- ☐ The BOM should either be part of the drawing or positively linked to the assembly drawing.
- ☐ For complex assemblies the best drawing packages include:
    - o   the bare PWB drawing
    - o   the assembly drawing
    - o   the CAD data
    - o   the BOM
- ☐ The BOM links these items along with components in one document.
- ☐ Proper revision control of all items, including CAD data, should also be in place in this documentation set.

Schematic:
- ☐ If a customer requires the circuit vendor to create the CAD data for the circuit, then a schematic is required.
- ☐ The schematic should highlight any specific electrical needs and component callouts (for the footprints).
- ☐ In many cases the details for materials and stackup cannot be finalized until the CAD data is completed, requiring close Engineer-to-Engineer (E2E) contact between the end user and the CAD designer.