#### More Design Considerations

Shield types

o Fold down style or welded fence frames.

Ventilation Holes

o Does the shielded component need air flow for ventilation?

- o Standard Hole Diameter: 0.062"
- Pick and Place

o Pick bars are a standard feature for pick and place machinery

o Be aware, if Automatic Optical Inspection (AOI) tools are used the horizontal bar may interefere with it's line of sight.

#### **Standard Materials**

There are two main base materials that are commonly used for board level shields: tin plated cold rolled steel and nickel silver. Orbel recommends:

#### Tin-Plated Cold Rolled Steel 1010 Nickel Silver 770 CDA

• 0.008 x 12" 1/2 Hard

• 0.015 x 12" 1/2 Hard

- 0.008 x 12" 1/2 Hard • 0.010 x 12" 1/2 Hard
- 0.010 x 12" 1/2 Hard • 0.012 x 12" 1/2 Hard
  - 0.012 x 12" 1/2 Hard
  - 0.015 x 12" 1/2 Hard

Each material has it's own benefits and drawbacks, which are important to consider when developing a shield.

Tin-Plated Steel is a more cost effective solution, but does not hold up as well in corrosive environments, and requires surface plating to become solderable. Steel is best for shielding at lower frequency ranges.

Nickel Silver is inherently solderable, non-magnetic and corrosion resistant. Nickel silver is the best solution when shielding is required in the mid kHz to GHz range.

#### **Mission Statement**

Orbel's mission is to provide top quality products and services to our customers allowing them to offer unique and innovative technologies to enhance our world.

# **Quality Policy**

With customer satisfaction of principal concern, provide integral metal components and related services that meet our customers' expectations on time, at all times. To this end, the Organization is committed to consistently measuring our success against documented objectives while continiously improving our Quality Management System, processes and

#### Certifications

Orbel is certified with numerous organizations and for a variety of different processes, these include:

resources.



www.orbel.com



needed.

Thank you,

As technology improves and develops the need for high quality board level shielding grows exponentially with it. As an industry leader in board level shielding, Orbel offers not just insight and development aid, but a wide variety of standardized and tailored shielding options to provide any component with the right shield to ensure it performs as

This guide highlights the benefits of early investment in shielding, the various product features of board shields that Orbel provides, and how to procur them.

The Orbel Team

# **Designing Board Shields**

Planning ahead for shielding is the best, most cost effective way to ensure not only that the component is properly shielded, but also that adequate space is provided to accomodate the shield. When designing the shield a few base points that are important to consider are:

- Intereference concerns
- Solderability
- Flatness/Coplanarity
- Cross-talk
- Mounting Methods

### **Design Considerations**

Now that the basics of the shield have been weighed, it is important to focus on the details in its design:

One or Two Piece Construction

o Will the components need to be accessed later? If so a Two Piece frame and cover construction would be the desired approach.

Shield Walls

o Standard shield corners may have small gaps where minimal EMI can pass through, Louvered corners break up the aperture.

o Other available corner types are tight and welded corners.

Cavities

o Are there multiple components in close proximity that need shielding? A multi-cavity shield can be developed to ensure those components are all covered by one shield.

Mounting

o Does the trace have through-holes or will the shield be surface mounted?

o Orbel's standard pins require a 0.050" diameter through-hole.

o A trace width of 3-4 times the thickness of the shield's material thickness is recommended.

# Shielding Families

These are Orbel's standard shield families, which outline construction styles that easily lend themselves to modified shield sizes:



**EZ-Shield Guardian Surface-Mount** One piece surface-mount with alignment pins.

EZ-Shield Guardian Through-Hole One piece through-hole with mounting pins.



Two piece surface-mount shield with castellated

edges.

**Snap-Shield Kontour Pro** 

cover.

**Snap-Shield Bullzeye** 

**Snap-Shield Lazerloc Surface-Mount** Two piece surface-mount shield with alignment pins.



shield assembly in the industry.

Snap-Shield Micro

Snap-Shield Lazerloc Through-Hole Two piece through-hole shield with mounting pins.

Digikey



Snap-Shield Groove-Loc A two-piece shield design that utilizes a continuous groove feature in the shield cover.

The lowest profile two piece surface-mount



Vault Shield Two piece through-hole shield ideal for extreme shock and vibration applications.

Multicav Compartmentalized shield that combines multiple shields into one.



As a project ramps up there are numerous ways in which Orbel can tailor the shielding to set requirements.

large volume runs.

printed on shields.

# **Project Requirements**

- Secondary and Progressive Tools can be built to support
- Various forms of nomenclature, as well as logos, can be
- Packaging can be bulk or Tape & Reel for Pick and Place machinery.

# Go To Market Methods

Orbel has various methods of reaching the market. These methods are:

- Distribution
- **Direct to Customers** 
  - Sales Rep. Network
- Regional Distributors
- Inside Sales Team • •
- Technical Outside Sales

To support this network, Orbel has a team of Customer Support, Applications Engineering and Internal Engineering personnel to further assist.

