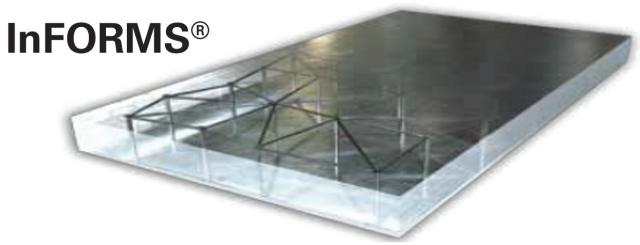
APPLICATION NOTE

InFORMS® Preforms Design Guidelines

Introduction

InFORMS® solder preform technology offers an effective solution to assembly tilt and coplanarity challenges, its reinforced matrix fabrication delivering a uniform bondline post-reflow. The result is a stronger, longer-lasting solder joint and predictable, repeatable assembly in mass production. These benefits are maximized by leveraging key design guidelines in selecting the **InFORMS®** preform sizing. These guidelines were developed through numerous case studies and real-world application experience to ensure optimal solder wetting, low voiding, and consistent planarity.



How to Size InFORMS®

How InFORMS® Work

The matrix will work as a bondline control for the solder as it reflows. During the soldering process, the matrix will not reflow and serves as a standoff for the components of a module while the solder reflows.

Pre- and Post-Reflow Considerations

In diagram 1, the Zi is shown to be sized thicker than the matrix. This leads to a reduction in total thickness during the reflow process. Since no total volume is lost, the length and width of the InFORM will expand during reflow.

Matching the Correct Size

The sizing process involves configuring the part for post-reflow dimensions, focusing on the final length and width. Additionally, determining the matrix size dictates both the initial and final thickness.

Calculating Differences

Using the initial and final thickness measurements (Zi and Zf) for the application, calculate the thickness reduction and total area gain, then proportionally adjust these measurements to achieve the desired final area based on the matrix type.

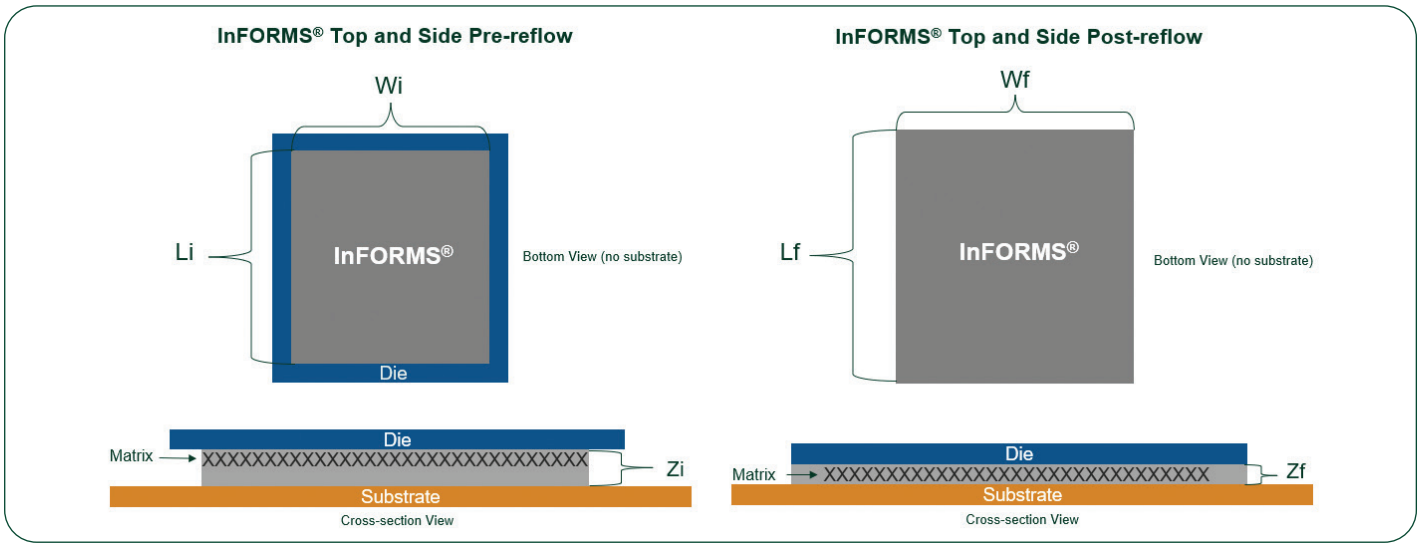


Diagram 1.

From One Engineer To Another®

Form No. 100348 R1

APPLICATION NOTE

InFORMS® Preforms Design Guidelines

Example

Generally, the initial area of the preform is 66% of the preform's final area.

For this example, the final dimensions will be 26.67mm (Lf) x 22.10mm (Wf) x 0.110mm (Zf). The Lf and Wf chosen fall under LM04, shown in the below chart. With all other factors known, the initial thickness (Zi) can be determined to be 0.165mm.

Solder Preform Requirements			
Description	**Approximate Standoff (Microns)**	**Part Dimensions (x and y) per side (Millimeters)**	**Part Dimensions (z) (Microns)**
ESM02	55	1.9–3.5	>110
ESM03	80	1.9–3.5	>140
SM04	110	3.5–11	>165
LM04	110	>11	>165
LM06	165	>11	>215
LM08	215	>11	>280
ESM10	265	1.9–3.5	>330

For this equation, "Di" will represent the Initial Dimensions, and "Df" will represent the Final Dimensions. All measurements below are in millimeters.

$$Di = \sqrt{\frac{Zf}{Zi}} \times Df$$

With this, the InFORM length (Li) and width (Wi) dimensions can be determined:

Calculation:

$$Li = \sqrt{\frac{0.110}{0.165}} \times 26.67 = 20.83$$

$$Wi = \sqrt{\frac{0.110}{0.165}} \times 22.10 = 17.27$$

Initial sizing now equals: 20.83 x 17.27 x 0.165

Volume Consistency Proof:

$$V1 = V2$$

$$20.83 \times 17.27 \times 0.165 = 26.67 \times 22.10 \times 0.110$$

$$0.0914mm^3 \times 0.0914mm^3$$

FAQ/Troubleshooting

For technical inquiries about adjusting preform size or thickness, please reach out to our Technical Support Engineers for detailed assistance.

All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified.
Indium Corporation is an ISO 9001:2015 registered company.

Contact our engineers: **askus@indium.com**
Learn more: **www.indium.com**

ASIA +65 6268 8678 • CHINA +86 (0) 512 628 34900 • EUROPE +44 (0) 1908 580400 • USA +1 315 853 4900