

# ALPHA<sup>®</sup> FORM

## Electroform Stencils

### DESCRIPTION

ALPHA<sup>®</sup> FORM Electroformed Stencils are designed and manufactured to give the ultimate stencil printing for the most challenging surface mount requirements, particularly when used in conjunction with ALPHA<sup>®</sup> Solder Pastes. The stencils are manufactured using 100% solid nickel plating (electroforming process) resulting in high precision durable stencils of any custom thickness.

### FEATURES & BENEFITS

- **High Repeatability:** ALPHA<sup>®</sup> FORM Stencils are made using anytime the exact same manufacturing standards in order to deliver consistent performance by eliminating the two sources of variation through our Stencil Engineering System, ALPHA DIMENSIONS™:
  - Design Inconsistencies
  - Manufacturing Inconsistencies
- **High Precision:** Produced from the modified CAD/CAM data in a climate controlled clean room using state of the art processing tools at 10,000 DPI resolution, resulting in a Aperture Size Accuracy of  $\pm 0.5$  mil ( $\pm 12.5$  micron) with superior processing capability ( $CpK \geq 1.33$ ).
- **Ultimate Durability:** Hard Nickel stencils ( $> 500$  VH) provide typically twice the lifespan of stainless steel stencils.
- **Ultra Fine-pitch Printing:** ALPHA<sup>®</sup> FORM Electroforming technology is targeted for print applications of 20 mil (0.5 mm) pitch and below and all area array packages (Flip-chip, CSP's,  $\mu$ BGA's, BGA's and CCGA's) as well as 0201 component technology.
- **Predictable Printing Results:** Proprietary internal testing provided us with the science behind the printing. Our database with more than 12 million data points allowed us to quantify the effects of taper, surface finishes, positional accuracy and area ratio. This information is used in our best practice commonality program to ensure consistent and predictable print results.
- **Print Performance:** In addition to the ability to provide local stepped area's on the stencil, the ALPHA<sup>®</sup> FORM process can manufacture any optimized custom thickness for optimum paste transfer volumes. A special in-process sloped 'Stepless Step' can be created on the PCB side of the stencil in those area's where large solder deposits are required.

### AVAILABILITY

- **Order Entry:**
  - Customer Profile Information (not required for repeat orders)
  - Stencil Order Information (specific to the order)
  - Send stencil order information including CAD/CAM-file by e-mail, ftp-site, modem or data storage media
- **Data Management:**
  - All common CAD/CAM file types such as Gerber, DXF, ODB++, etc are accepted.
  - Automatic aperture design modification options:
    - No Design Modifications
    - General Design Modifications
    - Custom Design Modifications

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- Cookson Design Modifications
  
- **Stencil Foil Material:**
  - 100% Hard Nickel Electroformed Foils
  - Post manufacturing surface treatment available
- **Stencil Foil Thickness:**
  - Custom thickness available between 0.6 and 8.0 mil (15 - 200µM)
  - Optional STEP UP and/or STEP DOWN Area's available
  - STEPLESS STEPS on PCB-side for high volume deposits on select components available
- **Fiducials:**
  - High durable fiducials (laser engraved)
  - High contrast fiducials (through hole + black Epoxy)
  - High contrast & durable fiducials (recess etched + black Epoxy)
  - Industry standard sizes and shapes
- **Stencil Framing Options:**
  - Industry standard 23" x 23" or 29" x 29" Tubular Frames new and/or refurbished
  - ALPHA TETRA foils for 4-sided ALPHA TETRA frame systems
  - MICROMOUNT foils for 2-sided MICROMOUNT frame systems
  - CHEMTECH foils for 4-sided FTS frame system
  - Other frame sizes or types available upon request
- **Lead time:**
  - ALPHA FORM Stencils are manufactured with lead times as short as 2 days if required from our central manufacturing facility. Please refer to our Reference Bulletin LEAD TIME DEFINITION for more details.

## APPLICATIONS

**ALPHA FORM** Electroform Stencils most common application is printing solder paste for electronics assembly reflow soldering processes, including selective through-hole reflow applications and medium to high volume print runs featuring medium to high aperture counts. ALPHA FORM stencils have increased solder paste transfer efficiency rates. Other popular applications for ALPHA FORM Stencils are ultra fine feature printing applications such as waferbumping and special applications

## SAFETY

Attention and care should always be applied when handling stencils. Mishandling can result in personal injury and/or stencil damage.

## SHIPPING AND STORAGE

ALPHA Stencils are shipped in specially manufactured cardboard boxes. Inspect the shipping box for damage. Report any exterior damage to the freight carrier.

Always clean stencil down properly after usage. Avoid delays between using the stencil and the cleaning process.

Ensure that the foil is dry and free from any cleaning residues before storing.

Recommended cleaning products to minimize gluebond and mesh deterioration:

- BIOACT SC-10E & SC-10E Plus Solvent Wipes or Cleaners
- HYDREX WS & SP Aqueous Cleaners



**CONDITIONAL PRODUCT SPECIFICATIONS**

<b>ALPHA FORM Stencils</b>	
Manufacturing Technique:	Electrolytic Forming
Material:	100% Hard Nickel (> 500VH)
Minimum Aperture Size:	≥ 1.1x Thickness (≥ 90µM / ≥ 3.5 mil) – Below < 90µM / < 3.5 mil on request
Minimum Bar Width:	≥ 1.1x Thickness
Aperture Size Accuracy*:	± 12.5 µM (± 0.5 mil) ≥ CpK 1.33
Positional Accuracy*:	± 25 µM over 432 mm (± 1.0 mil over 17") ≥ CpK 1.33
Available Thickness:	≥ 15 ≤ 200 µM (≥ 0.6 ≤ 8.0 mil)
Stepped Area Capability:	Yes (Squeegee and/or PCB Side)
Stepless Step Capability:	Yes (PCB Side) – image depending
Tolerance on Thickness:	± 10 µM (± 0.4 mil) in image area
Maximum Frame Size:	≤ 760 x 1000 mm (≤ 30" x 40") – select availability
Maximum Image Size:	≤ 735 x 585 mm (≤ 29" x 23")
Aperture Shape:	Tapered 18 - 25 µM (0.7 – 1.0 mil)
Recommended Pitch:	≤ 0.5 mm (≤ 20 mil)
Compatibility with Frame Systems:	Yes

(\* ) These targets are based on Process Capability Studies and Conditions as described per Cookson Electronics GLB-AMG-0301 Global Audit Procedure.