Materion Combo-Lids™ are a leading choice for hermetically sealed microelectronic packages. Our unique® cover lids are available for a wide range of high reliability applications in semiconductor, MEMS, crystal oscillator, medical and optical devices. They can function in the harshest service environments.

Combo-Lids™

Materion Combo-Lids™ are a leading choice for hermetically sealed electronic packages. The base material, Kovar™, or Alloy 42, is electroplated with nickel to ensure a clean particulate-free surface.

The lids are electroplated with gold and tack welded to a solder preform. The nickel electroplate layer serves as a very effective barrier to corrosion. The gold electroplate layer provides a readily solderable surface.

LID COMPOSITION

- Kovar™ or Alloy 42 with Nickel electroplate MIL-38510 50-350 micro-inch and gold electroplate MIL-G-45204B Type III, Grade A.
- Length and width dimension tolerance +/-.003."
- Thickness dimension tolerance is +/-.001" with Flatness <.001" for lids <.500" or .002" for lids >.500", burrs <.001."

LID FRAME

- Composition 80 +/- 1% Au
- Balance Sn with total impurities <149 ppm
- Length and width dimension tolerance +/-.003"
- Thickness dimension tolerance +/-.0003"
- Tack Weld Assembly, three integral welds, Alignment +/-.005", Weld Splatter <.003"

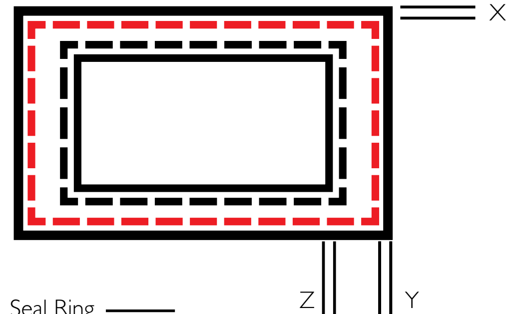
DESIGN GUIDELINES

Materion Advanced Materials can help you with the design of the cover lid, frame size, related tooling and suggest process parameters to ensure maximum line yields.

We recommend the cover OD to be .025" less than the package seal ring OD, and the ID of the preform to be .025" larger than the package seal ring ID, provided a minimum solder width of .025" is maintained. The outside dimensions of the lid and preform are usually the same.

The specifications refers to Materion Advanced Materials standard products. Plating properties can be modified to meet specific needs.

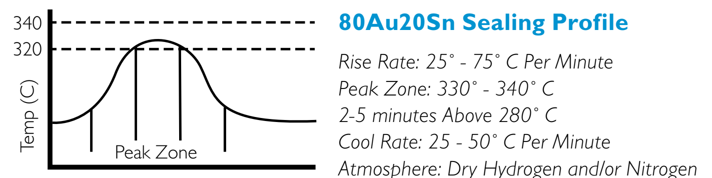
LID SIZE VS. SEAL RING SIZE



Seal Ring ——
Lid OD and Preform OD - - - -
Preform ID - - - -
X: 0.01"
Y: 0.010" - .015"
Z: 0.010" - .015"

COMBO-LID™ PROCESSING INFORMATION

We recommend a typical clip force of 0.9-2 lbs. Clip pressure varies depending on lid size, preform thickness, lid flatness and seal-ring flatness. Typical sealing profiles allow for 2-5 minutes above 280° C (melting temperature) with a peak temperature no more than 340° C in dry nitrogen, or hydrogen.

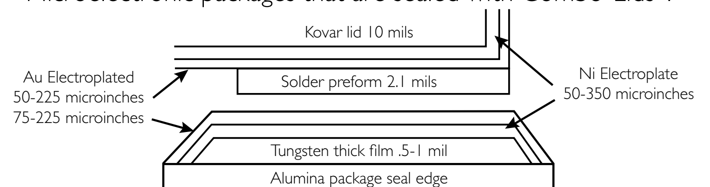


80Au20Sn Sealing Profile

Rise Rate: 25° - 75° C Per Minute
Peak Zone: 330° - 340° C
2-5 minutes Above 280° C
Cool Rate: 25 - 50° C Per Minute
Atmosphere: Dry Hydrogen and/or Nitrogen

MECHANISM FOR SEALING MICROELECTRONIC PACKAGES

Microelectronic packages that are sealed with Combo-Lids™:



- Chip carriers
- Dual in-line
- Side braze
- Flat packs
- PGA
- HTTC

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MATERION CORPORATION
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MATERION ADVANCE MATERIALS GROUP is a global advanced materials company, dedicated to providing solutions that enable our customers' technologies and drive their growth. Our products include precious and non-precious specialty metals, precision optical filters, inorganic chemicals and powders, specialty coatings, specialty-engineered beryllium alloys, beryllium and beryllium composites, and engineered clad and plated metal systems. The Materion business is structured to enhance our ability to provide customers with innovative, best total-cost solutions.