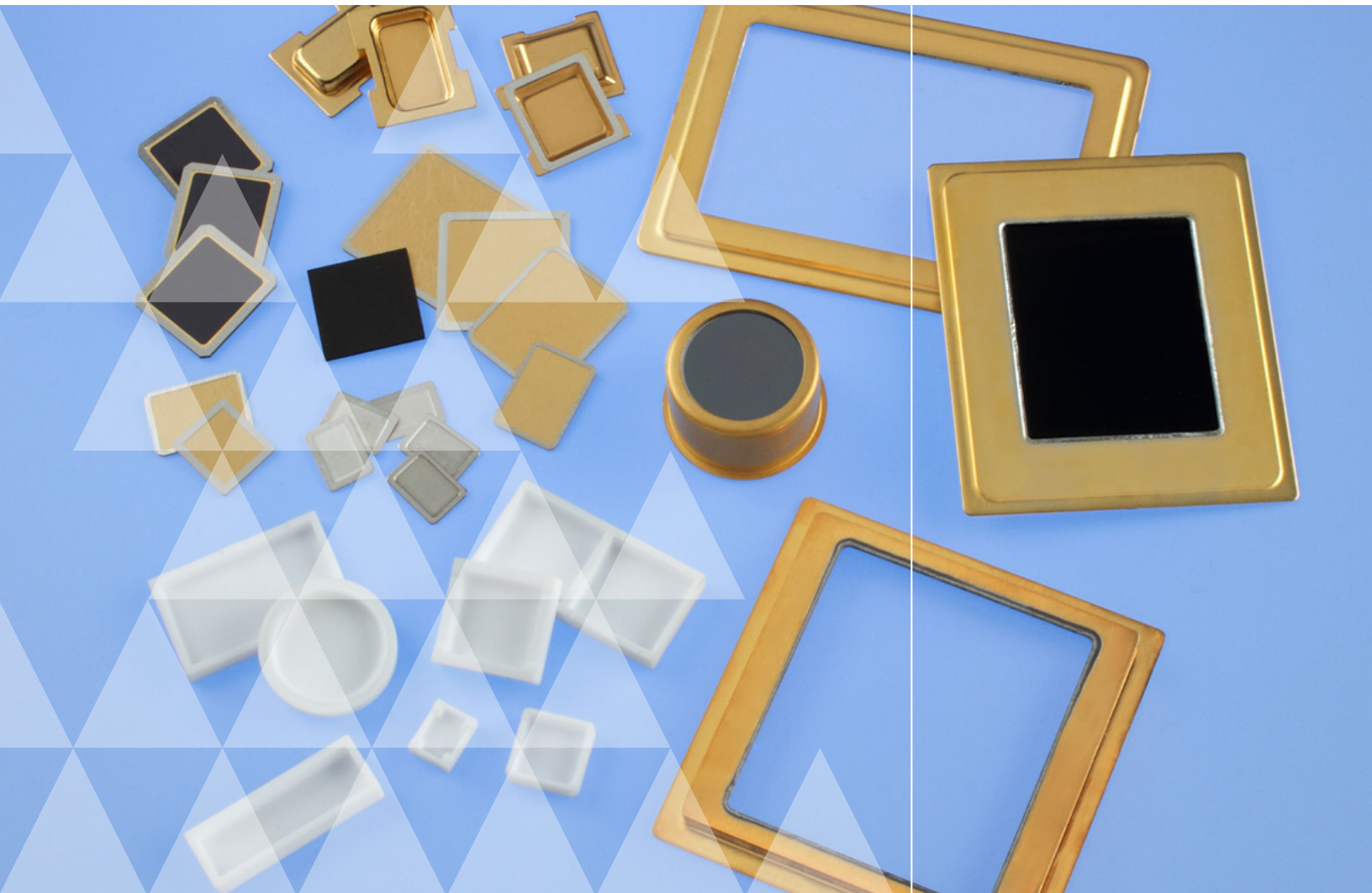




**MATERION**



**ADVANCED  
MATERIALS**

Microelectronic  
Packaging Materials

# Microelectronic Packaging Materials

## The Challenge

To ensure optimal performance and reliability, sensitive electronics must be adequately protected by secure packaging. Hermetic lids are necessary for semiconductor, MEMS, medical or optical applications to shield devices from moisture. RF and microwave packages must meet the demand for very low thermal resistance and very low RF loss. Metals and alloys used for the joining of vacuum electronic devices must be free of contamination that could negatively impact performance.

## The Solution

When it comes to packaging, we've got you covered! We offer a full range of products.

- Highly reliable hermetic lids for sealing and protection of delicate electronics
- Choice of best-solution materials from precious metal to epoxy-coated ceramic
- "Ultra clean" braze alloys for joints of high integrity and strength
- Innovative ceramic packages for very low thermal resistance and RF loss
- Choice of multiple designs & materials customized for specific applications

## BENEFITS

We offer a comprehensive range of packaging materials with these advantages:

- Convenience of operations in N. America, Singapore and the Philippines
- Extensive tooling library with 5000+ stamped preforms & cover lids
- Support for most configurations, applications & volume requirements
- Specialized precious metal alloys to complement all solder applications
- Lead-free braze materials
- Gold & silver alloys providing excellent corrosion resistance
- Variety of alloys offering superior thermal & electrical conductivity
- Wide range of melting temperatures deliver consistent performance
- Support in selecting optical product or assistance fabricating new design



# Materion ... Making Advanced Materials that Improve the World.



## LIDS

We've got you covered – hermetic and non-hermetic lids for semiconductor, MEMS, medical or optical requirements:

- Combo-Lid™ Covers – pre-assembled solder preform and lid
- Micro-Lid™ Covers – for packages smaller than .300 in<sup>2</sup>
- Seam Seal-Lid™ Covers – for sealing heat sensitive electronics
- Solder Reflow-Lid™ Covers – cost alternative to Combo-Lid™ covers
- Visi-Lid™ Covers – for optical packages
- Epo-Lid™ Covers – Epoxy-coated ceramic for non-hermetic uses
- Ceramic Combo-Lid™ Covers – for specialty applications

## BRAZE & SOLDER ALLOYS

Materials for microelectronic packaging & high temperature joining.

- AuSn Preforms
- Braze Materials
- SilSeal Materials
- Solder Alloys
- Lead-free Solders

### Characteristics

- Customized shapes and forms, including ribbon, wire, preforms and powder
- Precious and non-precious metals and alloys
- Wide range of melting temperatures
- Superior conductivity

## CERAMIC PACKAGING

RF & microwave packages for very low thermal resistance & RF loss.

Complementary packages and lids.

- BeO Packages
- CuPacks™ Packages
- Epo-Lid™ Covers
- Air Cavity Packages
- Plated Flanges

### Characteristics

- Dozens of open-tooled designs for best cost solutions
- Custom fabrication new designs
- Available in surface mount designs as well as bolt-down versions



Packaging Products	Applications	Illustrations	Lid Material	Preform Material
Combo-Lid™ Covers (Flat)	High reliability hermetic packaging		Kovar or Alloy 42	Gold-Tin or other alloys
Combo-Lid™ Covers (Drawn)	High reliability hermetic packaging where die height is higher than package cavity depth		Kovar or Alloy 42	Gold-Tin or other alloys
Non-magnetic Metal Combo-Lid™ Covers	Medical Imaging and signal noise control		Mo, CuW, Bronze, Cu	Gold-Tin or other alloys
Non-magnetic Metal Combo-Lid™ Covers	High Purity non-magnetic combo lids, does not contain Nickel or plating		Mo, CuW, Bronze, Cu	Gold-Tin or other alloys
Non-magnetic BeCu Combo-Lid™ Covers	High Purity non-magnetic combo lids, does not contain Nickel or plating		BeCu	Gold-Tin or other alloys
Nozzle Combo-Lid™ Covers	MEMS, Automotive and High reliability hermetic package sealing		Kovar	Gold-Tin
Ceramic Combo-Lid™ Covers with edge metallization	Non-magnetic applications		Al <sub>2</sub> O <sub>3</sub>	Gold-Tin or other alloys
Tack welding services for Ceramic Lids	Non-magnetic applications		Al <sub>2</sub> O <sub>3</sub>	Gold-Tin or other alloys
Selectively plated Combo-Lid™ Covers	High reliability hermetic package sealing		Kovar or Al <sub>2</sub> O <sub>3</sub>	Gold-Tin or other alloys
Getter Tack welded Combo-Lid™ Covers	High reliability hermetic package sealing		Kovar	Gold-Tin or other alloys
Palladium Combo-Lid™ Covers	High reliability and hermetic package sealing		Kovar with Palladium	Gold-Tin or other alloys
Seam Seal-Lid™ Covers	Hermetic package sealing without preform		Kovar	—
Special Shaped Combo-Lid™ Covers	High reliability hermetic package sealing		Kovar	Gold-Tin
Epo-Lid™ Covers	Ceramic Lid for non-hermetic packages including CuPack™ packages		Al <sub>2</sub> O <sub>3</sub>	MEG-150 or MEG-165 Epoxy
Ceramic Air Cavity Packages	Wireless Applications - Si, GaAs and GaN RF power transistors		Plated Alloy 42 with Ni, NiCo or Au	Alumina ring frames
Etch Lids for AR Coated Glass	Double preform attached lid for Visi-Lid™ cover application		Kovar	Gold-Tin or other alloys



### ADVANCED MATERIALS

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**MATERION ADVANCED MATERIALS** is a global advanced materials and services 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.