

# High-Temperature Products and Capabilities



## Power Packages

The hermetic power package is designed to meet demanding environmental requirements, where high-reliability and strength are essential. Typical applications include power converters; motor drives; switch mode power supplies; power hybrid circuits; and power thrusters for military, aeronautics, and space applications. (Source: [www.egide-group.com/en/produits/power-packages](http://www.egide-group.com/en/produits/power-packages))

**Common Alloys:** 78Au/22Sn, 79Au/21Sn, and 80Au/20Sn

**Application/Form:** Lid sealing/frame preform

**Common Thickness:** 0.0008–0.002"

**Application Note:** Many customers decide not to use AuSn frames here because they used AuSn for the die-attach.

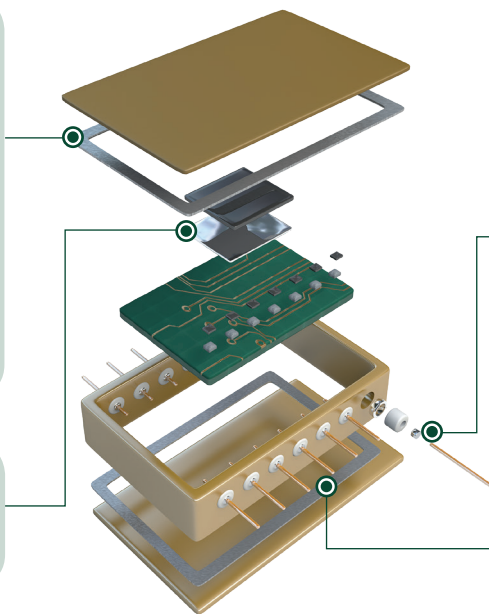
**Recommendation:** Offer the AuSn frame preform and using resistance seam sealing (MicroCircuit Laboratories LLC). It's not a traditional reflow and allows them to use AuSn for sealing and die-attach.

**In-house capabilities and specs:** Reference frames in the in-house capabilities.

**Common Alloys:** 79Au/21Sn and 80Au/20Sn

**Application/Form:** Die-attach/square and rectangle shapes

**Common Thickness:** 0.0005–0.002"



**Common Alloys:** 72Ag/28Cu and 99.99Ag

**Application/Form:** GTMS or CTMS - washers

**Common Thickness:** 0.002–0.016"

**Application Note:** Solder/braze volume is critical to engineers, and the reason for tight tolerances on prints. If there's too much solder, the operator has to scribe each solder joint; when there's too little, you have a weak joint.

**In-house capabilities and specs:** Reference washers in the in-house capabilities.

**Common Alloys:** 72Ag/28Cu and 99.99Ag

**Application/Form:** Base to frame sealing - frame

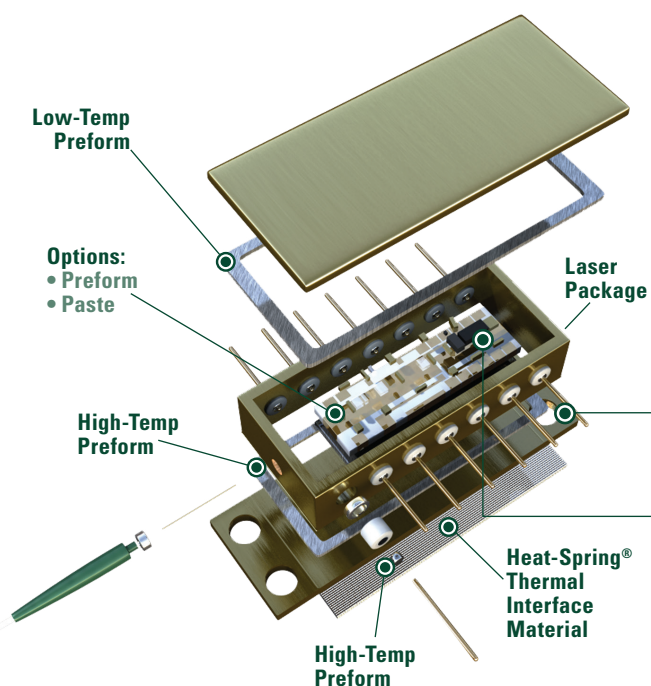
**Common Thickness:** 0.001–0.006"

**In-house capabilities and specs:** Reference frames in the in-house capabilities.

**Capillary Blocks®** can be used as a cost-efficient alternative to frame preforms.

## Laser/Optical

**Multi-chip module housings or IC packages** are used to 'package' and thereby protect sensitive electronic components and complete electrical assemblies from harsh environmental conditions, including high temperature-, shock-, and vibration-resistance. At the same time, the vacuum-tight housings and substrates must enable power and signal transmission (electrical and optical) into/out of the package. (Source: <https://www.us.schott.com/english/index.html>)



**Low-Temp Preform**

**Options:**  
• Preform  
• Paste

**High-Temp Preform**

**Heat-Spring® Thermal Interface Material**

**High-Temp Preform**

**Common Alloys:** 79Au/21Sn, 80Au/20Sn, 88Au/12Ge, and 72Ag/28Cu

**Application/Form:** Lead and base frame seal - frame shapes

**Common Thickness:** 0.0005–0.002"

**In-house capabilities and specs:** Reference frames in the in-house capabilities.

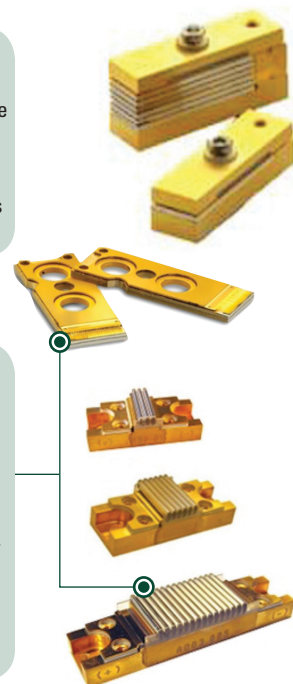
**Common Alloys:** 79Au/21Sn and 80Au/20Sn

**Application/Form:** Die-attach/square and rectangle shapes

**Common Thickness:** 0.0005–0.002"

**Differentiating Product:** AuLTRA™ ThInFORMS™ die-attach preforms 0.00035" thick. These allow you to have a very thin bondline to help keep solder from getting pushed out and obstructing the laser. The thin bondline also aids in thermal transfer.

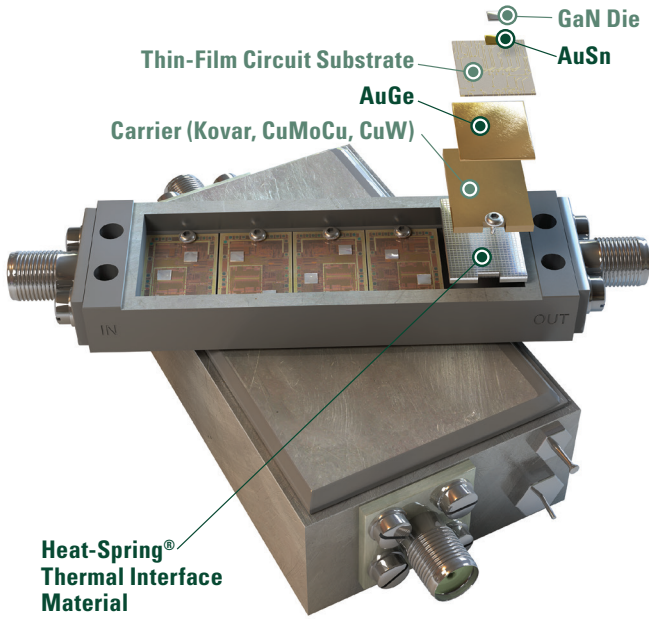
**In-house capabilities and specs:** Reference squares rectangles in the in-house capabilities.





## RF/Microwave Packages

Today, many applications require components that perform flawlessly and retain their original properties at microwave frequencies well into the GHz range. The Hermetic Solutions Group's 50 Ohm hermetic RF/microwave connectors are used in **military** and commercial applications where environmental conditions dictate a requirement for an extremely rugged and reliable hermetic seal, while low-loss **Corning 7070** glass is used for dependable electrical performance. (Source: <https://www.hermeticsolutions.com/products/hermetic-interconnect-products/rf-microwave-connectors/>)



**Common Alloys:** 79Au/21Sn and 80Au/20Sn; under development: 75Au/25Sn

**Application/Form:** Die-attach/square and rectangle shapes

**Common Thickness:** 0.0005–0.001"

**Application Note:** This die-attach application is done in a scrubbing reflow process. Typically the thin film substrates have thick Au plating on the substrate that leads to voiding from being an Au-rich solder joint. Off-eutectic AuSn preform compensates for the Au plating and helps reduce voiding in the solder joint.

**In-house capabilities and specs:** Reference squares rectangles in the in-house capabilities.

**Common Alloys:** 88Au/12Ge

**Application/Form:** Soldering of substrate to carrier/square and rectangle shapes

**Common Thickness:** 0.001–0.002"

**Application Note:** Semiconductor grade 88Au/12Ge preforms help reduce voiding in the solder joint to add in thermal transfer. Standard 88Au/12Ge typically leave large voids in the center from Ge oxide.

**In-house capabilities and specs:** Reference squares rectangles in the in-house capabilities.

## BPD Standard Capabilities – Tolerances and Requirements

*STANDARD PROCESSES ONLY (no steel rule die or laser cut)		X, Y, or Diameter Dimension/ Tolerance (inches)	Thickness or Height Dimension/ Tolerance (inches)	Burr Threshold (inches)	Flatness (inches/inch)	Aspect Ratio (thickness/wall)	Alloy
Gold	Rectangle	$\geq 0.020$ to $\leq 0.500$ : $\pm 0.002$ $> 0.500$ to $\leq 2.000$ : $\pm 0.005$	$\leq 0.002$ : $\pm 0.0002$	$\leq 0.005$ : $0.001$ $> 0.005$ to $\leq 0.010$ : $0.0015$ $> 0.010$ to $\leq 0.020$ : $20\%$ $\geq 0.020$ : $20\%$	Max 0.004/inch	$\leq 1.5/1$ (up to .030" thick)	Reference Y000-196 in-house standards
	Square		$> 0.002$ to $\leq 0.005$ : $\pm 0.0003$				
	Disc		$> 0.005$ to $\leq 0.010$ : $\pm 0.0005$				
	Frame		$> 0.010$ to $\leq 0.020$ : $\pm 0.0010$				
	Washer		$\geq 0.020$ : $\pm 5\%$				
	Ribbon	Length Tolerance: $\leq 120$ (10') : $\pm 2.000$ $> 120$ (10') : $\pm 2\%$	Contact Engineering for Pure Au $< 0.003$ " thick				
Wire	$\geq 0.001$ to $\leq 0.005$ : $\pm 0.001$ $> 0.005$ to $\leq 0.030$ : $\pm 0.002$ No pure gold wire	Length Tolerance: $D < 0.015$ : $\pm 1\%$ $D \geq 0.015$ : $\pm 2\%$		Additionally, purity to remain 99.99% overall			
Braze	Rectangle	$\geq 0.020$ to $\leq 0.500$ : $\pm 0.002$ $> 0.500$ to $\leq 2.000$ : $\pm 0.005$	$0.003$ : $\pm 0.0005$	$\leq 0.005$ : $0.001$ $> 0.005$ to $\leq 0.010$ : $0.0015$ $\geq 0.010$ : $20\%$	Max 0.004/inch	$\leq 1.5/1$ (up to .030" thick)	Reference Y000-196 in-house standards
	Square		$> 0.003$ to $\leq 0.010$ : $\pm 0.0010$				
	Disc		$> 0.010$ to $\leq 0.020$ : $\pm 0.0015$				
	Frame		$\geq 0.020$ : $\pm 10\%$				
	Washer		Length Tolerance: $\leq 120$ (10') : $\pm 1.000$ $> 120$ (10') : $\pm 1\%$				
	Ribbon	Length Tolerance: $D < 0.015$ : $\pm 1\%$ $D \geq 0.015$ : $\pm 2\%$	Contact Engineering				
Wire	Contact Engineering	Length Tolerance: $D < 0.015$ : $\pm 1\%$ $D \geq 0.015$ : $\pm 2\%$					

\*Engineering should be contacted for diameters of 0.004–0.010".

## Quick Turn Program

The goal of **Quick Turn** is to get parts in an engineer's hands as fast as, or faster than, our competition and at a reasonable (non-prohibitive) cost. By doing this, we increase our opportunity for new business via new application design/spec wins.

- New tool in 5 days\*
- Parts shipping in 10 days
- Parts punched in 5 days
- With existing tool, parts shipped in 5 days

\*Special tool pricing