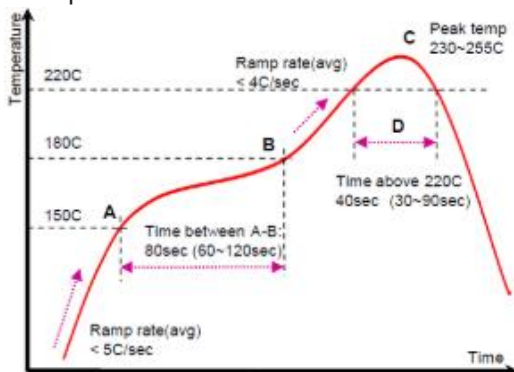


## Design Guide

### SAC 305 Solder Preform Characteristics

Physical Properties	Metric	English	Comments
Density	7.38 g/cc	0.267 lb/in <sup>3</sup>	
Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	41.1 MPa	5961 psi	
Thermal Properties	Metric	English	Comments
CTE Linear	21.6 $\mu\text{m/m-}^{\circ}\text{C}$ @ Temperature 20-100 $^{\circ}\text{C}$	21.6 $\mu\text{in/in-}^{\circ}\text{F}$ @ Temperature 68-212 $^{\circ}\text{F}$	
Melting Point	217-219 $^{\circ}\text{C}$	423-426 $^{\circ}\text{F}$	
Solidus	217 $^{\circ}\text{C}$	423 $^{\circ}\text{F}$	
Liquidus	219 $^{\circ}\text{C}$	426 $^{\circ}\text{F}$	
Component Element Properties	Metric	English	Comments
Tin- Sn	96.5%	96.5%	
Silver- Ag	3.0%	3.0%	
Copper - Cu	0.5%	0.5%	
Descriptive Properties	Value		Comments
Creep Resistance	Excellent		

- SAC Alloys are the leading alloys replacing tin-lead solders for electronic assembly applications. These alloys have proven to perform well in surface mount, wave soldering, and hand soldering applications. SAC Alloys may be used with existing equipment, processes, coatings, and flux chemistries. SAC Alloys are available in foil and preforms.

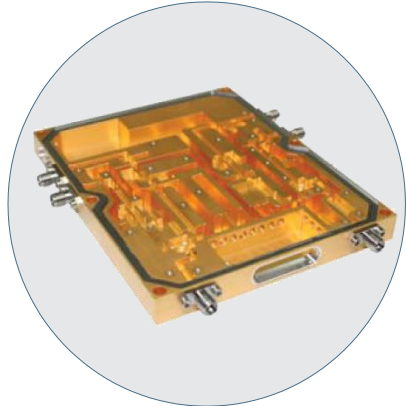


#### FEATURES

- Excellent resistance
- Excellent solder joint reliability
- Low melting point for a PB-Free alloy (217°-219°C)
- Compatible with most flux type

#### TEMPERATURE REQUIREMENTS

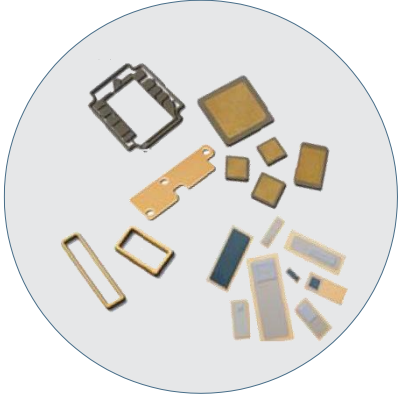
APPLICATION	RECOMMENDED TEMPERATURE
REFLOW SOLDERING	PEAK TEMPERATURE 230°-255°C (446°-491° F)
WAVE SOLDERING	POT TEMPERATURE OF 265°-270°C (520°-530°F)
HAND SOLDERING	TIP TEMPERATURE OF 370°-425°C (700°-800°F)



## OTHER PRODUCTS & SERVICES:

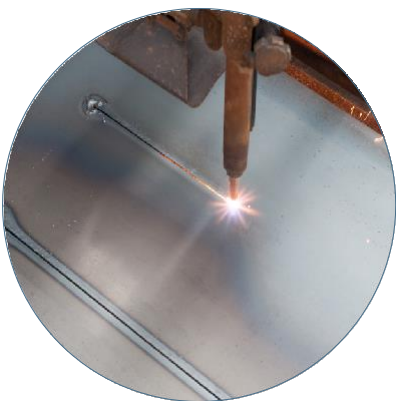
### Hermetic Electronic Packaging

We bring customers' hermetic electronic package designs to life and use unique materials and manufacturing processes to help optimize for weight savings, footprint reduction, thermal transfer and more. Our precision machining capabilities allow us to meet very tight tolerances for Kovar, aluminum and titanium housings. We deliver the standard and custom packaging solutions that ensure the electronics within those devices are unaffected by whatever extreme environmental condition they operate in.



### Enabling Components

There's more to a reliable hermetic package solution than a box and connectors and we manufacture components to ensure a module's long term viability. We produce: getters to prevent build-up of contaminants; solder preforms that aid in attaching electronic circuitry; ring frames that become integral side walls of a hermetic package; and custom thermal spreaders that ensure heat from a chip or substrate is efficiently dissipated. To top things off, we also manufacture package lids.



### Laser and Integration Services

We provide high-speed laser welding, sealing and marking with consistent accuracy. Our laser welding expertise also extends to the manufacture of custom designed/build laser welding, cutting & sealing systems for customers who wish to bring those capabilities in house.

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