0.5mm pitch Giga-SnaP™ Surface Mount Foot Soldering Instructions

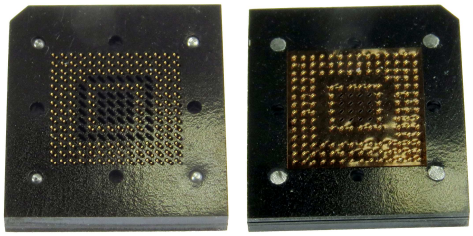

Figure 1: Giga Snap Adapter

Target PCBs, which are intended to accept the Ironwood Electronics surface mount Giga Snap Adapter vary greatly in size, mass, and thickness. There are also several manufacturing processes that can be used to attach the surface mount Giga Snap Adapter to target PCBs. Because of these wide ranges in customer target PCB specifications and process scenarios, Ironwood Electronics can offer only general soldering instructions.

The recommended method is explained below with visual aids showing the step-by-step process. This method has produced very good results. Figure 1 shows the Giga Snap Adapter and Figure 2 shows a target printed circuit board with the BGA removed. Figure 3 shows wicking off residual solder with solder wick or de-soldering tool.

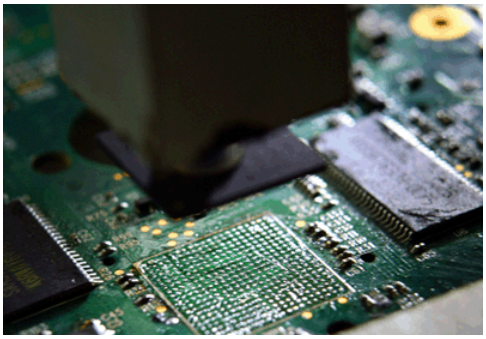

Figure 2: Remove BGA

Figure 3: Clean PCB

Clean the BGA using Alcohol and any other suitable methods.

Using a BGA stencil to apply solder paste on the target PCB. We recommend using 0.005” thick stainless steel stencil or a laser cut kapton to apply solder paste. Once the stencil is aligned with BGA foot print use glue on the corners to hold the stencil in place. Use the masking tape to tape off the area around the periphery of the stencil. Squeegee solder paste across the top of the stencil making sure all area of the apertures are filled.

Figure 4: Squeegee solder paste

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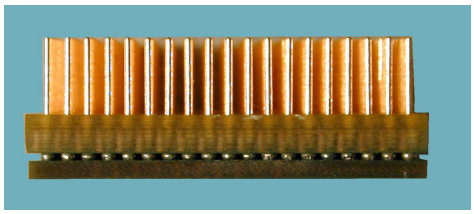
Remove masking tape and then wipe off any excess solder paste on the stencil with lint free wipe. Now gently remove the stencil from the target PCB leaving 0.005" thick solder paste on each ball Pad. Using a BGA work station place the Giga Snap adapter on the BGA land pattern on the target PCB.

Soldering Reflow Profiles: Low Temp and High Temp (RoHS)



Note: Because there are many unknown variables for each customer's situation, it is difficult to recommend an ideal temperature profile for attaching an Ironwood adapter to a particular customer's target board.

A few of the unknowns which make a profile suggestion difficult:

1) The target PCB size, mass
2) Number and size of components next to the adapter target pattern
3) Reflow oven type
4) Type of solder paste/flux used
5) Solder stencil characteristics (thickness and aperture size)

Therefore, we offer the following profiles as a guide / reference to mounting our standard and high temperature ROHS Giga-snaP™ and BGA SMT adapters.

While the following should work for most scenarios, Ironwood recommends contacting your solder paste / flux manufacturer for proper reflow profiles for your particular set-up and equipment.

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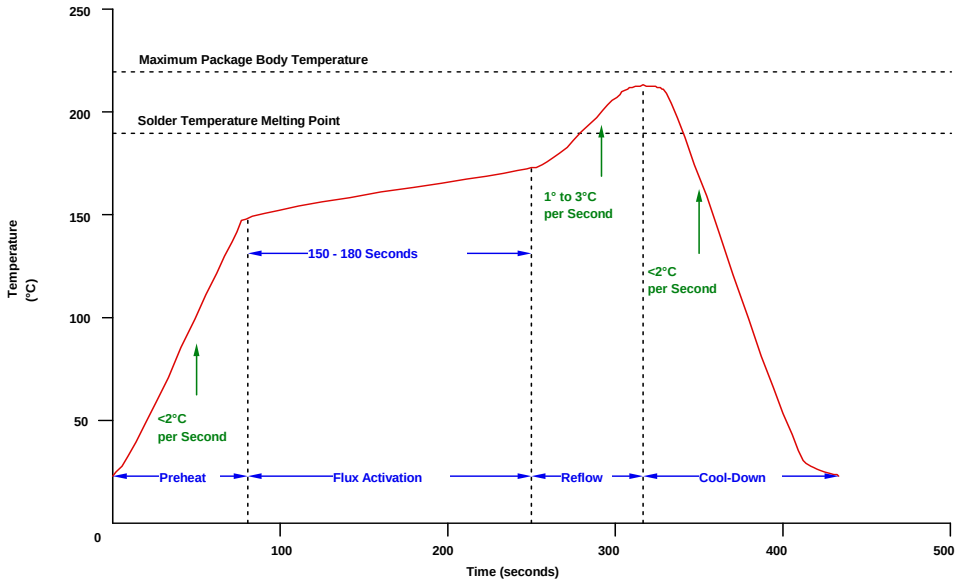
Recommended Reflow Profile – Low Temperature



(4) Surface tension between the adapter's solder spheres and the target PCB's pads will self-align the part during the reflow process.

(5) Reflow:

- Use caution when profiling to insure minimal temperature difference (<15^0 C and preferably <10^0 C) between components
- Forced convection reflow with nitrogen preferred (50 - 75 PPM)
- Preheat stage temperature ramp rate: <2^0 C per second
- Time required in Flux Activation stage: 150 to 180 seconds
- Flux Activation stage temperature range: 150 to 183^0 C
- Time required in Solder stage: 60 seconds
- Maximum temperature 210 - 220^0 C (Do not exceed 10 seconds at maximum temperature)
- Cool-Down stage temperature reduction rate: <2^0 C per second

NOTE:
It may be necessary to adjust the amount of heat when attaching the part, due to the fact that the adapter mass is different from the actual IC package. Solder sphere spec = 63Sn, 37Pb and its melting point = 183^0 C

(6) Clean PCB with the flux manufacturers recommended process.

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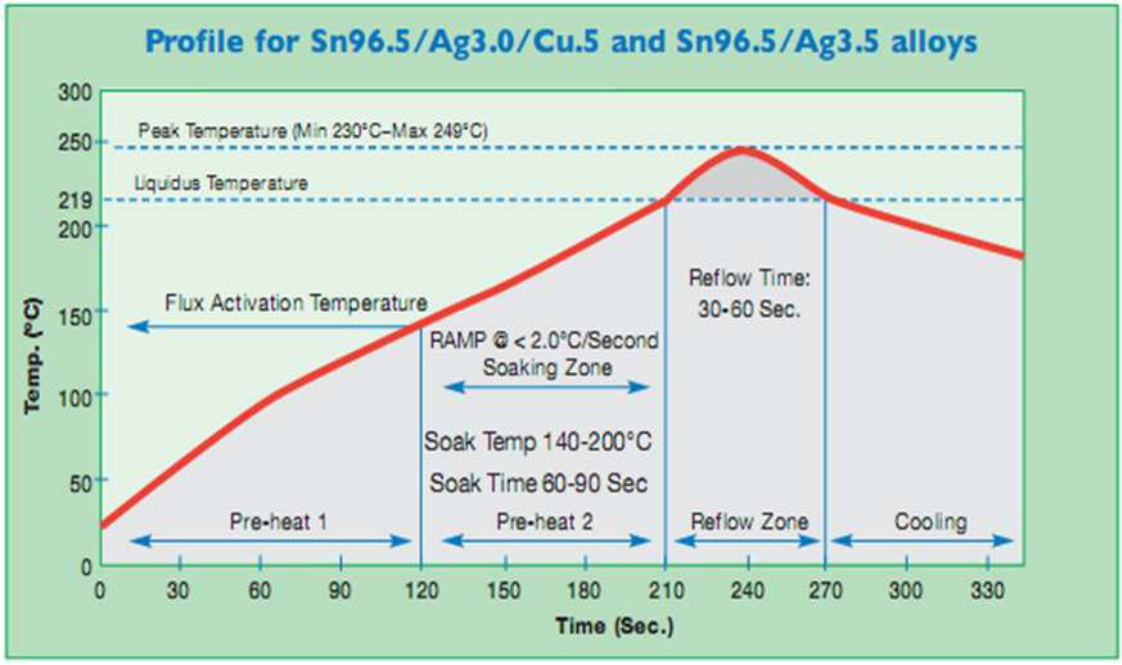
Recommended Reflow Profile – High Temperature (RoHS)



(4) Surface tension between the adapter's solder spheres and the target PCB's pads will self-align the part during the reflow process.

(5) Reflow:

- Use caution when profiling to insure minimal temperature difference (<15^0 C and preferably <10^0 C) between components
- Forced convection reflow with nitrogen preferred (50 - 75 PPM)
- Preheat stage temperature ramp rate: <2^0 C per second
- Time required in Flux Activation stage: 120 seconds
- Flux Activation stage temperature range: 140 to 145^0 C
- Time required in Solder stage: 30-60 seconds
- Maximum temperature 230 - 249^0 C (Do not exceed 10 seconds at maximum temperature)
- Cool-Down stage temperature reduction rate: <2^0 C per second

NOTE:
It may be necessary to adjust the amount of heat when attaching the part, due to the fact that the adapter mass is different from the actual IC package. Solder sphere spec = Sn96.5 Ag3.0 Cu0.5 and its melting point = 219^0 C

(6) Clean PCB with the flux manufacturers recommended process.

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