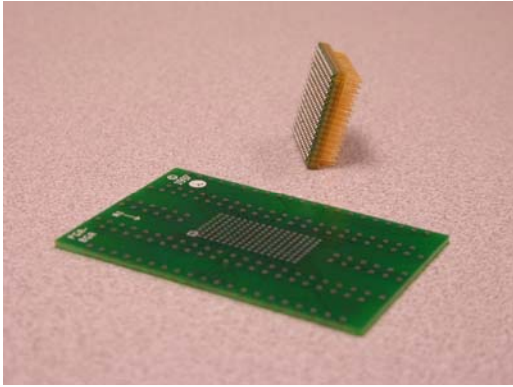


**Giga-snaP™ & BGA Surface Mount Foot Soldering Instructions**

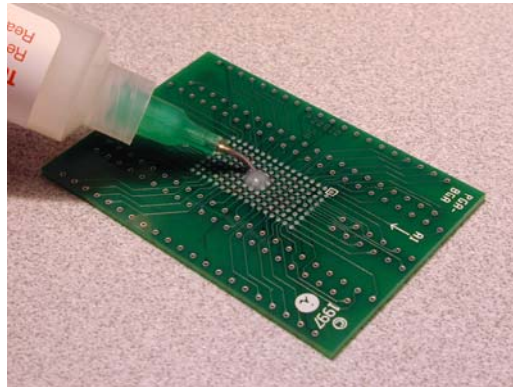


**Figure 1: Target PCB/BGA Emulator Foot**

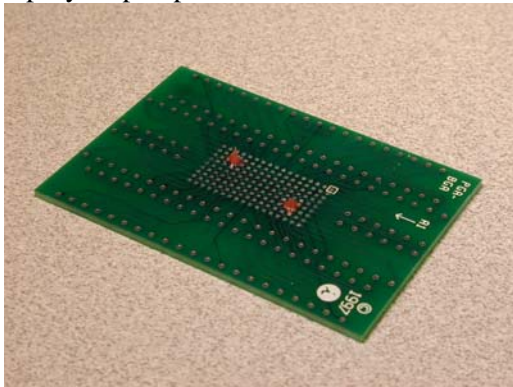
soldering instructions.

Ironwood's BGA surface mount emulator foot closely emulates a BGA package and therefore can employ similar processes to attach it to a target board. The recommended method is explained below with visual aids showing the step-by-step process. This method has

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



**Figure 2: Applying Flux**



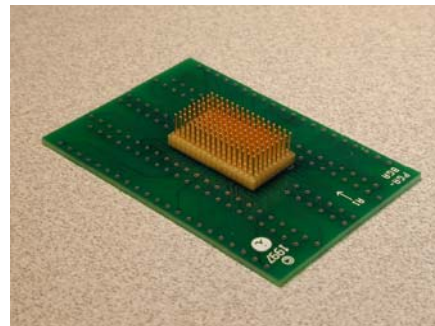
**Figure 4: Placing Tac Flux**

produced very good results. Figure 1 shows the BGA surface mount emulator foot and a clean target printed circuit board. The bottom side of the surface mount foot (shown) contains solder spheres. The steps involved in the soldering process are as follows:

(1) Using a flux dispenser, place a small amount of flux (water soluble or no clean) on the middle of the target PCB lands as shown in Figure 2. Spread the flux evenly over the PCB lands.

(2) Apply a small amount of TAC flux on opposite corners of the PCB lands as shown in Figure 3.

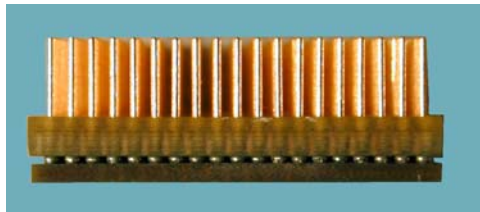
(3) Note the target board land pattern orientation and the adapter Pin 1 location. Place the adapter (sphere side down) onto the flux and land pattern as shown in Figure 4 (align as closely as possible to the land pattern of the target PCB). The BGA surface mount feet are durable enough to be handled by hand. However, adaptors are available for handling the part with a vacuum pen or pick and place equipment.



**Figure 3: Align Adapter to 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:

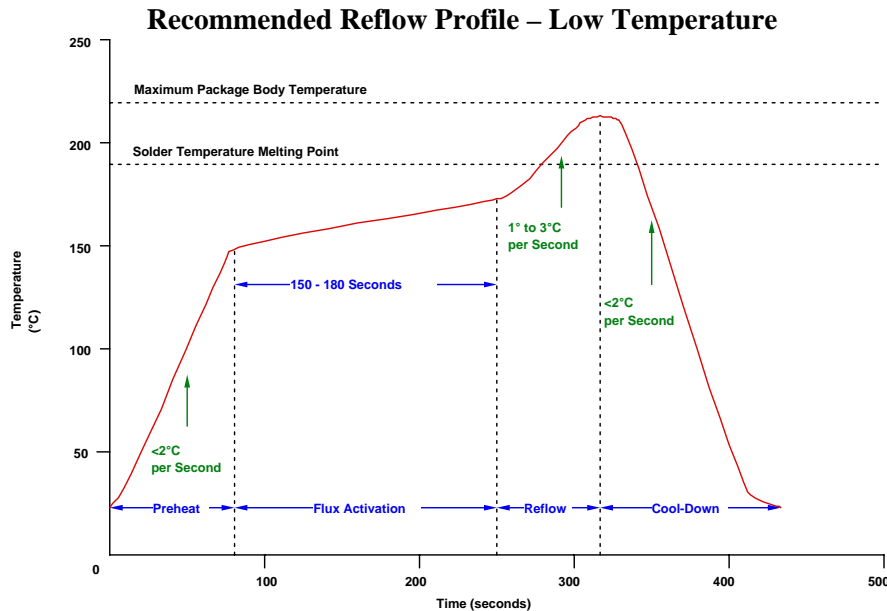
- 1) The target PCB size, mass
- 2) Number and size of components next to the adapter target pattern
- 3) Reflow oven type
- 4) Type of solder paste/flux used
- 5) Solder stencil characteristics (thickness and aperture size)

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.



**Giga-snaP™ & BGA Surface Mount Foot Soldering Instructions (cont.)**



(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 ( $<15^{\circ}\text{C}$  and preferably  $<10^{\circ}\text{C}$ ) between components
- Forced convection reflow with nitrogen preferred (50 - 75 PPM)
- Preheat stage temperature ramp rate:  $<2^{\circ}\text{C}$  per second
- Time required in Flux Activation stage: 150 to 180 seconds
- Flux Activation stage temperature range: 150 to  $183^{\circ}\text{C}$
- Time required in Solder stage: 60 seconds
- Maximum temperature  $210 - 220^{\circ}\text{C}$  (Do not exceed 10 seconds at maximum temperature)
- Cool-Down stage temperature reduction rate:  $<2^{\circ}\text{C}$  per second

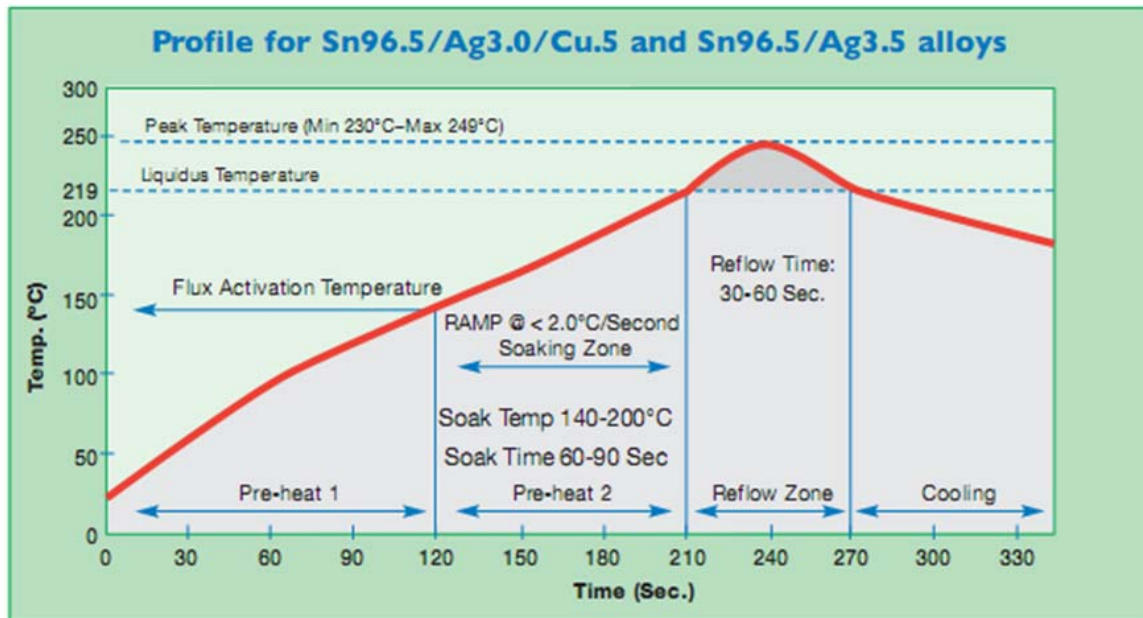
NOTE:

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 =  $183^{\circ}\text{C}$

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



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

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