

## Reworking SEARAY™ SEAM-RA/SEAF-RA Connectors

This document describes the recommended procedure for reworking (connector removal, site cleaning, and connector replacement) Samtec's SEARAY™ SEAM-RA/SEAF-RA connectors using hot air rework equipment.

### Equipment Used:

Air-Vac DRS27 BGA/SMT rework machine  
Air-Vac NT902XD3280DS hot air rework nozzle

### Other Materials:

SEAF-50-01-L-10-2-RA-GP connector  
Alpha OM-338 Pb-free, no-clean solder paste  
Kester TSF-6522 no-clean rework flux  
Mini-stencil  
PCB thickness .093  
Processing fixture CAT-SEAF-50-01-RA

### Thermal Profiling

Prior to each process, a complete thermal profile study shall be completed. Thermocouples shall be placed directly beneath the center of the component as well as on the insulator body. The ideal process will replicate the temperature gradient and ramp rate as recommended by the solder paste manufacturer.

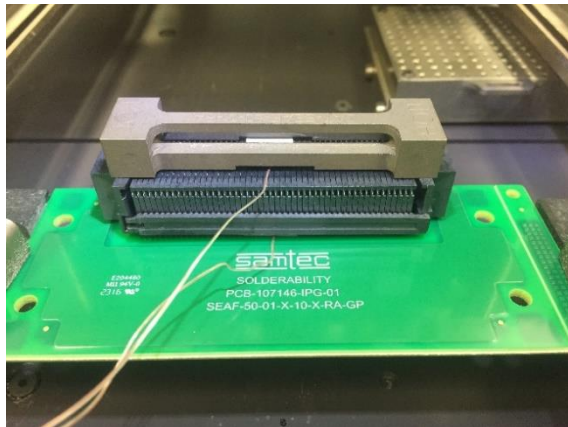


Figure 1. Thermocouple Placement

### Process 1 – Connector Removal

- Place board to be reworked on hot air rework machine.

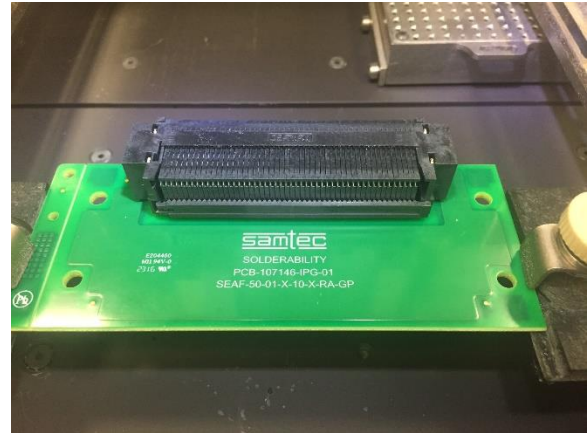


Figure 2. Board Placed on Rework Machine

- Align nozzle over component.
- If possible, apply tacky flux to solder joints along each side of the connector.

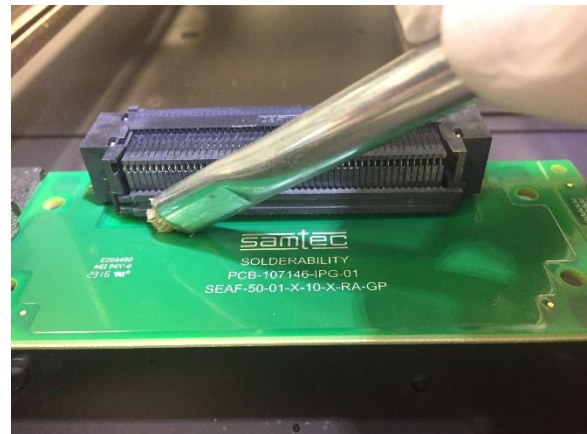


Figure 3. Flux Application

- Run connector removal heating program.

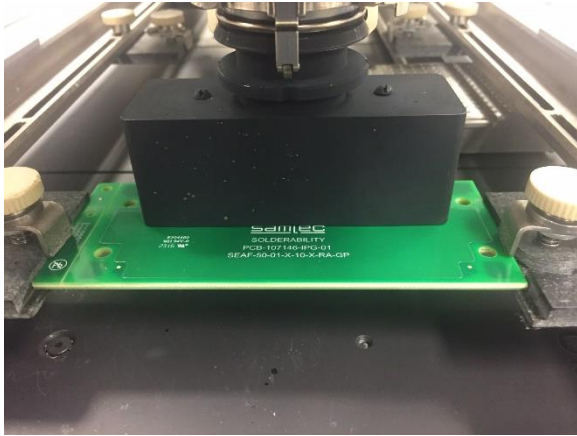


Figure 4. De-soldering Process - Nozzle in Down Position

### Samtec Removal Program Settings\*

- Pre-heat board to 140°C
  - Bottom heater – 325°C
- Pre-soak
  - Z-axis hot gas heater – 245°C, 85% flow
  - Bottom heater – 300°C for 30 seconds
- Soak
  - Z-axis hot gas heater – 275°C, 85% flow
  - Bottom heater – 300°C for 30 seconds
- Ramp
  - Z-axis hot gas heater – 300°C, 85% flow
  - Bottom heater – 300°C for 20 seconds
- Reflow
  - Z-axis hot gas heater – 325°C, 85% flow
  - Bottom heater – 300°C for 70 seconds

\* Customer settings may be different

- After (removal) heating program is complete, quickly remove connector as nozzle rises.

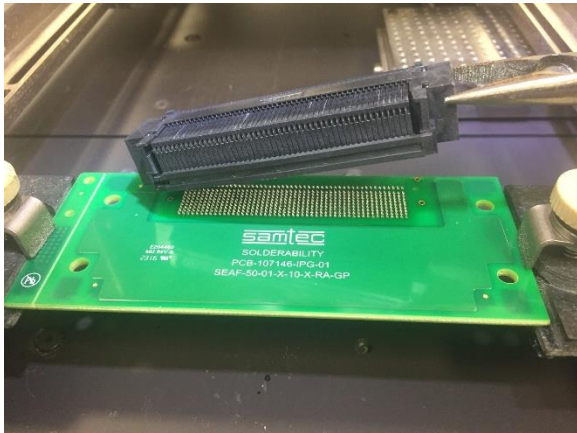


Figure 5. Connector Removal

## Process 2 – Site Cleaning

- Apply tacky flux to area to be site-cleaned.

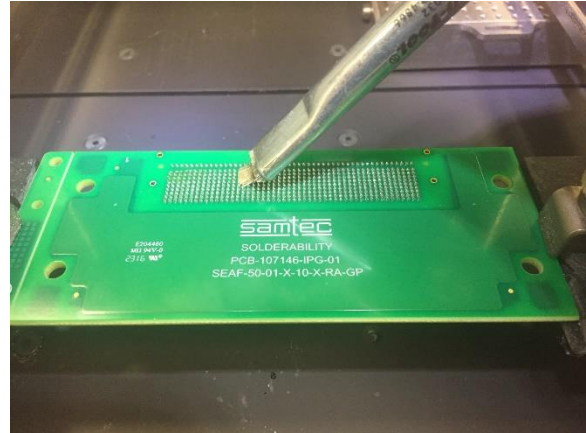


Figure 6. Flux Application

- Run site cleaning thermal program. (Once site-cleaning nozzle is lowered, manually adjust table location until all pads have been cleaned, resulting in a flat surface with a thin coating of solder.)
- If a site cleaning feature is not available, a manual site cleaning process is required.

### Samtec Site Clean Program Settings\*

- Pre-heat board to 130°C
  - Bottom heater – 300°C
- Site Clean
  - Z-axis hot gas heater – 460°C, 80% flow
  - Bottom heater – 300°C

\* Customer settings may be different

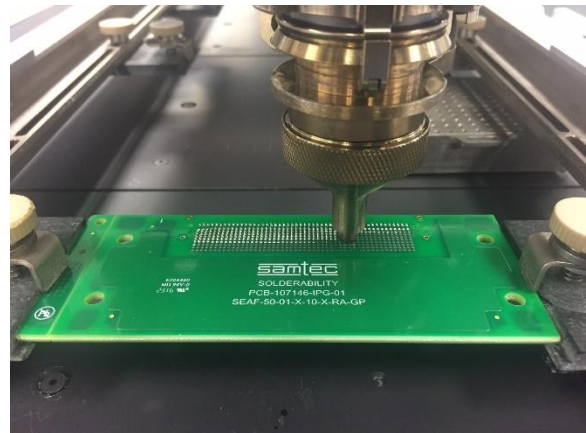


Figure 7. Site-Cleaning

## Process 3 – Connector Replacement

- Apply solder paste to pads using the Samtec recommended stencil aperture design using either a stencil, mini-stencil, or solder jet printer.

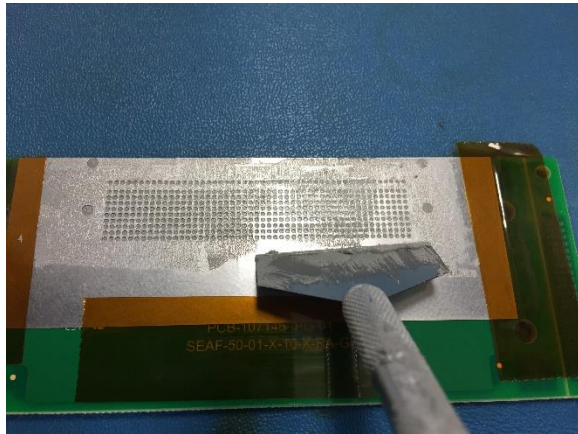


Figure 8. Solder Paste Application (Mini-Stencil)

- Place printed PCB on rework machine and populate component.
- Using a processing fixture is recommended for -08 and -10 row SEAM-RA/SEAF-RA connectors.

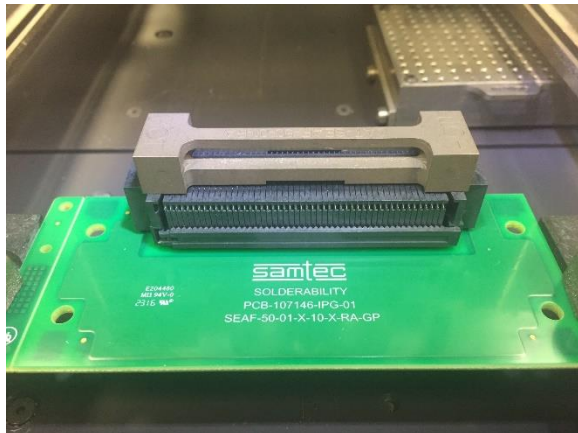


Figure 9. Populated PCB

- Run connector replacement thermal program.

### Samtec Soldering Program Settings\*

- Pre-heat board to 140°C
  - Bottom heater – 325°C
- Pre-soak
  - Z-axis hot gas heater – 245°C, 85% flow
  - Bottom heater – 300°C for 30 seconds
- Soak
  - Z-axis hot gas heater – 275°C, 85% flow
  - Bottom heater – 300°C for 30 seconds
- Ramp
  - Z-axis hot gas heater – 300°C, 85% flow
  - Bottom heater – 300°C for 20 seconds
- Reflow
  - Z-axis hot gas heater – 325°C, 85% flow
  - Bottom heater – 300°C for 50 seconds

\* Customer settings may be different

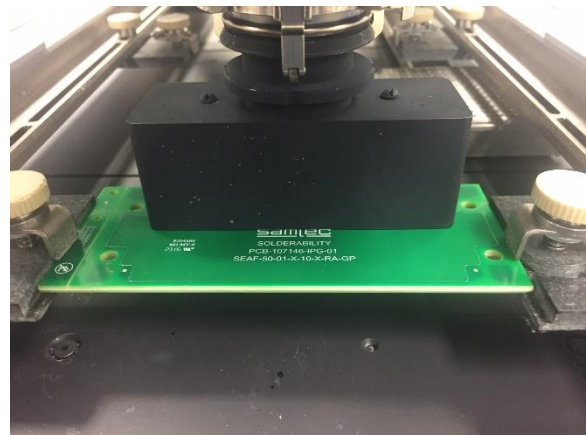


Figure 10. Soldering Process - Nozzle in Down Position

For more information regarding reworking Samtec connectors, please contact Samtec's Interconnect Processing Group at [ipg@samtec.com](mailto:ipg@samtec.com).

For more information on the hot air rework equipment/nozzles used, please contact:

Air-Vac Engineering  
30 Progress Ave., Seymour, CT 06483  
Telephone: 203-888-9900