Reworking Right Angle and Horizontal Samtec Connectors

This document describes the recommended procedure for reworking (connector removal, site cleaning, and connector replacement) Samtec's right angle and horizontal connectors using hot air rework equipment.

Equipment Used:
Air-Vac DRS27 BGA/SMT rework machine
Air-Vac hot air rework nozzle

Other Materials:
Alpha OM-338 Pb-free, no-clean solder paste
Kester TSF-6522 no-clean rework flux
Mini-stencil

Process 1 – Connector Removal

- Place board to be reworked on hot air rework machine.
- Align nozzle over component.
- Apply tacky flux to all accessible solder joints of the connector.

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.
Reworking Right Angle and Horizontal Samtec Connectors

- Run connector removal heating program.

  ![Image of connector removal heating program](image1)

  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 – 210°C, 60% flow
  - Bottom heater – 250°C for 35 seconds

  Soak
  - Z-axis hot gas heater – 240°C, 60% flow
  - Bottom heater – 250°C for 60 seconds

  Ramp
  - Z-axis hot gas heater – 295°C, 60% flow
  - Bottom heater – 250°C for 30 seconds

  Reflow
  - Z-axis hot gas heater – 350°C, 60% flow
  - Bottom heater – 250°C for 75 seconds

* Customer settings may be different

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

  ![Image of connector removal process](image2)

  Figure 5. Connector Removal

  ![](image3)

  Figure 6. Flux Application

  ![Image of flux application](image4)

  Figure 7. Site-Cleaning

**Process 2 – Site Cleaning**

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

- 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 120°C
  - Bottom heater – 300°C

  Site Clean
  - Z-axis hot gas heater – 425°C, 55% flow
  - Bottom heater – 300°C

* Customer settings may be different
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)](image)

- Place printed PCB on rework machine and populate component.

![Figure 9. Populated PCB](image)

- Run connector replacement thermal program.

<table>
<thead>
<tr>
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<td>- Bottom heater – 250°C for 60 seconds</td>
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</tbody>
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* Customer settings may be different

![Figure 10. Soldering Process - Nozzle in Down Position](image)

For more information regarding reworking Samtec connectors, please contact Samtec’s Interconnect Processing Group at ipg@samtec.com.

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

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