Reworking Q Strip® and Q2™ Vertical Connectors

This document describes the recommended procedure for reworking (connector removal, site cleaning, and connector replacement) Samtec's Q Strip® and Q2™ Vertical connectors using hot air rework equipment.

Equipment Used:
Air-Vac DRS27 BGA/SMT rework machine
Air-Vac NT380LZ2620S hot air rework nozzle

Other Materials:
QSE-060-01-L-D-A connector
Alpha OM-338 Pb-free, no-clean solder paste
Kester TSF-6522 no-clean rework flux
Mini-stencil
PCB thickness .062

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.

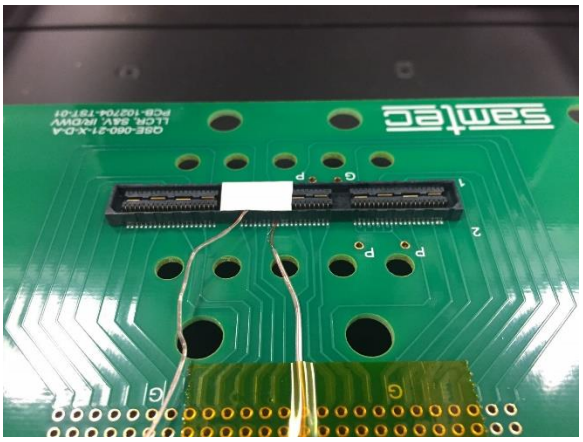

Figure 1. Thermocouple Placement

Process 1 – Connector Removal

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

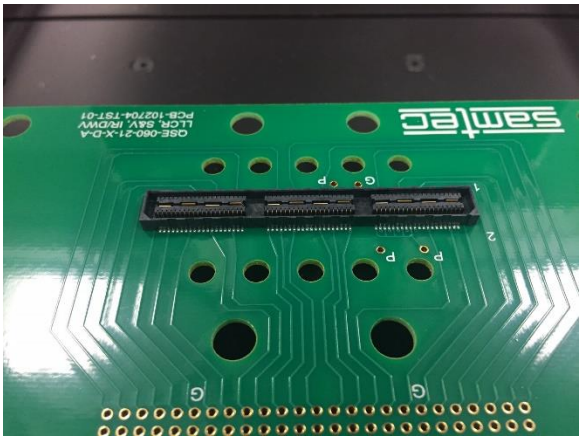

Figure 2. Board Placed on Rework Machine

- Align nozzle over component.
- Apply tacky flux to solder joints along each side of the connector.

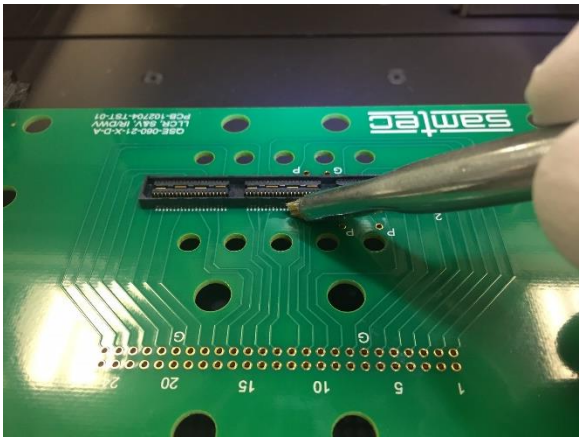

Figure 3. Flux Application

- Run connector removal heating program.

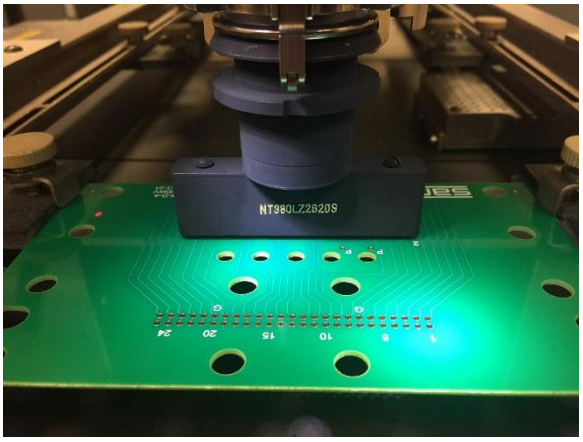

Figure 4. De-soldering Process - Nozzle in Down Position

Samtec Removal Program Settings*

Pre-heat board to 140°C
- Bottom heater – 325°C

Pre-soak
- Z-axis hot gas heater – 200°C, 85% flow
- Bottom heater – 275°C for 30 seconds

Soak
- Z-axis hot gas heater – 210°C, 85% flow
- Bottom heater – 275°C for 45 seconds

Ramp
- Z-axis hot gas heater – 240°C, 85% flow
- Bottom heater – 275°C for 20 seconds

Reflow
- Z-axis hot gas heater – 255°C, 85% flow
- Bottom heater – 275°C for 50 seconds

* Customer settings may be different

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

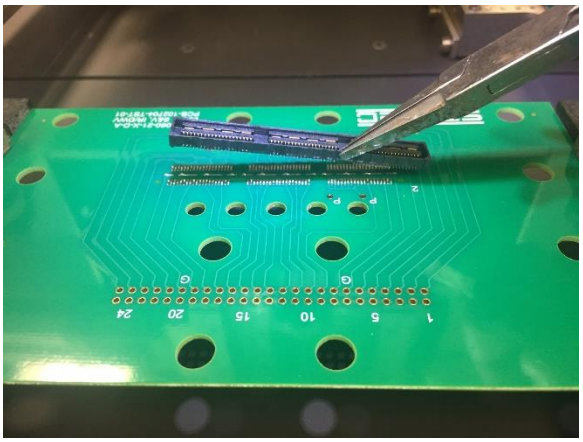

Figure 5. Connector Removal

Process 2 – Site Cleaning

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

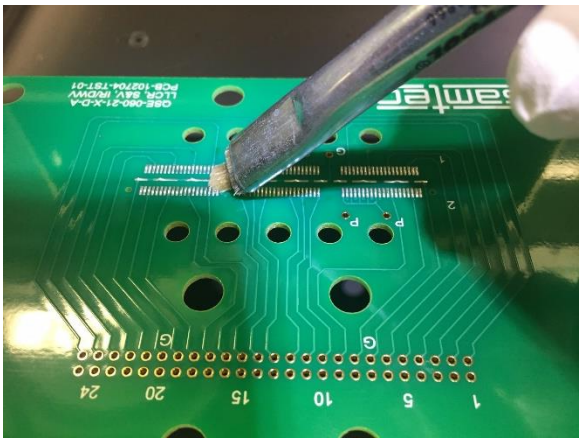

Figure 6. Flux Application

- 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 120°C
- Bottom heater – 300°C

Site Clean
- Z-axis hot gas heater – 425°C, 55% flow
- Bottom heater – 270°C

* Customer settings may be different

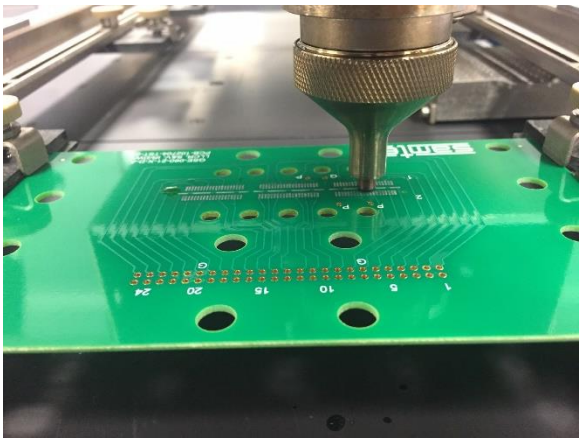

Figure 7. Site-Cleaning

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.

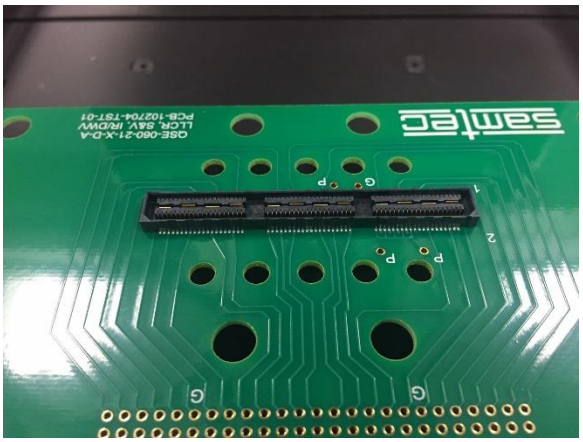

Figure 9. Populated PCB

- 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 – 200°C, 85% flow
- Bottom heater – 275°C for 30 seconds

Soak
- Z-axis hot gas heater – 210°C, 85% flow
- Bottom heater – 275°C for 45 seconds

Ramp
- Z-axis hot gas heater – 240°C, 85% flow
- Bottom heater – 275°C for 20 seconds

Reflow
- Z-axis hot gas heater – 255°C, 85% flow
- Bottom heater – 275°C for 50 seconds

* Customer settings may be different

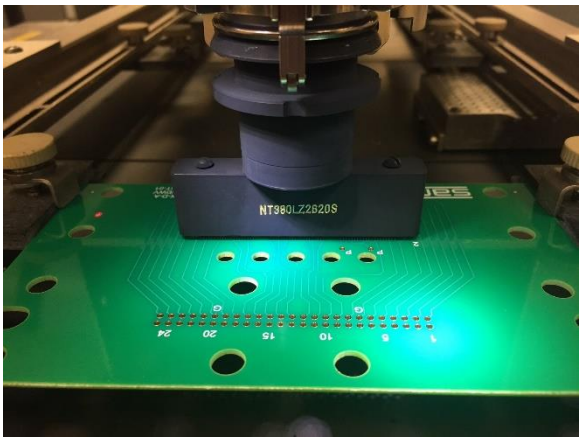

Figure 10. Soldering Process - Nozzle in Down Position

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

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

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Telephone: 203-888-9900