

Reworking Edge Mount Connectors

This document describes the recommended procedure for reworking (connector removal, site cleaning, and connector replacement) Samtec's Edge Mount 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.

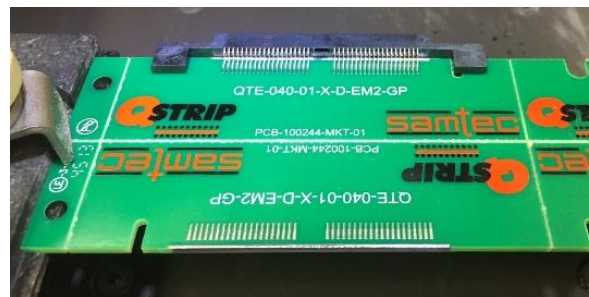


Figure 2. Board Placed on Rework Machine

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.

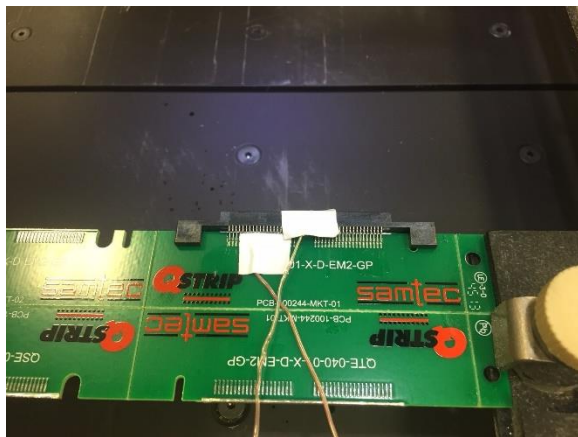


Figure 1. Thermocouple Placement

- Align nozzle over component.
- Apply tacky flux to all accessible solder joints along the top and bottom side of the PCB.



Figure 3. Flux Application

- Run connector removal heating program.
- Once the nozzle lowers, adjust the Y axis location so that the nozzle straddles the edge mount connector.



Figure 4. Example of Nozzle Straddling the Connector

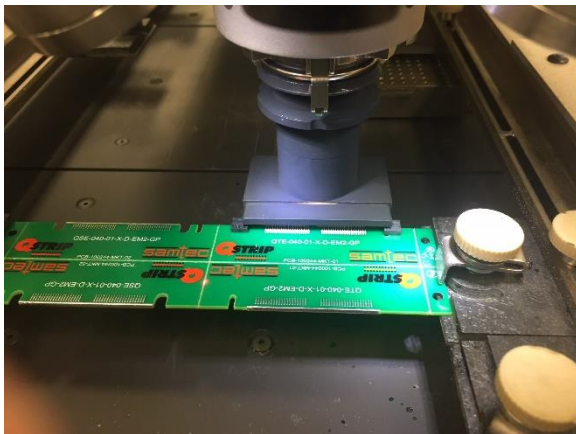


Figure 5. De-soldering Process - Nozzle in Down Position

Samtec Removal Program Settings*

Pre-heat board to 140°C

- Bottom heater – 325°C

Pre-soak

- Z-axis hot gas heater – 210°C, 85% flow
- Bottom heater – 275°C for 30 seconds

Soak

- Z-axis hot gas heater – 220°C, 85% flow
- Bottom heater – 275°C for 45 seconds

Ramp

- Z-axis hot gas heater – 250°C, 85% flow
- Bottom heater – 275°C for 30 seconds

Reflow

- Z-axis hot gas heater – 265°C, 85% flow
- Bottom heater – 275°C for 55 seconds

* Customer settings may be different

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

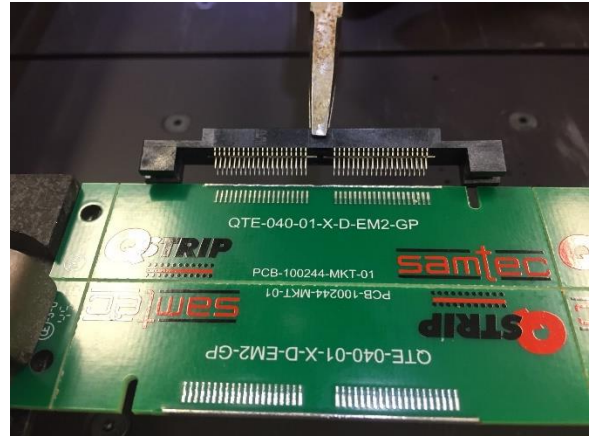


Figure 6. Connector Removal

Process 2 – Site Cleaning

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



Figure 7. 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.)
- Repeat site-cleaning program for PCB side 2.
- If a site-cleaning feature is not available, a manual site-cleaning process is required. A manual process may be required for the edge mounted ground plane, if present.

Samtec Site Clean Program Settings*

Pre-heat board to 140°C

- Bottom heater – 325°C

Site Clean

- Z-axis hot gas heater – 460°C, 80% flow
- Bottom heater – 275°C

* Customer settings may be different



Figure 8. Site-Cleaning

Process 3 – Connector Replacement

- Apply solder paste to the solder pads, on both sides of the PCB, using the Samtec recommended stencil aperture design and a stencil, mini-stencil or solder jet printer.

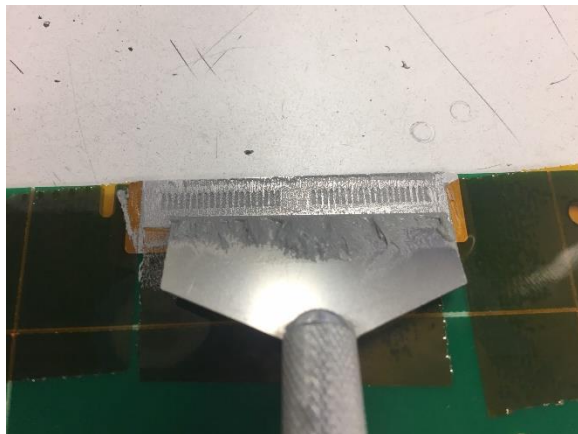


Figure 9. Solder Paste Application (Mini-Stencil)

- For connectors with an edge mounted ground plane, apply solder paste to the solder pad on the edge of PCB using a solder gun, syringe or other direct application method.

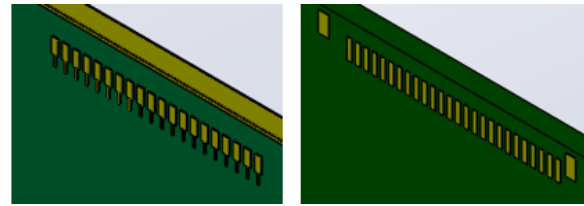


Figure 10. For connectors **with** an edge mounted ground plane (Left); For connectors **without** an edge mounted ground plane (Right)

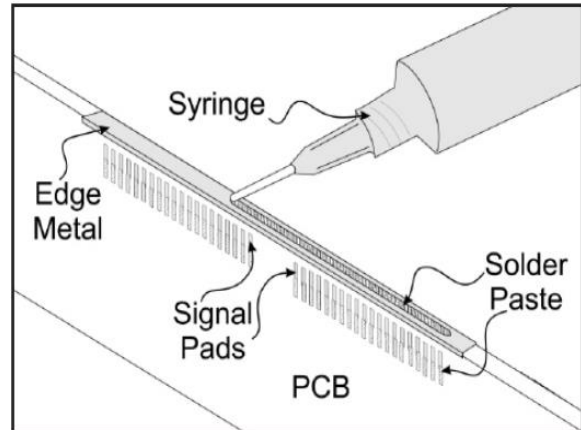


Figure 11. Solder Paste Application PCB Edge

- Place printed PCB on rework machine and populate component.
- It is imperative that the connector be fully seated to ensure contact between the connector's edge mounted ground plane and the solder pad on the edge of the PCB.



Figure 12. 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 – 210°C, 30% flow
- Bottom heater – 275°C for 30 seconds

Soak

- Z-axis hot gas heater – 220°C, 30% flow
- Bottom heater – 275°C for 45 seconds

Ramp

- Z-axis hot gas heater – 250°C, 30% flow
- Bottom heater – 275°C for 30 seconds

Reflow

- Z-axis hot gas heater – 265°C, 30% flow
- Bottom heater – 275°C for 55 seconds

* Customer settings may be different

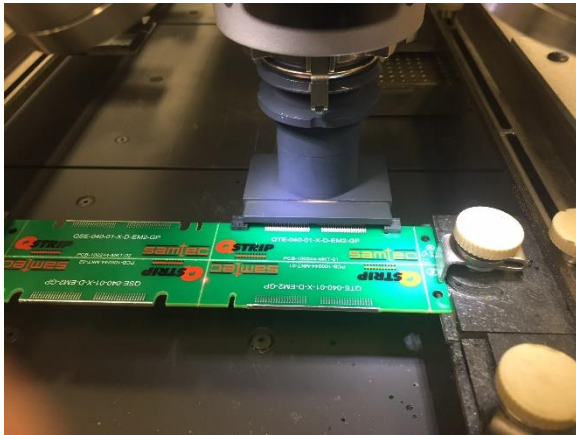


Figure 13. Soldering Process - Nozzle in Down Position

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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