



PCMCIA Card Kit
ROCARD™
Rugged Original Card

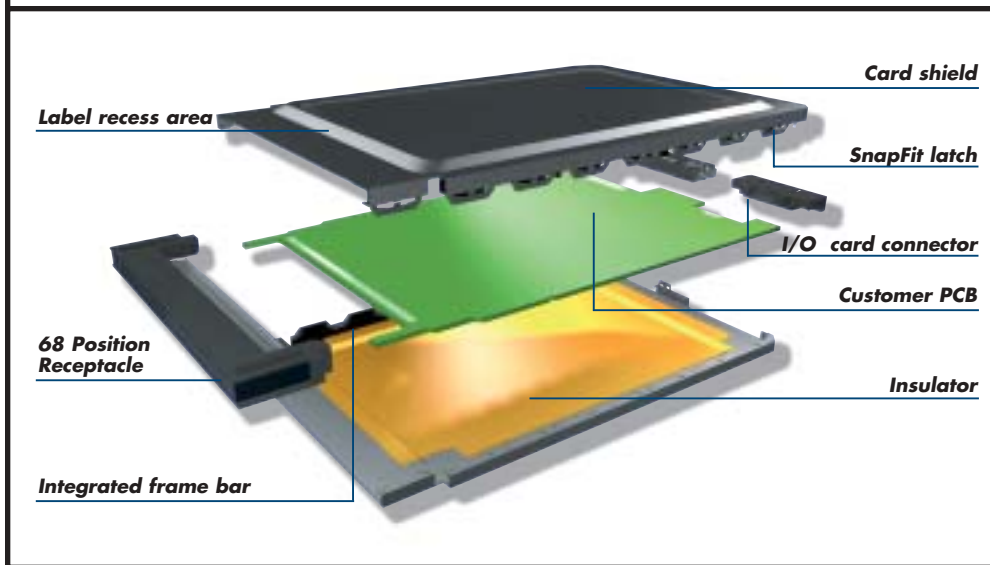
Application Note



Overview

This note covers the recommended application of the PCMCIA Card kit ROCARD™ System and is intended to provide general guidance for process development. It is impossible to define one process that will work under all possible sets of conditions and equipment variations. Therefore, connector users will need to develop a process that meets their needs.

Figure A



Product Drawings & Applicable Documents

Product drawings and FCI's product specifications GES-12-091 Card Kit, GES-12-099 4 position I/O, and 110-263 68 position surface mount receptacle are available by calling either Technical Service or the FCI Fax™ drawing response system at 800-237-2374 (717-938-7212 from outside the U.S.). In the event of a conflict between this note and the drawing, the drawing will take precedence. Customers are advised to refer to the latest revision level of FCI product drawings for appropriate details.

General Kit Application Features

The PCMCIA Card Kit consists of two card shields, a 68 position receptacle and optional I/O card connectors of 4 or 15 positions. Each component must be purchased separately (see Figure A).

PCB Design

See product drawing for product-specific information. Recommended proper PCB design affects connector reliability and performance. These recommendations are intended to ensure reliable electrical connections, while maximizing manufacturing yields and aiding in possible rework applications. See technical application specifications TA-717 for all PCB layout options.

- Copper defined solder pad
- Pad plating = Copper with OSP or HASL
- Keep out area on perimeter for rework clearance = .762 mm (0.030 in.)

Soldering Process Recommendations

1) Solder Paste Deposition

- The recommended no clean solder paste is Kester R244L or Alpha LR-735.
- The recommended solder mask opening is .051mm (0.002 in) less than the PCB pad width and length. The recommended stencil thickness is .127mm (0.005 in) thick.
- The type and volume of paste is critical to ensure a strong consistent solder joint.

2) Connector Placement

- All connectors are packaged inside standard pick-and-place trays or standard tape and reels (see Figure B). Automated vacuum pick-and-placement is recommended.

The Card Component Weights:

68 pos receptacle	1.48 grams
68 pos receptacle w/shield	1.97 grams
4 pos I/O card connector	0.35 grams
15 pos I/O card connector	0.70 grams
1 piece metallic shield	7.76 grams

Figure B



3) Recommended solder reflow profile stages. All temperatures are taken on the board at the solder tails (see Figure C).

Zone 1: Initial Preheating Stage (25°-150° C)

- Excess solvent is driven off.
- PCB and Components are gradually heated up.
- Temperature gradient shall be <3°C/sec.

Zone 2: Soak Stage (150°-180° C)

- Flux components start activation and begin to reduce the oxides on component leads and PCB pads.
- PCB components are brought nearer to the temperature at which solder bonding can occur.
- Allows different mass components to reach the same temperature.
- Activated flux keeps metal surfaces from re-oxidizing.

Zone 3: Reflow Stage (183°-230° C)

- Paste is brought to the alloy's melting point.
- Activated flux reduces surface tension at the metal interface so metallurgical bonding occurs.

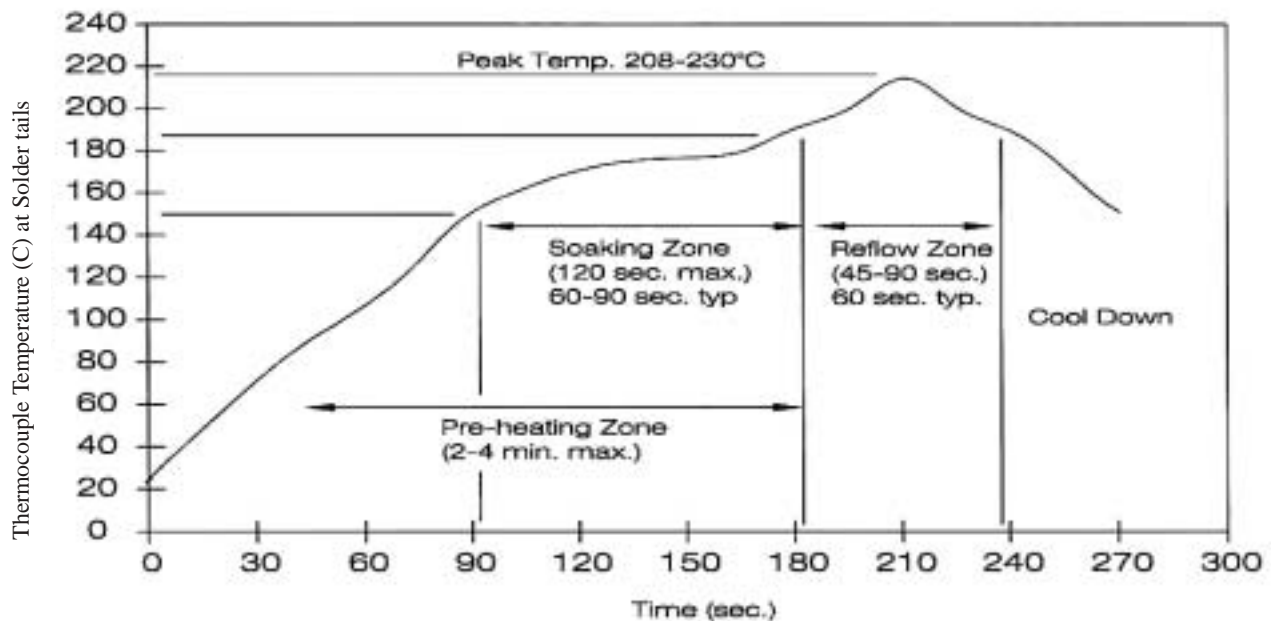
Zone 4: Cool Down Stage (180°-25° C)

- Assembly is cooled evenly so thermal shock to the components or PCB is reduced.

4) Cleaning

- The recommended solder paste is a no clean formula so cleaning is not necessary.
- Process residues are easily be removed using inline automated cleaning equipment with a cleaning solution and ionized water. This equipment and cleaning solution is available from your solder paste supplier.

Figure C



5) Inspection and Testing

- Visually inspect the connector for damage and cleanliness.
- Visually inspect the solder joints to ensure each solder tail is fully reflowed with a fillet on all sides between the PCB pad and solder tail. No bridging of solder between any two PCB pads should occur.
- Electrical testing for opens and shorts can be performed with a customer designed test system. Caution must be taken to avoid damage to the connector during testing.

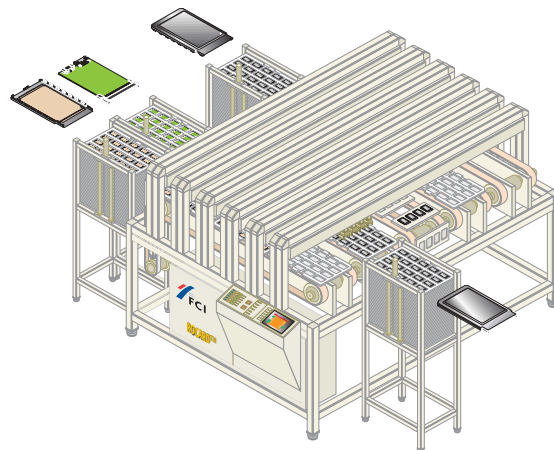
Application Equipment

- Closing the ROCARD card shields is a simple operation. For repair purposes in the field the card shields can be closed manually. A universal bench press part number CKY462A2 assures correct parallel card closure. Card assembly time is 15 seconds (depending on operator dexterity) see Figure D and TA-849.
- For high volume production, an automatic card assembly machine is available on request (see Figure E).

Figure D



Figure E



Rework

- Prevention of defects is preferred to rework. Rework can be avoided through good process controls, such as proper equipment set-up and maintenance, in process inspection, SPC use, and adequate operator training.
- These guidelines are for general rework procedures. Manufacturer's specific instructions shall take precedence where any differences in procedures occur.
- To open an assembled card without damaging the PCB assembly, a shield separation tool part number CKY473A2 is available.
- Remove the damaged connector per the available vendor recommendations or by gradually preheating the board to 94° C.
- Once preheating is completed, use localized top side heating to the connector area to bring the solder to a liquid state. Caution must be taken not to thermally or mechanically damage the board or any surrounding components during all the steps of the rework process.
- Remove the connector once all the solder reaches a liquid state. Caution: a premature attempt to lift the part before the solder liquefies can lift the pads from the board.
- Remove excess solder and clean the area to prepare the site for replacement.
- Apply the recommended solder paste to the solder pads. See soldering process recommendation previously mentioned.
- Position the new connector on the PCB pads. Reflow the solder using the vendor provided temperature profile or by carefully heating the connector tail area until the solder becomes liquid. Follow the guidelines found in soldering process recommendations above.
- Rework cycles must be kept to a minimum to avoid board damage.
- Repeat the instructions for inspection and testing.
- New shields must be used for assembly after PCB repair and testing is complete.

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