


NUMBER GS-20-118	TYPE APPLICATION SPECIFICATION		
TITLE POWER EDGE CARD PRESS-FIT		PAGE 1 of 7	REVISION A
		AUTHORIZED BY Julia Wang	DATE Oct 07, 08
CLASSIFICATION UNRESTRICTED			

1.0 OBJECTIVE

This specification provides information and requirements regarding customer application of PRESS FIT POWER EDGE CARD connector. This specification is intended to provide general guidance for process development. It is recognized that no single process will work under all customer applications and that customers will develop their processes to meet their needs.

2.0 SCOPE

This specification provides information and requirements regarding customer application of PRESS FIT POWER EDGE CARD connectors.


3.0 REFERENCE DOCUMENTS

Any applicable product drawing (10075664-XXX)
Product spec.: GS-12-459.

4.0 GENERAL

This document is meant to be an application guide. If information varies from that in the product drawings and specifications, the drawings take precedence.

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5.0 APPLICATION INFORMATION

5.1 General Product Information

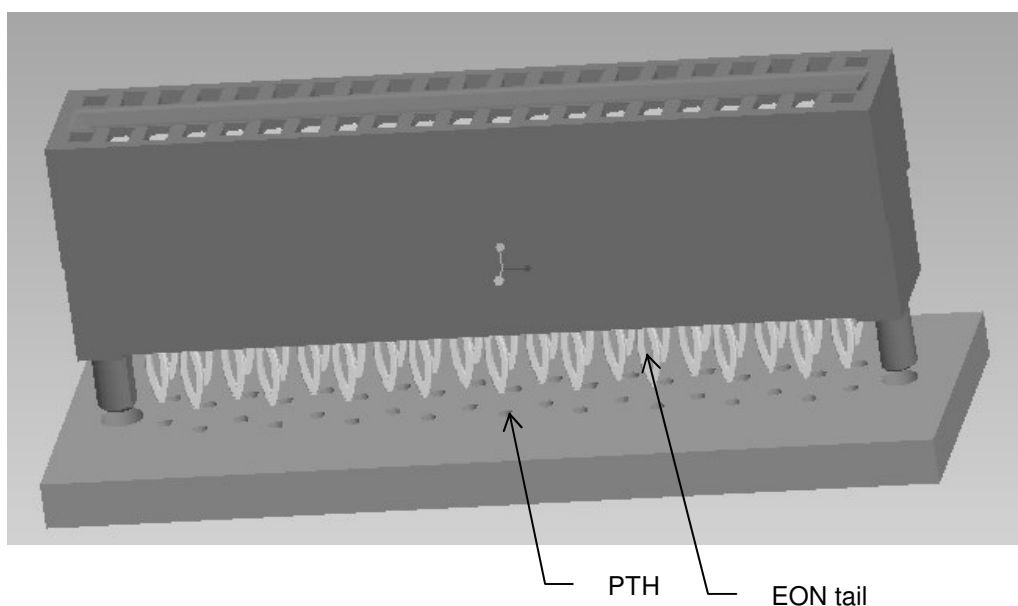


Figure 1: Press-fit Power Edge Card profile


5.1.1 Terminal information

An EON press-fit connection is achieved by mechanically inserting a pin into a plated thru hole (PTH). The electrical connection is maintained by the normal forces generated between the EON section to the PTH walls. There are a number of benefits in the use of press fit connections. First, using a press-fit connection eliminates the need for soldering processes. Second, press-fit technology reduces rework concerns because a damaged connector may be pressed out and replaced with a new one (this process may be performed a maximum of two times in the same PCB).

The EON was designed to meet the requirements for press-fit terminations according to MIL-STD-2166. Figure 2,3 illustrates a typical cross-section of EON pin after insertion into a PCB. This terminal may be used in a tin-lead, lead free PTH or in a copper OSP PTH. The OSP boards have special protective coatings to reduce oxidation. The specification requires the following:

- a. EON retention/insertion force should be checked on an 3.18 ± 0.25 mm min thick segment of FR-4 glass/epoxy circuit board segment with a finished hole size of diameter 1.02 ± 0.07 mm drilled through. At a rate of 25 ± 6 mm per minute:

Insertion force no more than 4.54 Kgf (10Lbs) per pin.
Retention force no less than 0.91 Kgf (2 Lbs) per pin.

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- b. PCB Hole Deformation Radius-Cross-section parallel to board surface(see figure 2). Photograph and measure the hole deformation (deformation on board material) radius at a point 0.010" from the surface, and at the center of the EON pin section. Include 10 holes. The average (of 10 holes) hole deformation radius shall be no greater than 0.0381mm (0.0015 inch) when measured from the drilled hole. The absolute maximum deformation radius shall not exceed 0.0508mm (0.002 inch). Reference MIL-STD-2166.
- c. PCB Hole Wall Damage-Cross-section perpendicular to the board surface(see figure 3), and through the EON section wear track. Photograph and measure the copper thickness remaining between the EON pin and the printed wiring board laminate. Include 10 holes. The minimum average (of 10 holes) copper thickness remaining between the EON pin and the printed wiring board laminate shall not be less than 0.00762mm(0.0003 inch). In addition there shall be no copper cracks, separations between conductive interfaces, or laminate-to-copper separations. Reference MIL-STD-2166.

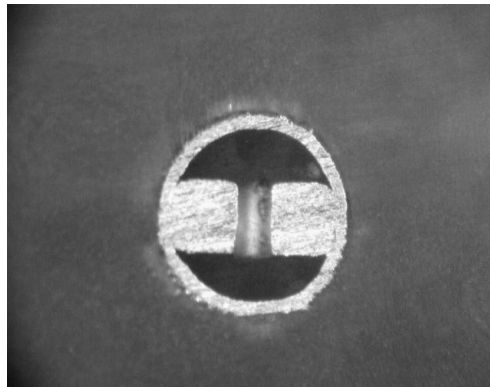


Figure 2: PCB Hole Deformation Radius-Cross-section parallel to board surface.

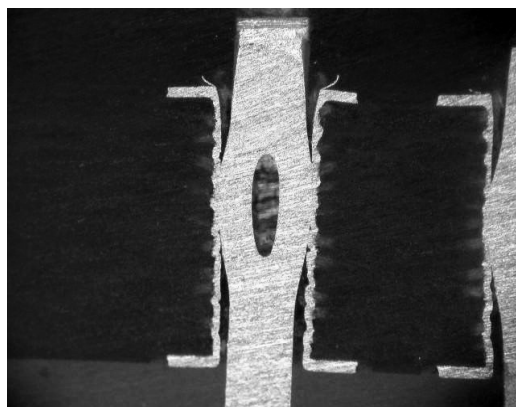



Figure 3: PCB Hole Damage-Cross-section perpendicular to the board surface.

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5.2 PCB Requirements

A press fit connection is a means of terminating connectors to printed circuit boards without going through a soldering operation. PCB layout is per customer drawing's PCB recommended dimension. The features that are important to define on the printed circuit board when using press fit technology are:

- Drilled hole diameter
- Plated hole diameter
- Plating type in thru hole
- Printed circuit board thickness
- Land/pad size

Collectively, these features influence the reliability of the termination as well as the force required to apply the connector to the printed circuit board. The recommended values are shown in Table 1, and a sketch showing these features is shown in Figure 4.

Table 1: Recommended feature sizes for PF POWER EDGE CARD PCB's.

Feature	Dimension
	mm
Drill Hole diameter	1.151+/-0.025
Plated hole diameter	1.02/-0.07
copper plating on hole wall	0.051+/-0.025
Tin/Lead or Tin plating (optional)	0.007
Land/Pad size	1.727+/-0.064

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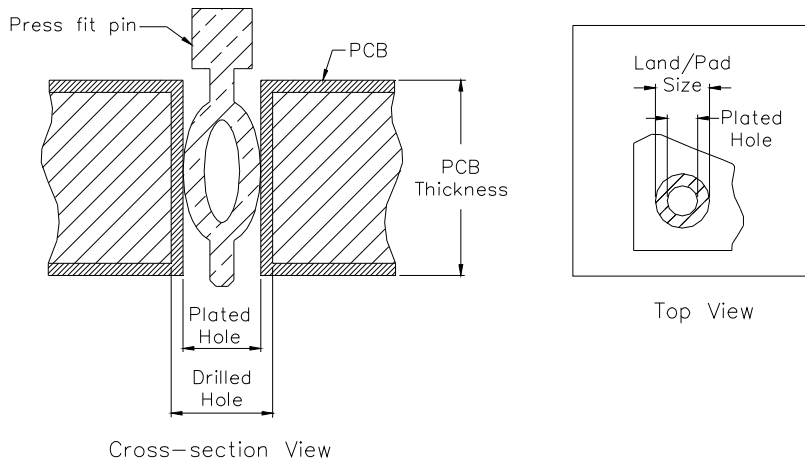



Figure 4: Critical features of PCB design for PF POWER EDGE CARD connector.

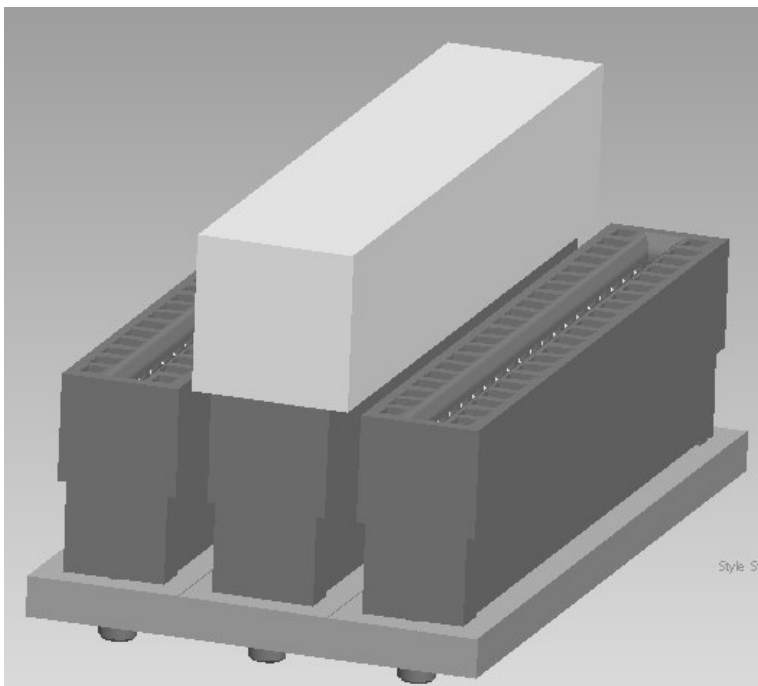
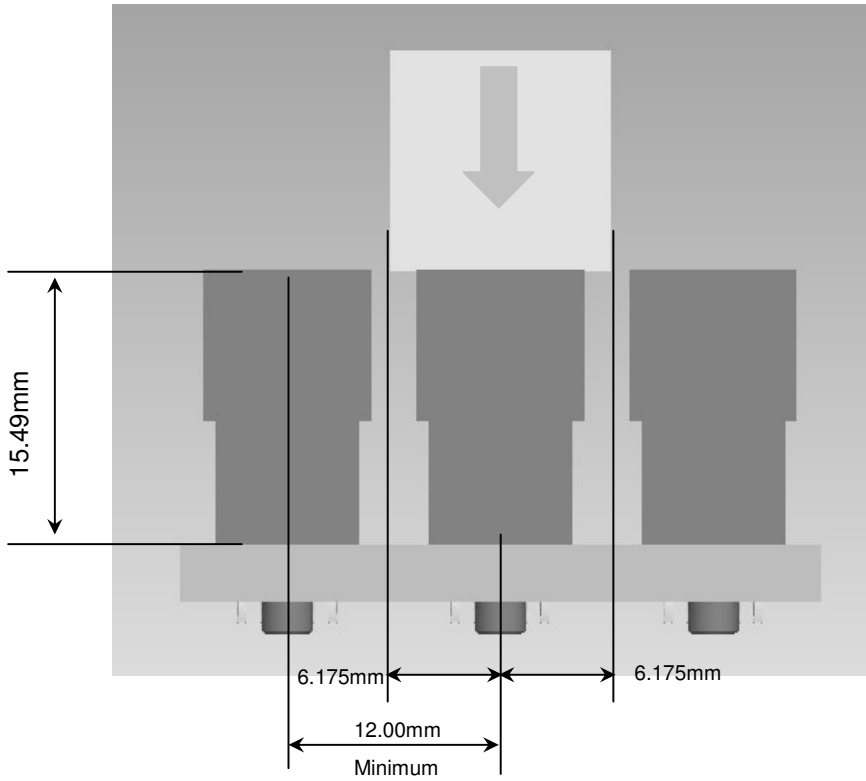
5.3 Customer Application Machines (CAMS)

5.3.1 Insertion Tooling

PRESS FIT POWER EDGE CARD connector can be installed with any standard press as long as it capable of applying force as specified earlier in this document. A flat-rock press can be used as a top tool for 31(x2), 19(x2),. Make sure the backup fixture does not interfere with pins protruding through the PCB

Flowing are the recommended insertion tooling design:

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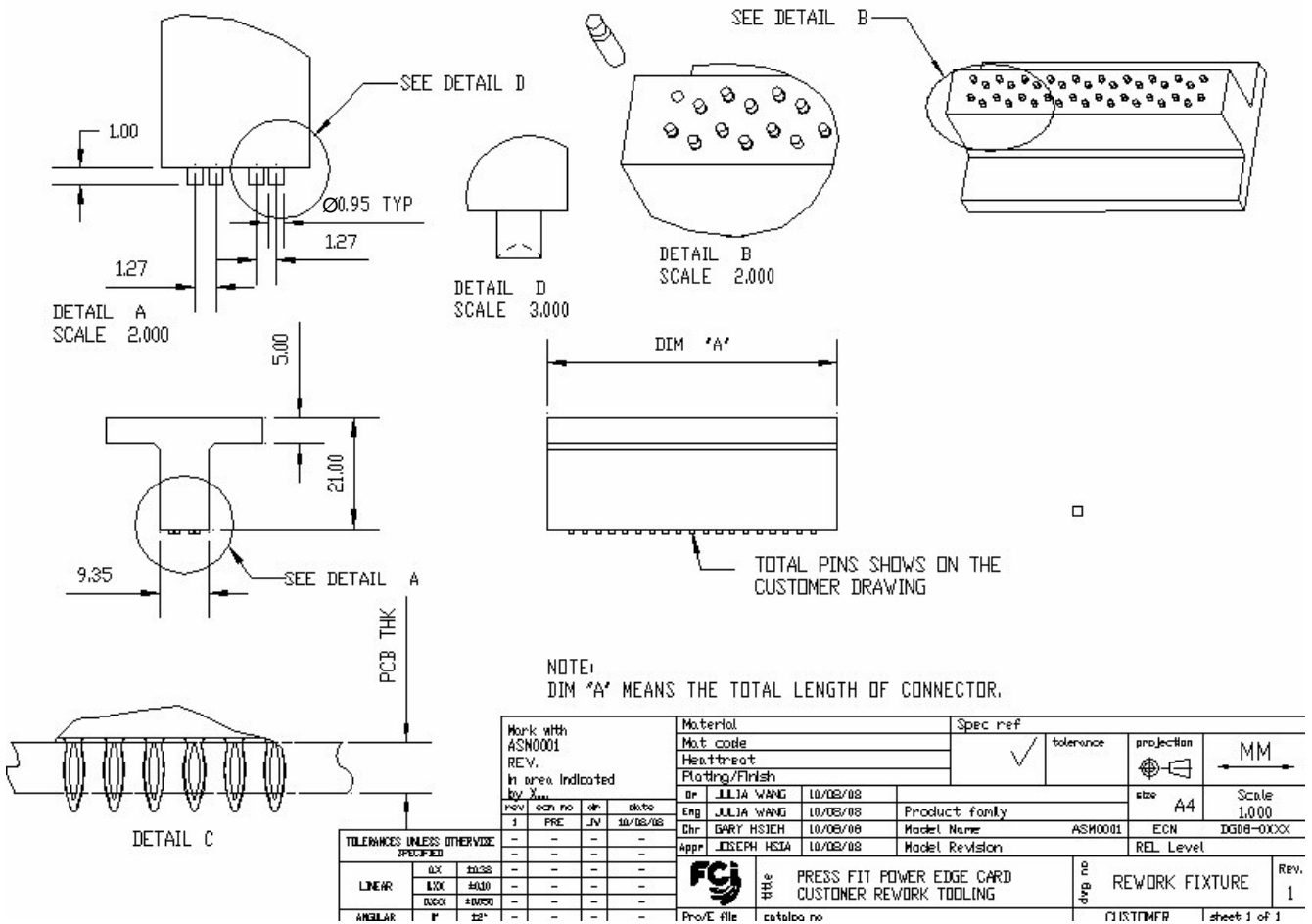


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5.3.2 REWORK TOOLING

Press fit POWER EDGE CARD connector can be reworked when the defected connector is pressed out and replaced with a new one. The recommended rework tool is designed as the figure 5. If want to get the detailed design, please contact to FCI engineers.

Figure 5 --- Recommended connector remove fixture



Revision Record

REVISION	PAGE	DESCRIPTION	ECN	DATE
A	ALL	NEW RELEASED	DG08-0280	10/07/08