



**NOTE**

All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of  $\pm 0.13$  and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

**1. INTRODUCTION**

This specification covers the requirements for application of CFP Transceiver connector assemblies to interconnect fiber optic transceiver modules to host printed circuit (pc) boards used in the communications industry. The connectors are compatible with CFP receptacle applications. The connector assembly is a housing with straddle mount surface mount contacts and is available in 74 positions with contact spacing on 0.8 mm centerlines. Bosses on the top and bottom provide a positional datum for the connector in the module shell. The connector is supplied in a clear PVC packaging tube for manual placement.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

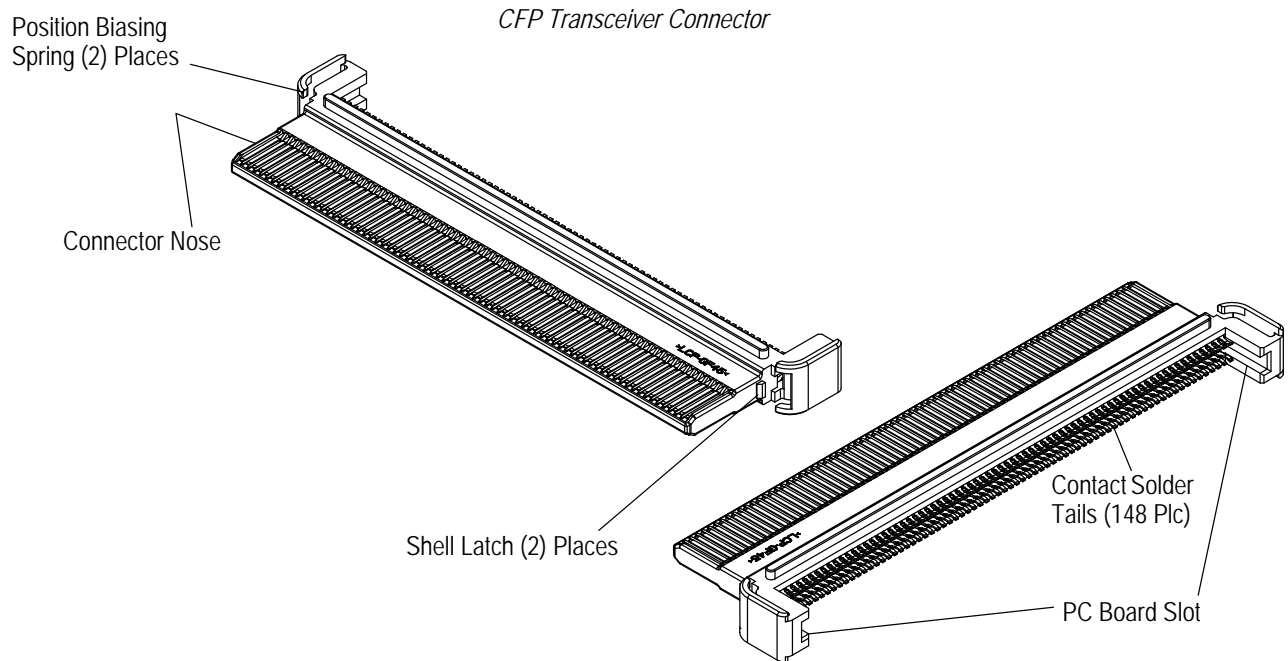


Figure 1

**2. REFERENCE MATERIAL**

**2.1. Revision Summary**

Revisions to this application specification include:

- Updated document to corporate requirements
- Added new text to Paragraph 2.2

**2.2. Customer Assistance**

Reference Product Base Part Number 2057629 and Product Code L622 are representative of the CFP Transceiver Connector Assembly. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local TE Representative, by visiting our website at [www.te.com](http://www.te.com), or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of page 1.

## 2.3. Drawings

Customer Drawings are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied by TE, call the Product Information number at the bottom of page 1.

## 2.4. Manuals

Manual 402-40 is available upon request and can be used as a guide to soldering. This manual provides information on various flux types and characteristics with the commercial designation and flux removal procedures. A checklist is included in the manual as a guide for information on soldering problems.

## 2.5. Specifications

Product Specification 108-2399 provides product performance and test information while (Electronic Industries Alliance) EIA-364-52 provides solderability requirements and evaluation methods, and Workmanship Specification 101-21 provides solder fillet requirements for the connector.

## 2.6. Instructional Material

Instruction Sheets (408-Series) provide assembly instructions. Documents available which pertain to this product are:

<u>Document Number</u>	<u>Document Title</u>
408-10301	CFP Transceiver Connector Assembly

## 3. REQUIREMENTS

### 3.1. Safety

Do not stack component packages so high that the shipping containers buckle or deform.

### 3.2. Storage

#### A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the connector material.

#### B. Shelf Life

The connectors should remain in the shipping containers until ready for use to prevent deformation to the contacts. These products should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

#### C. Chemical Exposure

Do not store connectors near any chemicals listed below, as they may cause stress corrosion cracking in the contacts or compliant pins.

Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur	Nitrites	Tartrates

### 3.3. Limitations

The connectors are designed to operate in a temperature range of -55° to 105°C [-67° to 221°F].

### 3.4. Material

The connector housing is made of liquid crystal polymer (LCP) thermoplastic, UL 94-V-0. The contacts are made from copper alloy plated with gold over nickel.

### 3.5. PC Board

#### A. Material and Thickness

The pc board material shall be glass epoxy (FR-4 or G-10). The pc board thickness shall be a minimum of 1.44 mm for mounting the connector to the pc board.

**i** **NOTE**  
 Contact the Product Information Center at the number listed at the bottom of page 1 for suitability of other board materials.

#### B. Tolerance

Maximum allowable bow of the pc board shall be 0.08 mm over the length of the cage assembly. The coplanarity of the pc board circuit pads must be 0.03 mm.

#### C. Circuit Pads

The circuit pads must be solderable in accordance with EIA-364-52.

#### D. PC Board Layout

All circuit pads must be precisely located on the pc board to ensure proper alignment and optimum performance of the connector. Recommended circuit pad pattern, dimensions, and tolerances are provided in Figure 2.

Recommended PC Board Layout

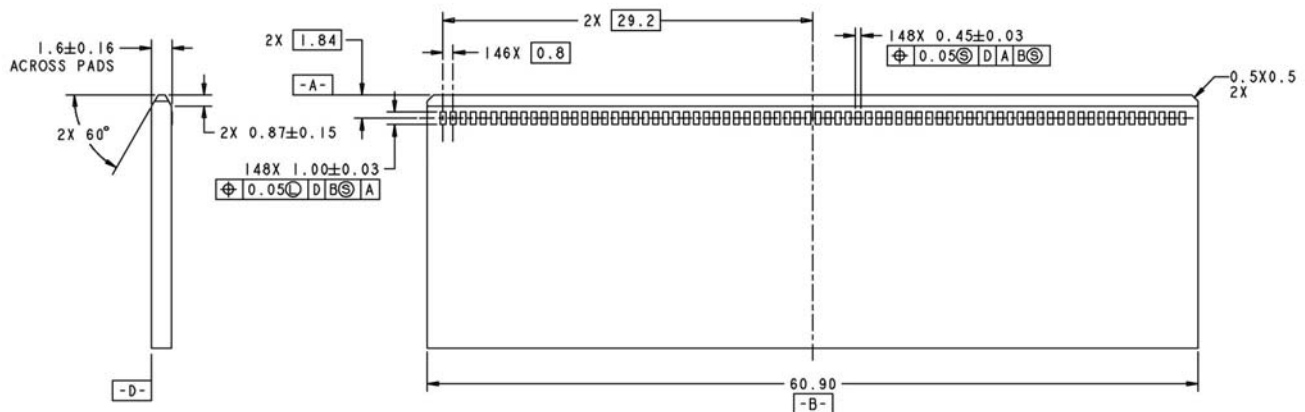


Figure 2

### 3.6. Solder Paste Characteristics

- Alloy type for tin-lead solder shall be 63 Sn/37 Pb, 60 Sn/40 Pb, or 62 Sn/36 Pb/2 Ag
- Alloy type for lead-free solder shall be compatible with pure tin or gold; for example, SAC305 (96.5 Sn/3 Ag/0.5 Cu) or SAC405 (95.5 Sn/4 Ag/0.5 Cu)
- Flux incorporated in the paste shall be rosin, mildly active (RMA) type
- Paste will be at least 80% solids by volume
- Mesh designation -200 to +325 (74 to 44 square micron openings, respectively)
- Minimum viscosity of screen print shall be 5x10% cp (centipoise)
- Minimum viscosity of stencil print shall be 7.5x10% cp (centipoise)

### 3.7. Solder Volume

Minimum solder volume (V) (before curing) for each circuit pad is calculated by multiplying the pad length (L) by the pad width (W) by the stencil thickness (T): 1.0 mm (L) x 0.4 mm (W) x 0.15 mm (T) = 0.06 mm<sup>3</sup> (V). Solder volume for each connector must be 0.06 mm<sup>3</sup> per contact solder tine.

**i** **NOTE**  
 Solder volume may vary depending on solder paste composition.

### 3.8. Solder Paste Thickness

Solder paste thickness for the connector contact solder tines must be at least 0.15 mm.

### 3.9. Stencil

The stencil aperture is determined by the circuit pad size and stencil thickness. It may be any shape as long as it prevents solder bridging from one pad to another. Generally, a thinner stencil will need a larger aperture to maintain the given volume of solder paste. The stencil should be 0.15 mm thick.

### 3.10. Solder Mask

When soldering, a solder mask is recommended between all circuit pads to minimize solder bridging between pads. The mask must not exceed the height of the pad. If a trace is run between adjacent pads on the pc board, a solder mask must be applied over the trace to prevent bridging and wicking of solder away from the connector contact solder tines. The mask most suitable is Liquid Photo Imageable.



**CAUTION**

All traces must be covered by solder mask in the solder deposit area. Exposed traces could cause bridging and create a short, or wick solder away from the solder tines, producing a weak solder joint.

### 3.11. PC Board Placement



**CAUTION**

Connectors should be handled only by the housing to avoid deformation, contamination, or damage to the contact solder tines.

#### A. Registration

The connector contact solder tines must be aligned with matching circuit pads before soldering the connector onto the host pc board. This should be assured by the fit of the pc board within the board slot on the rear of the connector assembly.

#### B. Position

Optimally, the contact solder tines should be centered on the host pc board circuit pads. However, a slight misalignment is permissible as shown in Figure 3.

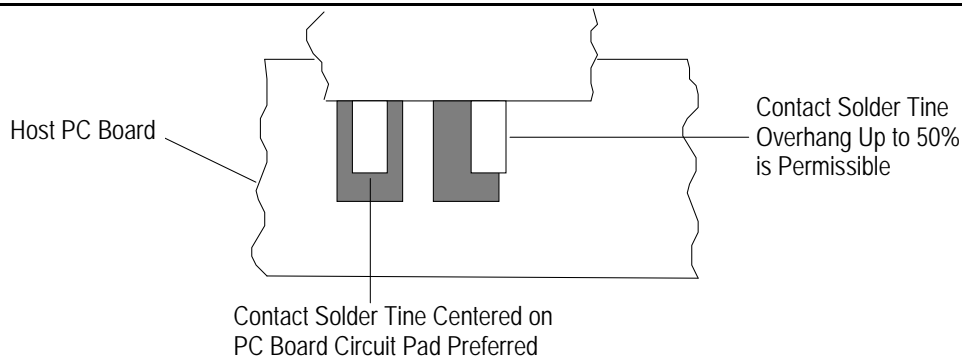


Figure 3

#### C. Insertion

The pc board and slot are designed to form a tight fit with only a maximum 0.05 mm interference, the force required to seat the connector is minimal. Apply only that force necessary to insert the pc board until it reaches the positive stop. See Figure 4.

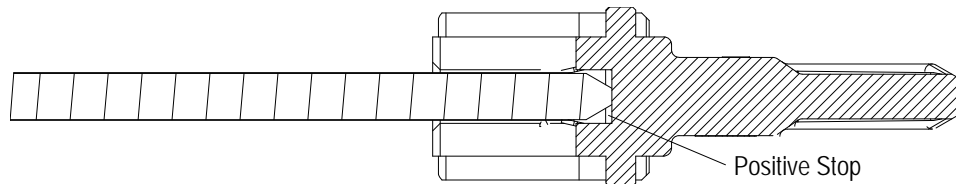


Figure 4

### 3.12. Soldering

#### A. Process



**NOTE**

For single sided applications, only one reflow pass is required.

The connector must be soldered using non-focused infrared (IR) reflow or equivalent soldering technique. When mounting to both sides of the host pc board, two reflow processes will be needed. The surface tension of the solder when it is in the liquidus state will hold the connector on the pc board. Reflow temperature and time may vary depending on the size of the host pc board and placement of other components. The reflow temperature and approximate time to which the connector can be subjected is specified in Figure 5.

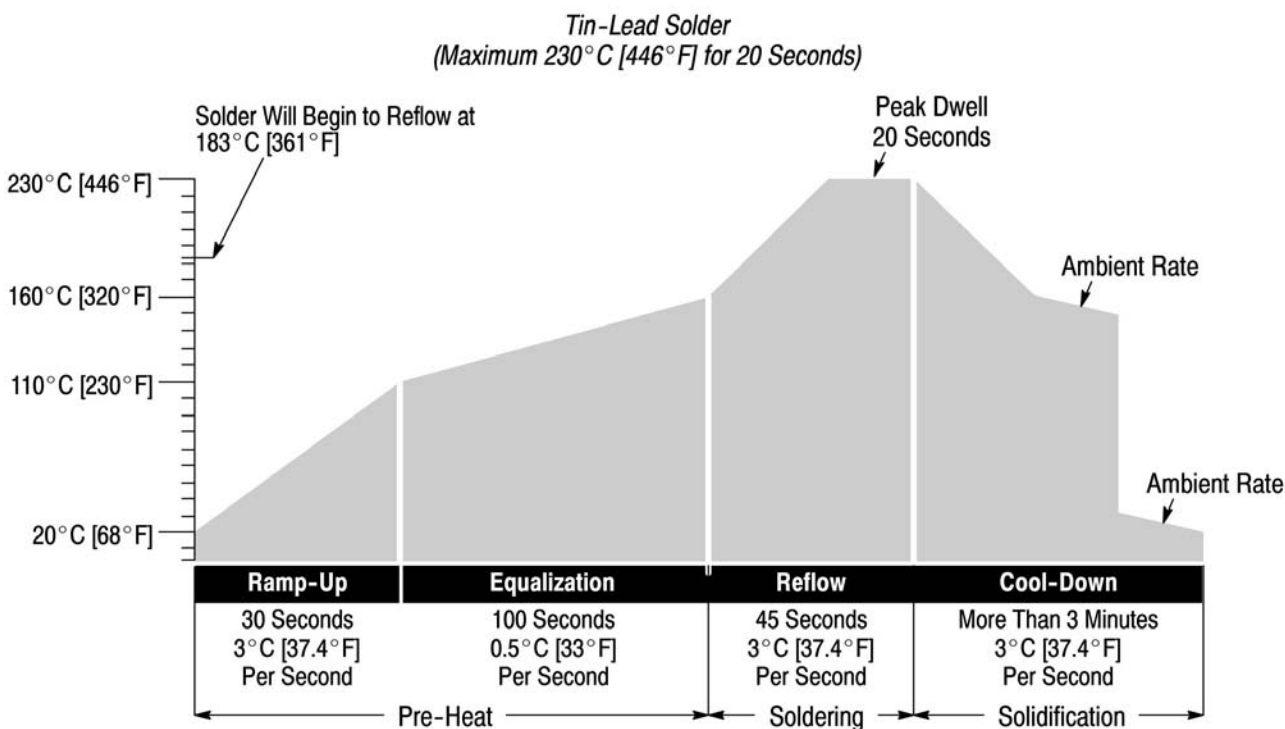
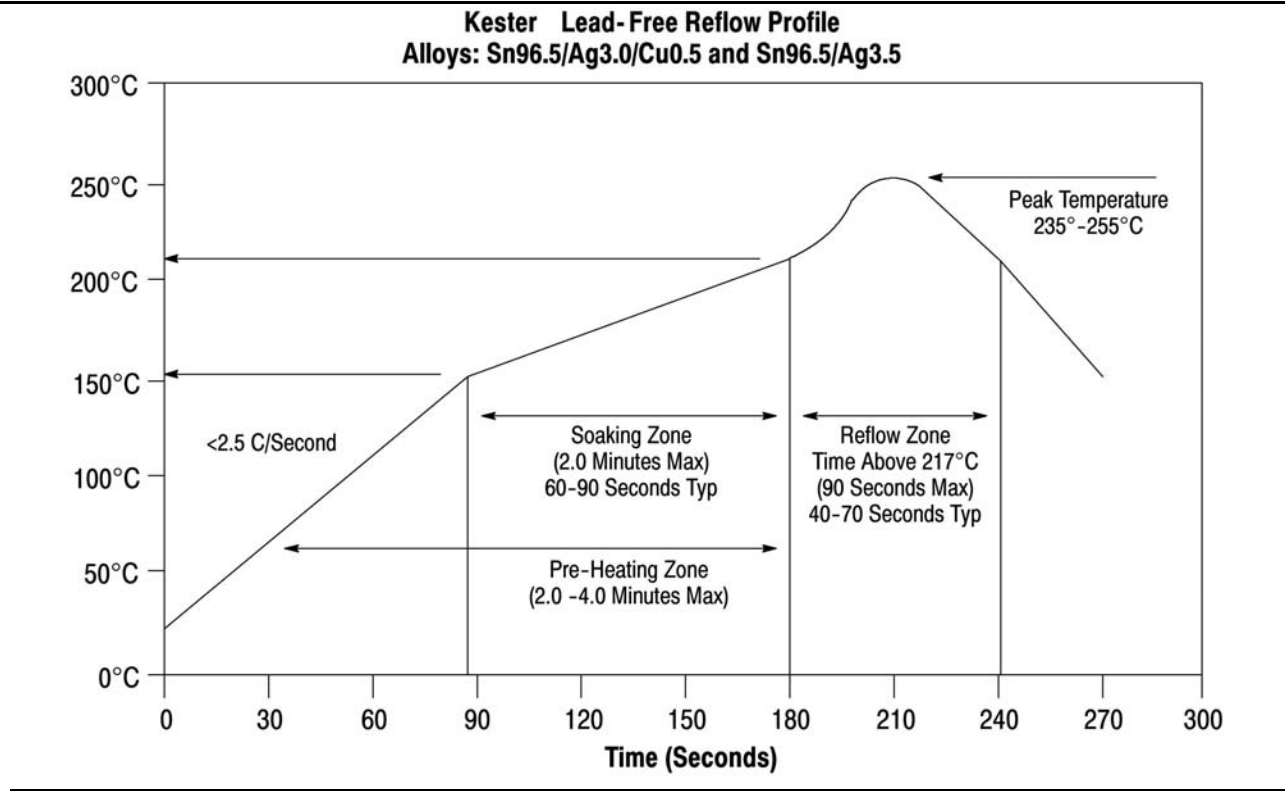


Figure 5

Kester is a trademark.



**CAUTION**

*Excessive temperature may cause connector housing degradation or plating deterioration. It is recommended that component temperatures not exceed 230°C [446 °F] when using tin-lead solder and 260°C [500°F] when using lead-free solder.*

**B. Cleaning**

After soldering, removal of fluxes, residues, and activators is necessary. Consult with the supplier of the solder and flux for recommended cleaning solvents. Cleaners must be free of dissolved flux and other contaminants. It is recommended cleaning the host pc board on its edge. If using aqueous cleaner, standard equipment such as a soak-tank or an automatic in-line machine should be used. Common cleaning solvents that will not affect the connector for the time and temperature specified are listed in Figure 6.



**DANGER**

*Consideration must be given to toxicity and other safety requirements recommended by the solvent manufacturer. Refer to the manufacturer's Material Safety Data Sheet (MSDS) for characteristics and handling of cleaners. Trichloroethylene and Methylene Chloride is not recommended because of harmful occupational and environmental effects. Both are carcinogenic (cancer-causing).*



**NOTE**

*If you have a particular solvent that is not listed, contact Product Information at the number on the bottom of page 1 for recommendations.*

**C. Drying**

When drying cleaned assemblies and host pc boards, make certain that temperatures do not exceed 85°C [185°F]. Excessive temperatures may cause connector housing degradation.

CLEANER		TIME (Minutes)	TEMPERATURE (Maximum)
NAME	TYPE		
ALPHA 2110	Aqueous	1	132°C [270°F]
BIOACT EC-7	Solvent	5	100°C [212°F]
Butyl CARBITOL	Solvent	1	Ambient Room
Isopropyl Alcohol	Solvent	5	100°C [212°F]
KESTER 5778	Aqueous		
KESTER 5779	Aqueous		
LONCOTERGE 520	Aqueous		
LONCOTERGE 530	Aqueous		
Terpene	Solvent		

Figure 6

**3.13. Checking Installed Connector**

All solder joints must conform to those specified in Workmanship Specification 101-21 and all other requirements specified in this document. The installed connector must have solder fillets evenly formed around each contact solder tine. Solder must have 95% minimum coverage over the circuit pad.

**3.14. Removal and Repair**

Standard de-soldering methods must be used to remove the connector from the host pc board. The connector **MUST NOT** be re-used after removal. The connector is not repairable. Any defective or damaged products **MUST NOT** be used.

**4. QUALIFICATION**

CFP Transceiver Connector Assembly is Recognized by Underwriters Laboratories Inc. (UL) in File E28476.

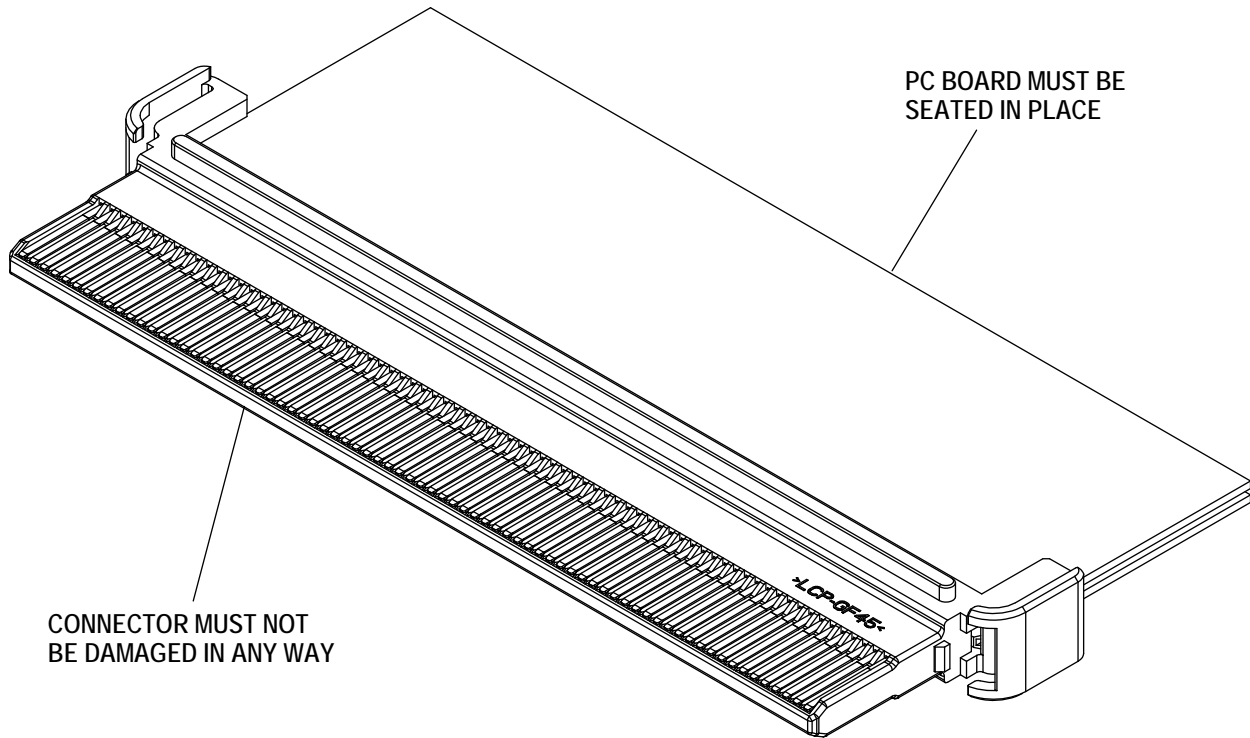
**5. TOOLING**

No tooling is required for manual placement of the pc board into the CFP Transceiver Connector.

ALPHA, BIOACT, CARBITOL, LONCOTERGE, and KESTER are trademarks of their respective owners.

## 6. VISUAL AID

The illustration below shows a typical application of this product. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.



**FIGURE 7. VISUAL AID**