NOTE

All Numerical values are in metric units. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ±0.13 and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of PCIe gen5 card edge connector. The connectors are available in 36, 64, 98 and 164 positions (see picture1) with contact spacing on 1.0 mm centerlines (1.0mm pitch). The connectors are designed per PCIe CEM5.0 requirements.

The connector consists of a polarized housing containing pre–installed contacts. Each contact is a solid one–piece construction with SMT soldering tail. The connector features a card slot to support and hold the module in the mated position, and the card slot contains a molded–in key and function key to ensure polarization with the mating daughterboard (which must be slotted to accept the keys). The connector features hold downs or tabs to provide retention for the connector during soldering or alignment posts to aid in pc board alignment during connector mounting. The connector also features standoffs and molded–in circuit identification. The connectors are designed for manual placement on the pc board or a mylar sticked on the top surface to aid for auto picking and dropping on the pc board.

When corresponding with TE Electronics 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.

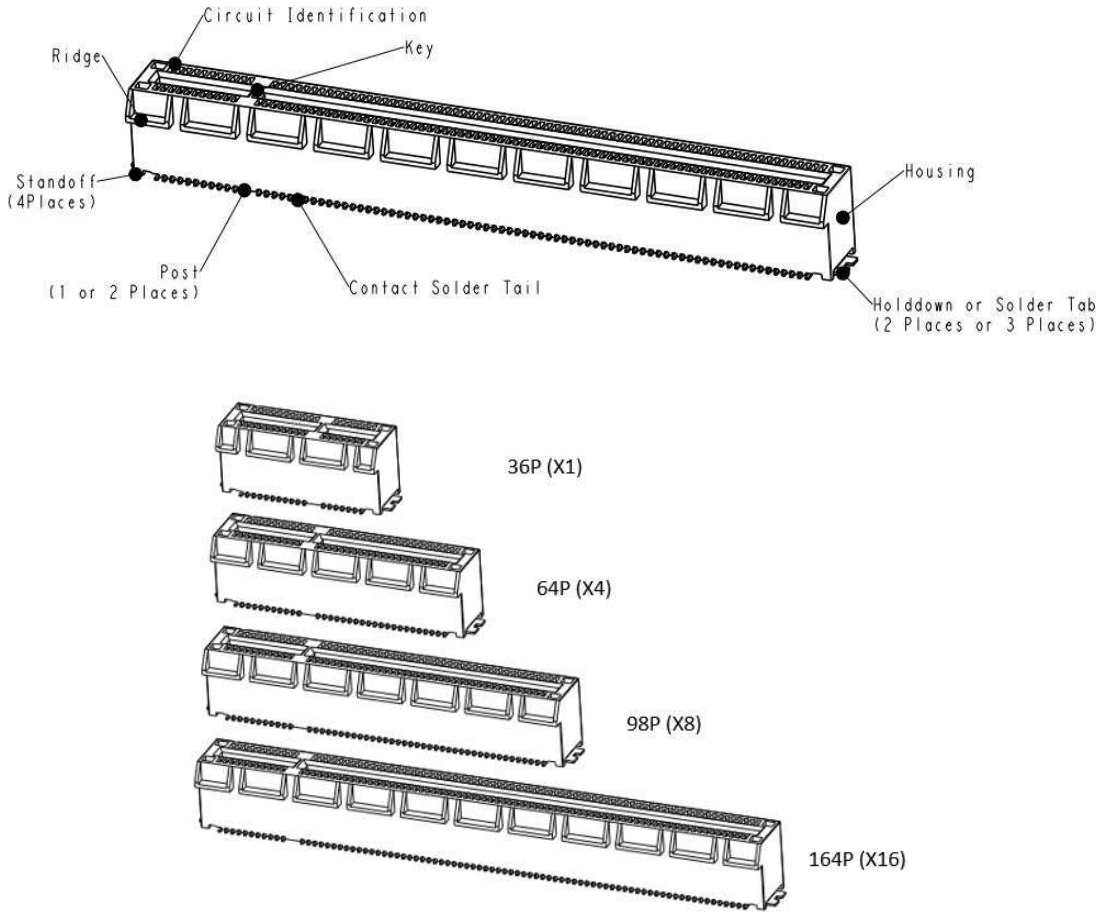


Figure 1

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2. REFERENCE MATERIAL

2.1 Revision Summary

- Updated document to corporate requirements
- New format

2.2 Customer Assistance

Reference Base Product Part Numbers of 2364427,2371899,2378762,2384030,2384214,2388957,2371437, 2399941, 2393113,2371438,2371900 are representative numbers of PCIe Gen5 connectors. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Electronics Representative or, after purchase, by calling the Product Information Center at the number at the bottom of page 1.

2.3 Drawings

Customer Drawings for product part numbers are available from www.te.com. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, the Customer Drawing takes preference.

2.4 Specifications

Product Specification 108-160247 provides product performance requirements and test information.

3. REQUIREMENTS

3.1 Safety

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

3.2 Limitations

Connector assemblies are designed to operate in a temperature range of –40˚ to 85˚C.

3.3 Material

The housings and latches are made of high temperature thermoplastic. The contacts are made of copper alloy and plated at the contact interface with precious metal. All contacts have a nickel underplate and tin plated soldering leads. Refer to the specific customer drawing for details.

3.4 Storage

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

B. Chemical Exposure
Do not store connectors near any chemical listed below as they may cause stress corrosion cracking in the contacts.

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

3.5 PC Board

A. Material and Thickness

The pc board material should be glass epoxy (FR–4, ref). Refer to the customer drawing for various sizes and corresponding pc board sizes.



Contact the Product Information Center at the number listed at the bottom of page 1 for suitability of other board materials and sizes.

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B. Tolerance

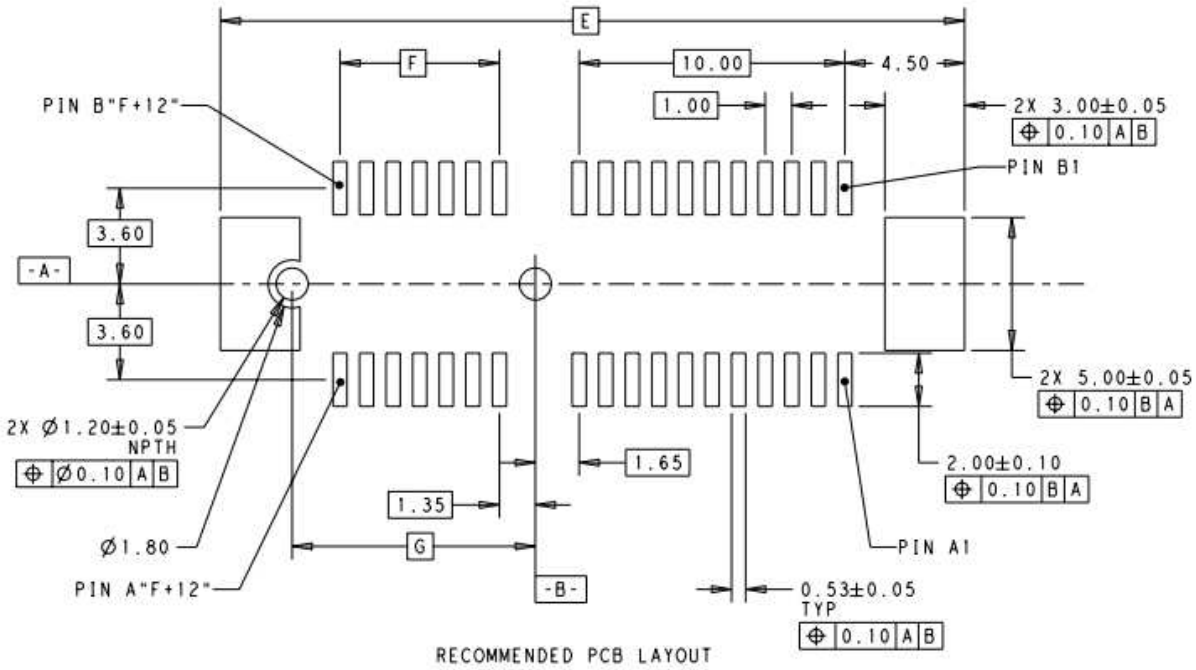
Maximum allowable bow of the board shall be 0.06 over the length of the connector. The coplanarity of the pc board circuit pads must be 0.03.

C. Circuit Pads

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

D. Layout

All holes and circuit pads must be precisely located on the pc board. The pc board layout must be designed using the dimensions provided on the customer drawings for the specific connector. A reference sample of the recommended pc board layout is given in Figure 2.



POS.	DIM. E	DIM. F	DIM. G	DIM. H
164	92.00	70	73.15	72.15
98	59.00	37	40.15	39.15
64	42.00	20	23.15	22.15
36	28.00	6	9.15	8.15

Figure 2

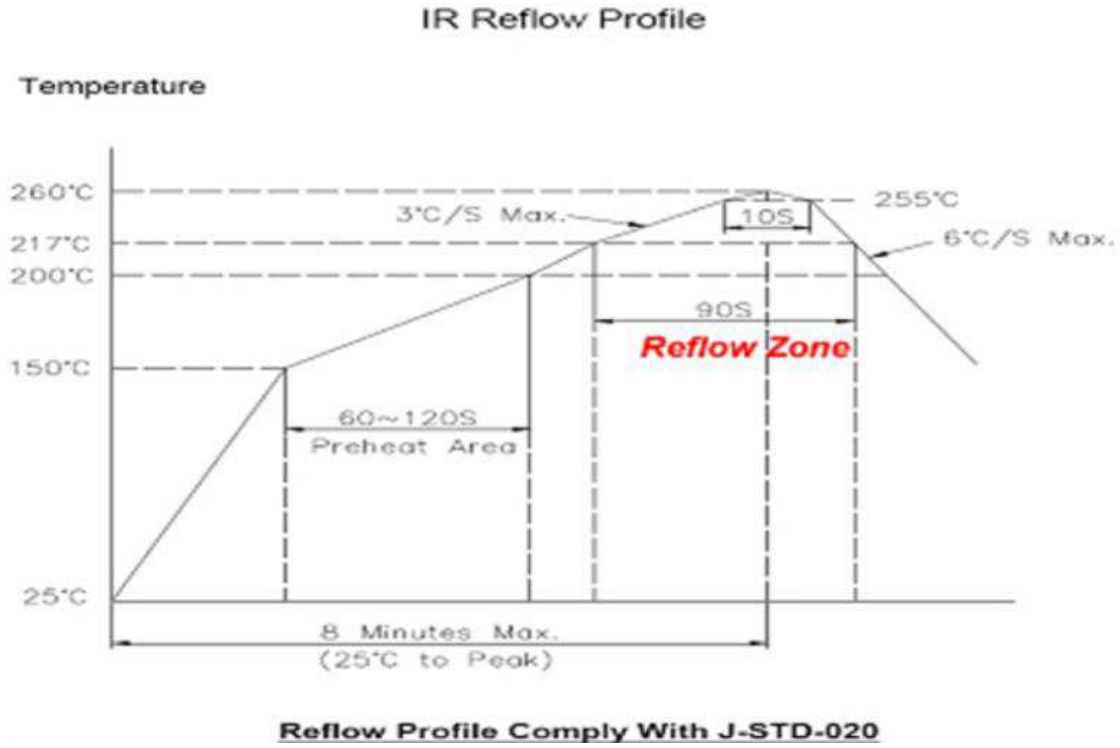
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3.6 Soldering

A. Process

The connector will be soldered using infrared reflow (IR) or equivalent soldering technique. Reflow temperature and time may vary depending on the size of the pc board and placement of other components. This connector can be subjected to the reflow temperature and approximate time specified in Figure 3.

CAUTION Excessive temperatures may cause connector housing degradation or plating deterioration.



Reflow Profile Comply With J-STD-020

Figure 3

B. Solder Paste Characteristics

1. Alloy type for lead-free solder shall be compatible with pure tin or gold, for example, SAC305 (96.6 Sn/3 Ag/0.5 Cu) or SAC405 (95.5 Sn/4 Ag/0.5 Cu)

2. Flux incorporated in the paste shall be rosin, mildly active (RMA) type.

C. Solder Volume

Minimum solder volume (V) (before curing) for each circuit pad is calculated as follows:

2.0 (pad length) × 0.53 (pad width) × 0.15 (stencil thickness) = 0.159 mm^3 (V).

NOTE

Solder volume may vary depending on solder paste composition.

D. Solder Paste Thickness

Recommended Solder paste thickness for the connector contact solder tines is at least 0.15mm.

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E. 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. The stencil should be 0.15mm thick. The stencil should include circuit pads for the contacts and hold-downs and holes for the solder tabs. The stencil layout must be designed using the dimensions provided on the customer drawing for the specific connector.

F. Solder Mask

When soldering, 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. Mask most suitable is Liquid Photo Imageable.

3.7 Connector Placement

Each contact solder tine must be seated on its pc board circuit pad. Optimally, the tines should be centred on the pc board circuit pads; however, slight misalignment is permissible.

When placing connectors on the pc board, make sure that the connector number one position is aligned with the number one position board hole. Posts or Tabs must be aligned and started into the matching holes before seat the contact solder tails on the pc pad. Avoid applying in–line force which could cause irreparable damage to the Posts and Tabs. The connector must be kept parallel to the full length of the pc board.

3.8 Checking Installed Connector

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. See Figure 4.

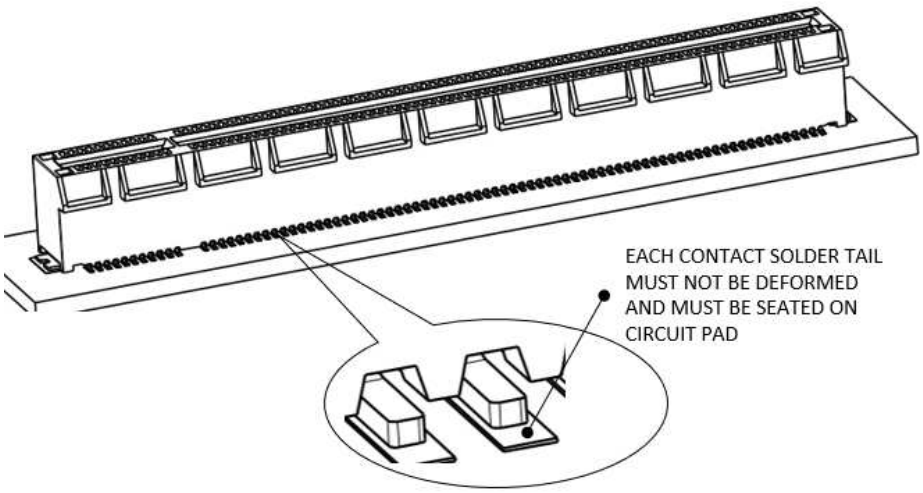
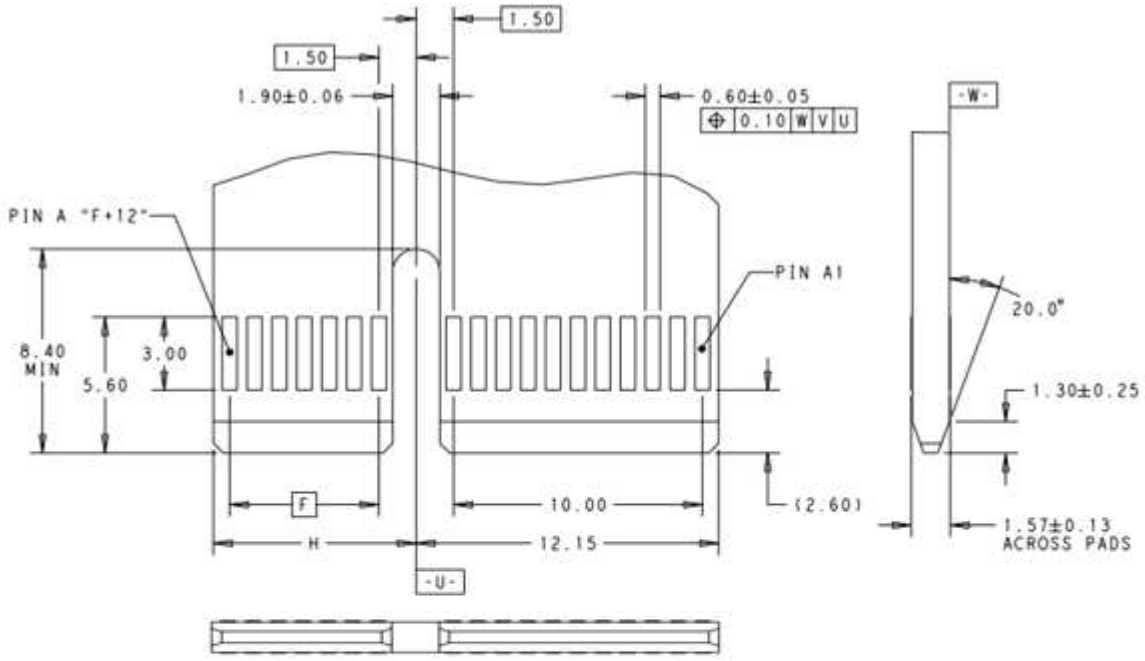


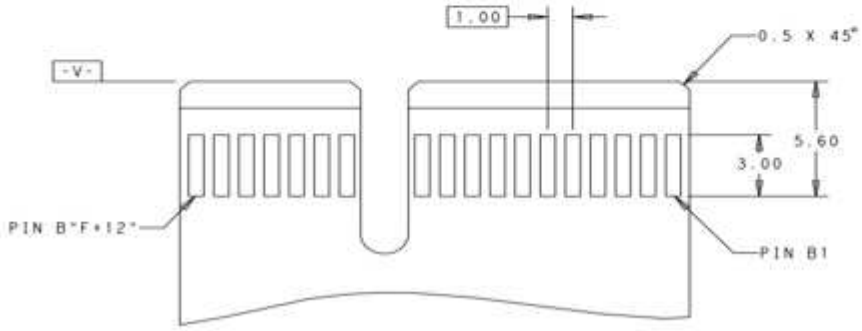
Figure 4

3.9 Daughterboard Configuration

Daughterboard configuration must be designed using the dimensions provided on the customer drawings for the specific connector. A reference sample of the recommended daughterboard is given in in Figure 5.

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ADD-IN CARD EDGE-FINGER DIMENSION
DEFUALT TOLERANCE ±0.13

164	92.00	70	73.15	72.15
98	59.00	37	40.15	39.15
64	42.00	20	23.15	22.15
36	28.00	6	9.15	8.15
POS.	DIM. E	DIM. F	DIM. G	DIM. H

Figure 5

3.10. Daughtercard Mating and Un-mating

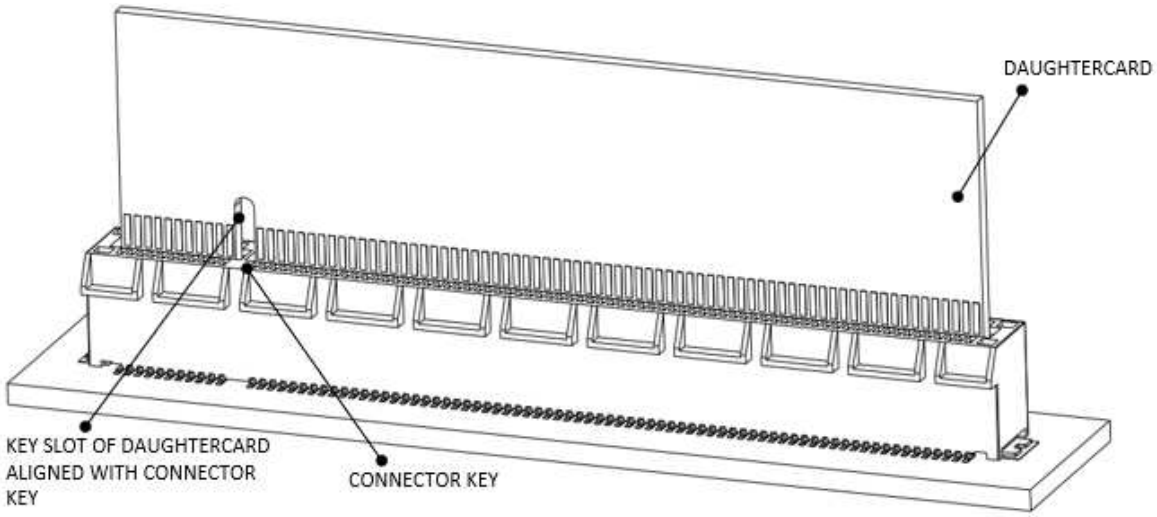
When mate or un-mate daughtercard, care should be taken to prevent longitudinal rocking of the module with respect to the connector, Angles greater than 2˚ could cause damage to the housing or misregistration of the contacts and module circuit pads, refer to Figure 6.

The daughtercard must be mated to the connector according to the following requirements:

1. The keying slot of the daughtercard must align with the key of the connector.
2. The daughtercard should be inserted vertically and evenly along the key and slot. The daughtercard should be fully seated.

The daughtercard should be carefully and slowly slide straight out of the connector key and slot.

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PREVENT LONGITUDINAL ROCKING OF MODULE

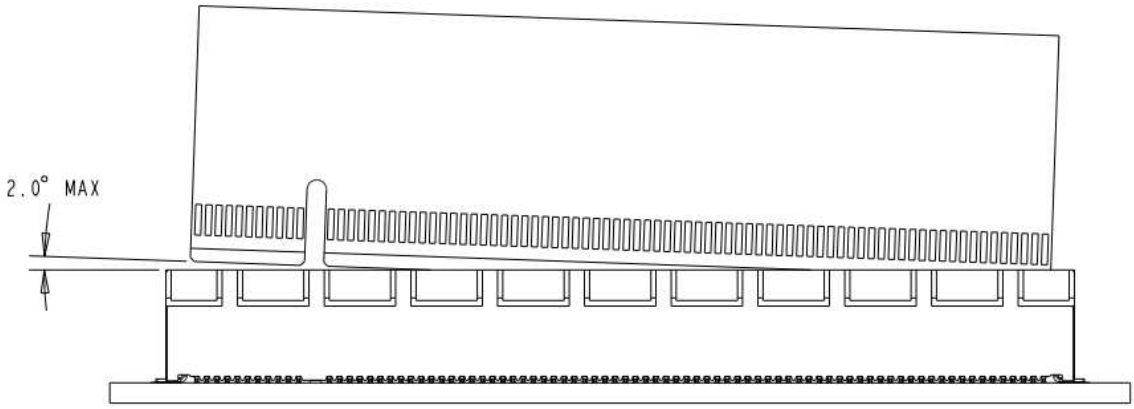


Figure 6

3.11. Repair

Damaged connectors must be removed, discarded, and replaced. The contact solder tails and hold-downs& tabs will require desoldering.

4. QUALIFICATION

TE PCIe Gen5 connectors are Qualified according to TE Product Specification 108-160247.

5. TOOLING

No tooling is required for placement of the connectors onto the pc board. If the connectors with solder tabs or posts and the length of them exceed the PCB thickness, a pc board support must be used to prevent damage to the connector components during the placement of connectors on the board. It should have
flat surfaces with holes or a channel large enough and deep enough to receive the tabs and. See Figure 7.

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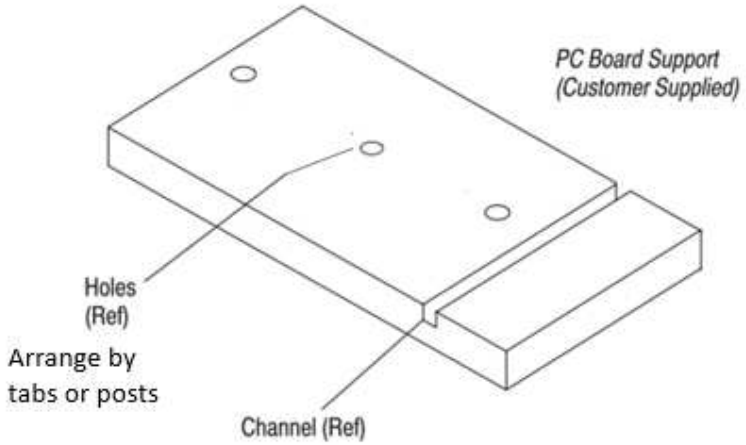


Figure 7

6. VISUAL AID

Figure 8 shows a typical application of a PCIe Gen5 connector. 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.

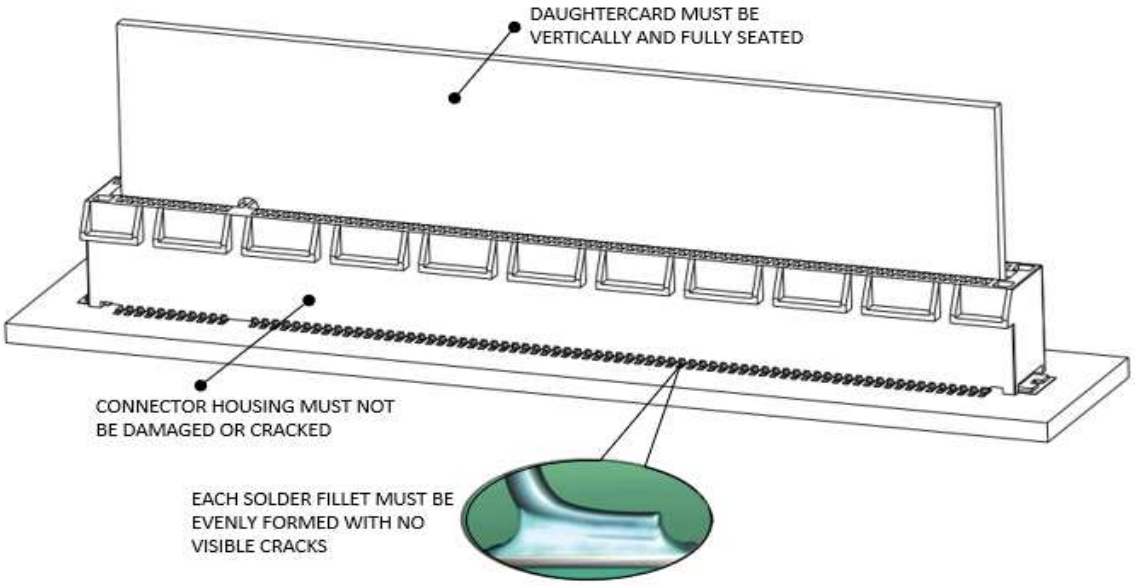


Figure 8. VISUAL AID

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TE Connectivity:

2834055-1 650075-000 U5254-000005-030PA 3631B101LL MPT100C18RF SBCHE154R7K 2005330-1
1-794222-0 1-962915-1 1393431-1 1743455-2 1969656-1 2-292161-3 175977-2 2377783-2 917696-1
TE50BR39J 141991-2 936348-1 CRGCQ2010J3K3 RH73H2A40MKTN 2380312-2 ROX05SJ18R
SBCHE64R7K CPF0402B37K4E1 SMW73R0JT 1903112-2 2310537-1 3-1393225-0 3430B2F51RTDF