

**NOTE**



All numerical values are in metric units. 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 application requirement of TE Connectivity (TE) Crown Clip™ Junior Busbar Power Connector series (CCJ). All the connectors are designed to engage specified bus bar board system. TE Connectivity Crown Clip™ Junior Busbar Power Connector series is recommended to use in server, storage, data center, switch, etc., based on Open Rack V2.0 Standard, or other industrial equipment.

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 as reference Figure 1.

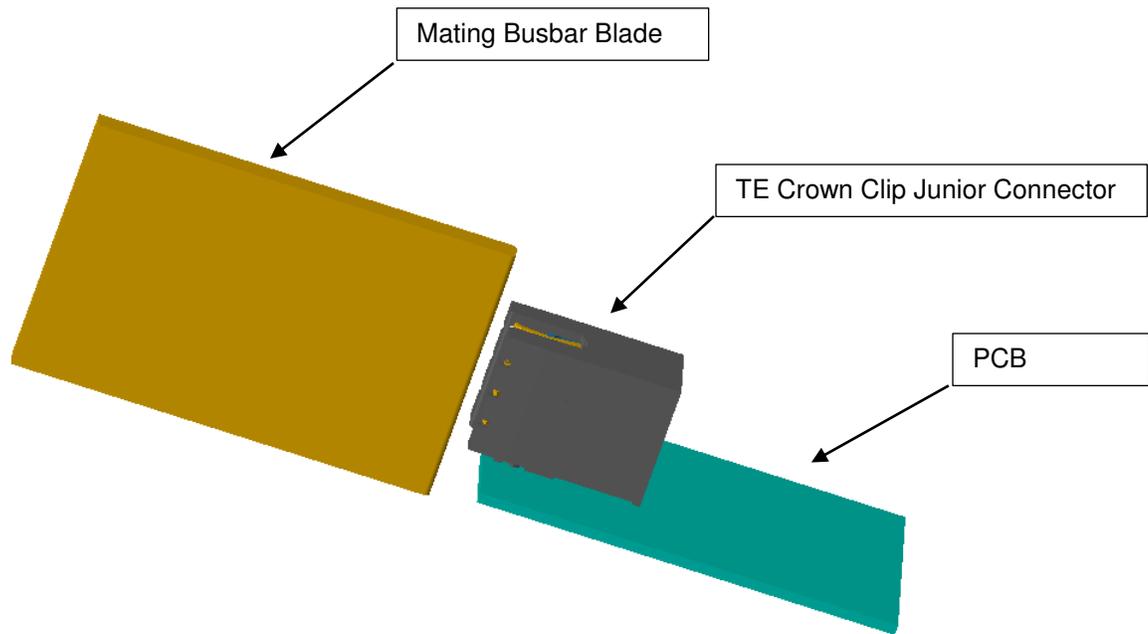


Figure 1 The Reference Product View of TE Crown Clip™ Junior Busbar Power Connector series

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Initial release of Application Specification includes:

Updated document to corporate requirements.

### 2.2. Customer Assistance

Reference Product Part Number in product code 1080 are representative of TE Crown Clip™ Junior Power Connector series.

TE P/N: 2204018-1 TE Crown Clip™ Junior 150 Busbar Power Connector, Gold Plating Version.

TE P/N: 2204899-1 TE Crown Clip™ Junior HC250 Busbar Power Connector, Gold Plating Version.

TE P/N: 2204900-1 TE Crown Clip™ Junior HC320 Busbar Power Connector, Gold Plating Version.

TE P/N: N/A 5mm Mating Busbar Blade of TE Crown Clip™ Busbar Power Connector, Gold Plating Version.

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 Representative, by visiting our website at [www.te.com](http://www.te.com), or by calling PRODUCT INFORMATION at the numbers at the bottom of page 1.

### 2.3. Drawings

Customer Drawings for product part numbers 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, the information contained in the Customer Drawings takes priority.

### 2.4. Specifications

Production Specification as below provide expected product performance and test information.

108-128048 Product Specification of TE Crown Clip™ Junior Busbar Power Connector

501-128048 Qualification Test Report of TE Crown Clip™ Junior Busbar Power Connector

### 2.5. Standards

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- 109-197: Test Specification (TE Connectivity Test Specification vs EIA Test Methods)
- Open Rack Standard V2.0, Open Compute Project

## 3. REQUIREMENTS

### 3.1. Safety

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

### 3.2. Material

The insulation housing is made of thermoplastics, flammability class UL94 V-0, and the contacts are made of high conductivity copper alloy, gold plating, or silver plating over nickel base—plated at product contact area, detail please refer to the customer drawing.

### 3.3. Storage

#### A. Ultraviolet Light

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

#### B. Shelf Life

The connector or components should remain in the shipping containers until ready for use to prevent deformation to the contacts. The connector or components 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 connector or components near any chemical listed below as they may cause stress corrosion cracking in the contacts.

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

### 3.4. Recommended Bus Bar Board

TE Crown Clip™ Junior Busbar Power Connector is designed for two type of mating condition:

1. Solid Mating Busbar Blade for single pole application,
2. Laminated Mating Busbar Blade for specific dual-pole application.

On the product tail side, crown clip connector is soldered with PCB, bottom busbar board, flexible bus bar, in accordance with the actual application.

#### A. Material

For the optimum performance, the Mating Busbar Blade must be made of highly conductive copper (101% @ 20°C [68°F] according to International Anneal Copper Standards {IACS}), such as C10100, C10200, C11000, etc.



The bus bar may NOT be made of aluminum.

#### B. Plating

Recommended Plating Specification of Mating Busbar Blade:

Version I: 0.76um min. [0.000030 inch] Gold plating over 1.27~7.62um [0.000050~0.000300 inch] Matte Nickel based-plating on mating busbar blade copper contact surface.

Version II: 0.38um min. [0.000015 inch] Gold plating over 1.27~7.62um [0.000050~0.000300 inch] Matte Nickel based-plating on mating busbar blade copper contact surface.

Note: The difference of Version I and Version II is product durability application. Version I could meet product durability 200 cycles, and Version II could be up to product durability 500 cycles.

Recommended Plating Specification of PCB PTH, Bottom Busbar Board PTH:

ENIG plating, or 0.76~8.9um [0.000030 ~ 0.000350 inch] Matte Tin plating over 1.27~ 8.9 um [0.000050 ~ 0.000350 inch] matte nickel base-plating on bus bar copper contact surface.

The gold plating area theoretically of mating blade: 20.2\*4.0mm min. ref. for the full mating condition. And the actual function plating area will be defined according to the actual process of mating busbar blade, such as the gold plating area width 8.0~10.0mm.

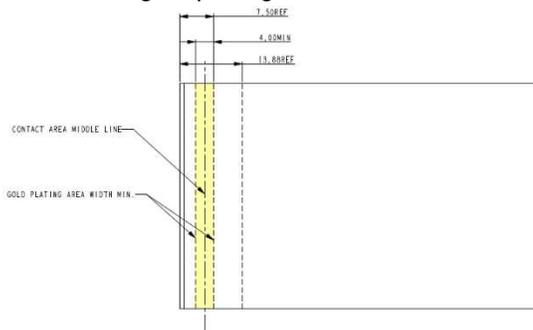


Figure 2. Reference View of the gold plating area theoretically.

### C. Mating Busbar Blade Design

The bus bar must be rigidly constructed and capable of preventing movement that could cause stubbing or misalignment of the contact with the bus bar.

Solid and Laminated Mating Busbar Blade thickness must be  $5.00 \pm 0.05$ mm for the mating area, detail please refer to TE customer drawing, and the recommended middle insulation layer thickness is 0.5~1.0 mm ref.

### D. Mating Edge Treatment:

The recommended guide chamfer feature of Mating Bus Bar Board is 2.0\*1.0mm, 1.0\*1.0mm min. per actual application.

The leading edge must have a full radius or a gradual taper to provide a lead-in and ease mating of the connector with the bus bar.

All the dimension shall be in accordance with customer specific application requirement.

Detail please refer to the below mating busbar figure.

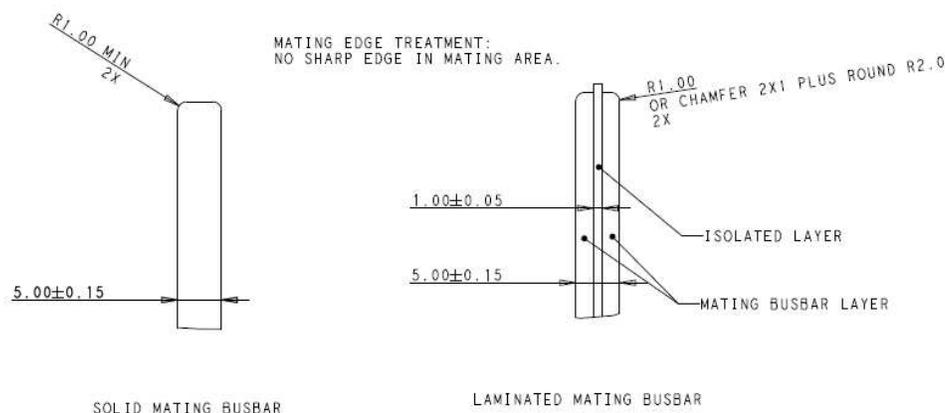


Figure 3. Solid or Laminated Mating Busbar Blade Reference View.



### 3.5. Mating

#### A. Mating Length

General mating length is 13.8mm ref, from CCJ connector head edge to connector mating edge, P/N: 2204900-\*/2204899-\*/2204018-\*, at the full mating condition between mating busbar blade and CCJ power connector.

#### B. Misalignment.

Misalignment capability:  $\pm 1.25\text{mm}$ .

#### C. Floating Capability.

Floating capability:  $\pm 1.0\text{mm}$ .

#### D. Mating/Un-mating Force

Please refer to Product Specification, and Qualification Test Report, general mating force Spec. 80N max. actual test value 35N ref. and unmating force 4.5N min. actual test value 14N ref.

#### E. Rack system misalignment.

The steel guide module is recommended to assemble with Rack Node, to improve the misalignment capability, and anti-vibration performance of Rack system. The tolerance between guide pin and guide hole or module, is always recommended to be  $\pm 0.25\text{mm}$  ref. TE P/N: 223969-1, Stainless steel guide pin, and TE P/N: 5223957-3 Guide socket module (Mating screw 1410946-1/-2/-3).



Figure 7. Reference Guide pin and Guide Socket Module View.

### 3.6. Repair

These connectors are not repairable. Damaged or defective connectors must not be used.

## 4. SOLDERING

TE Crown Clip™ Junior Busbar Power Connector shall be soldered with bottom PCB with waving soldering, or PIP reflow soldering.

TE P/N: 2204018-1 TE CCJ 150 Connector. Only Wave soldering.

TE P/N: 2204899-1 TE CCJ HC250 Connector. Wave soldering, and PIP Reflow soldering.

TE P/N: 2204900-1 TE CCJ HC320 Connector. Wave soldering, and PIP Reflow soldering.

The reference PIP Reflow soldering process, please refer to TE Spec. 109-202 Component Heat Resistance to Wave Soldering, and 109-201 Component Heat Resistance to Lead-Free Reflow Soldering. The PIP Rflow soldering evaluation test setup and product soldering view is as below.

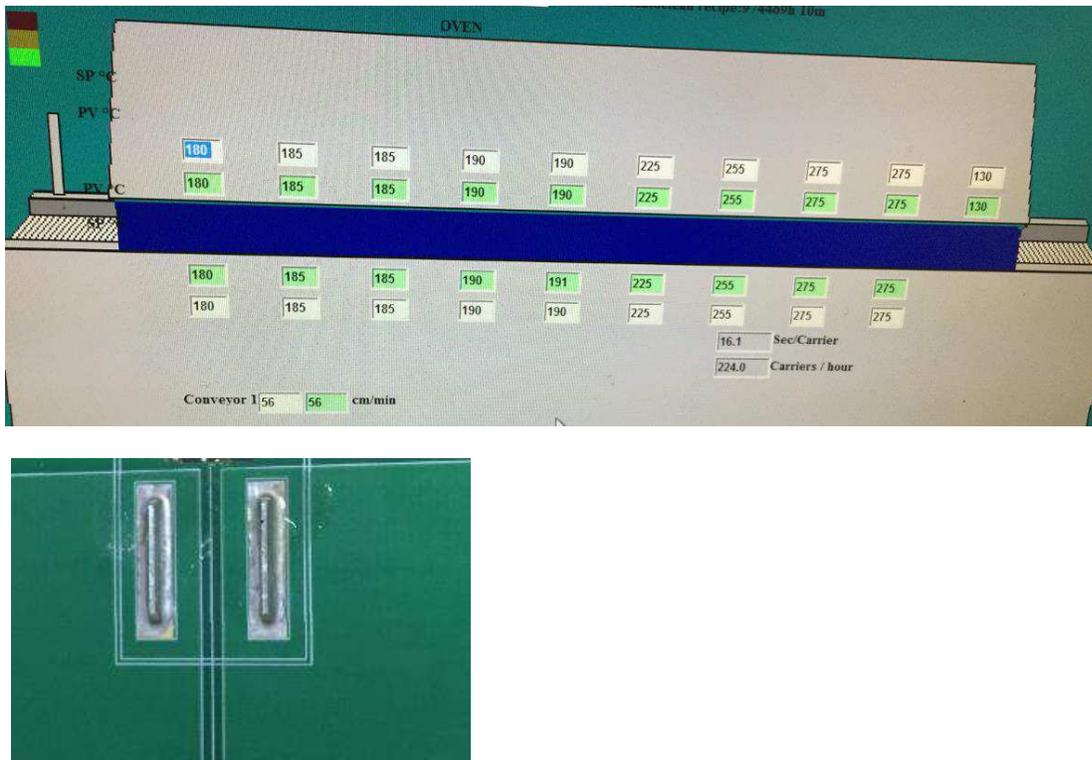


Figure 8. PIP Reflow soldering setup and soldering result Reference View.

**5. VISUAL AID**

The below illustration shows a typical application of TE Connectivity (TE) Crown Clip™ Junior Busbar Power Connector series (CCJ). 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.s

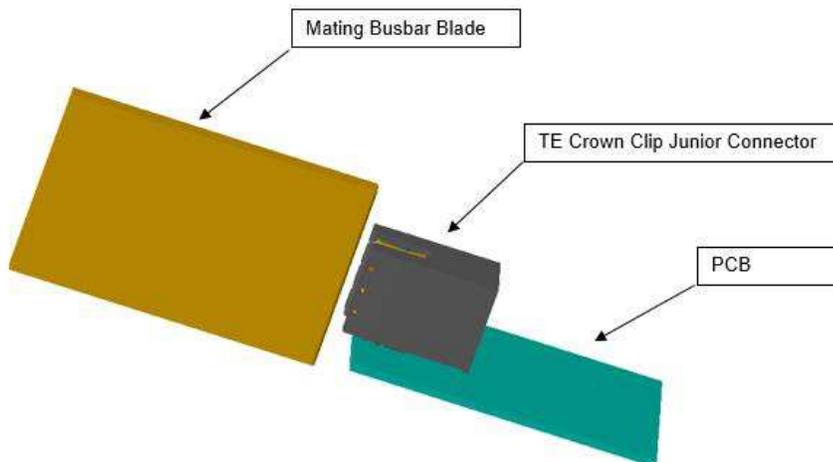


Figure 9. Visual Aid of TE Connectivity (TE) Crown Clip™ Junior Busbar Power Connector Series