



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of  $\pm 0.13$  [ $\pm 0.005$ ] 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 25 Degree DDR II Dual In-Line Memory Module (DIMM) 240-Position Connector. The connector is available only in a 240-position with contact spacing on 1.00 mm centerlines (1-mm pitch). The connectors are designed to connect processor modules (daughterboard) to printed circuit (pc) boards (motherboard).

The connector consists of a polarized housing containing pre-installed through hole contacts. Each contact is a solid one-piece construction with a tapered lead-in solder tine. The connector features module support towers and extractors designed to support and hold the module in the mating position, and a card slot which contains a molded-in voltage key and function key to ensure polarization with the mating daughterboard (which must be slotted to accept the keys). The connector also features boardlocks to provide retention for the connector during soldering, standoffs to allow easy pc board cleaning after soldering, and molded-in circuit identification on the mating face. The connectors are designed for manual placement on the pc board.

When corresponding with 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.

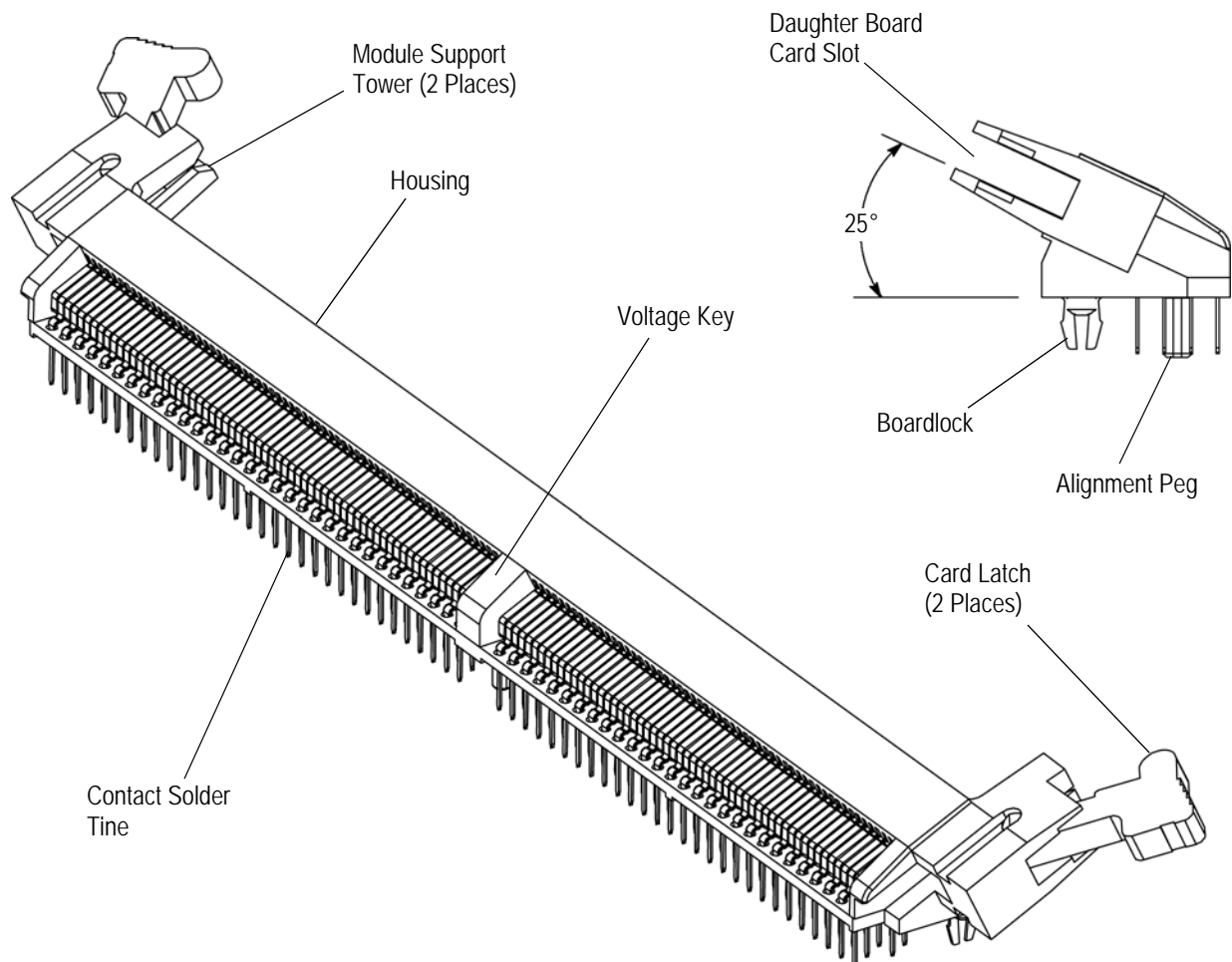


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

- Removed logos from artwork.
- Updated document to corporate requirements.

### 2.2. Customer Assistance

Reference Base Product Part Numbers 1658912 (Standard Footprint), 1658787 (Reverse Footprint), and Product Code 2954 are representative of the 25 Degree DDR II DIMM 240-Position Connector. 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 Tyco Electronics Representative (Field Service Engineer, Field Applications Engineer, etc.) 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 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 Customer Drawing takes preference.

### 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 108-2168 provides product performance and test result information.

All solder joints should conform to those specified in Tyco Electronics Test Specification 109-11 and all other requirements specified in this document.

## 3. REQUIREMENTS

### 3.1. Safety

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

### 3.2. Special Features

This connector is designed for low-profile applications in which memory (daughter-board) will be mated to the mother-board at a 25 degree angle. The connector is available in standard or reverse footprints.

### 3.3. Material

The housing and extractors are made of high temperature thermoplastic. The interface finish is made of nickel with gold plating; solder tines are plated with matte lead free plating over nickel.

### 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 must be glass epoxy (FR-4 or G-10). The pc board thickness may be 1.60 mm, 2.36 mm, or 3.18 mm thick. Refer to the customer drawing for various solder tail lengths to accommodate the pc board thicknesses.

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



#### B. Tolerance

Maximum allowable bow of the pc board must be 0.08 mm over each 25.4 mm of length of the connector.

#### C. Hole Dimensions

The pc board holes for the connector contact solder tines must be plated through. The drilled hole size, plating types, and plating thickness will depend on application requirements. The finished hole size must be as stated to provide unrestricted insertion and ensure adequate application of solder to the solder tines. See Figure 2.

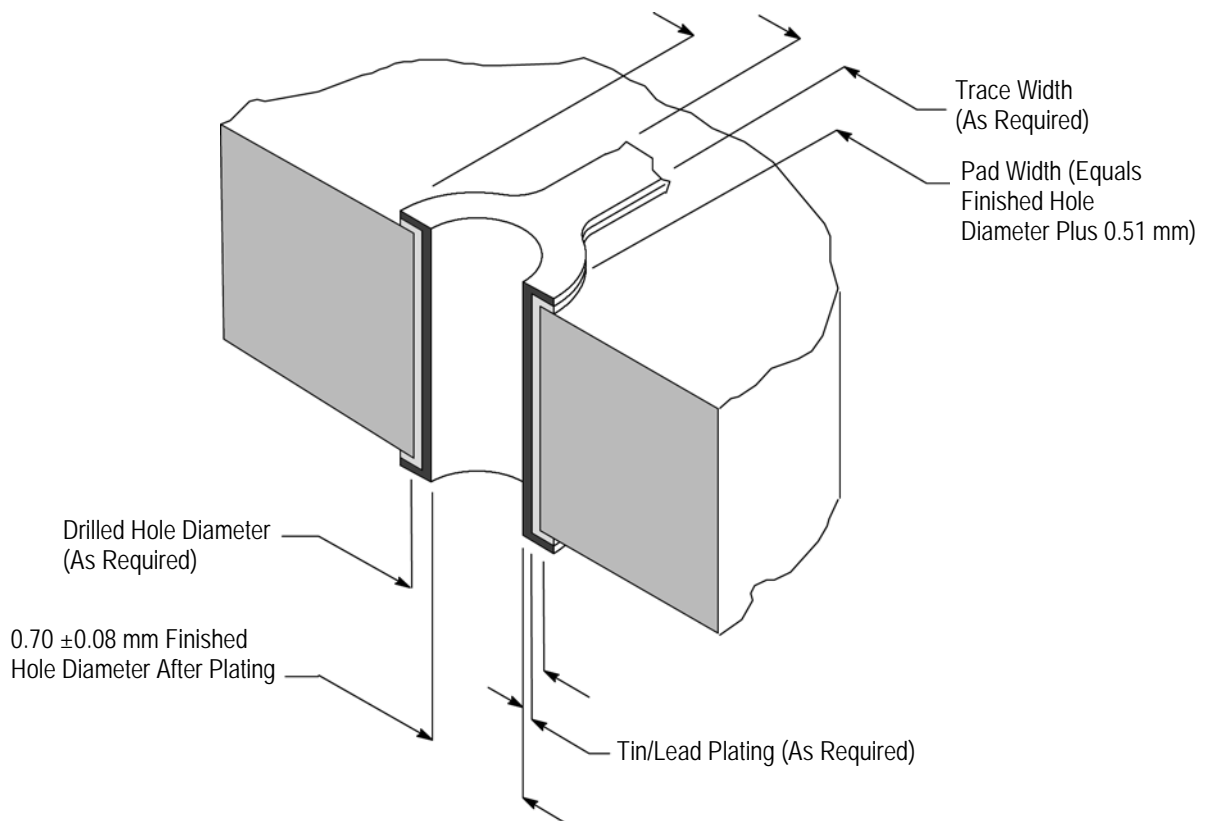


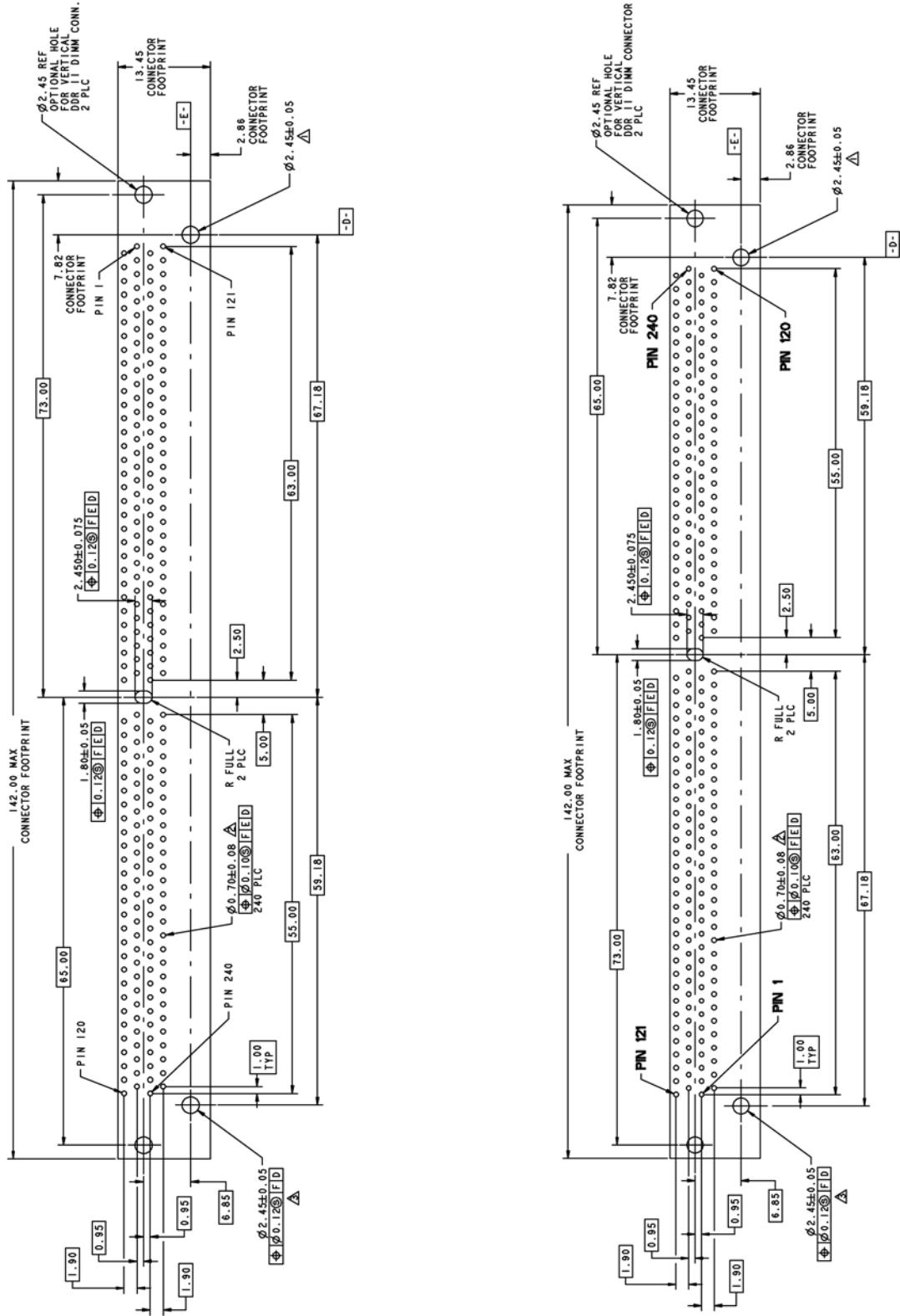
Figure 2

#### D. Layout (Motherboard)

The contact holes and boardlock holes in the pc board must be precisely located to ensure proper placement and optimum performance of the connector. Design the pc board layout using the dimensions provided in Figure 3.

PC Board Layout for Part Number 1658787

PC Board Layout for Part Number 1658912



- 1 Right hole is global D-E origin for all positional tolerances. Left and right non-plated thru holes establish -F-
- 2 Finished hole size 0.15 maximum angular ring
- 3 Datum -F- is connector side surface of pc board

Figure 3

### 3.6. Connector Spacing

Care must be used to avoid interference between adjacent connectors and other components. The minimum allowable distance between connectors, measured from housing end to housing end, and row-to-row, to ensure proper assembly is provided in Figure 4.

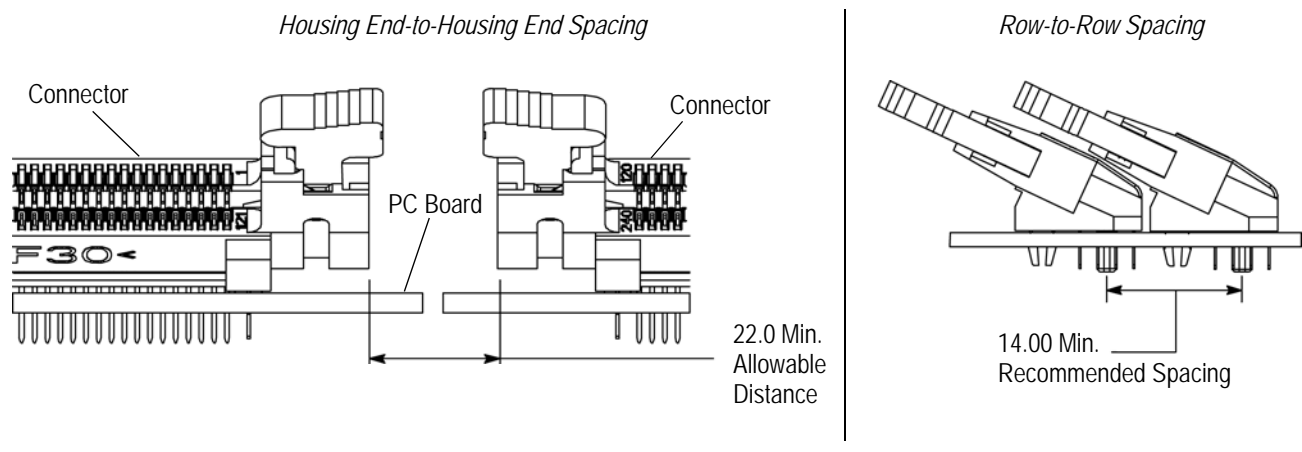


Figure 4

### 3.7. Connector Placement

When placing connectors on the pc board, make sure that the connector number one position is aligned with the number one position board hole. Boardlocks must be aligned and started into the matching holes before inserting the contact solder tines into respective holes. Avoid applying in-line force which could cause irreparable damage to the boardlocks and contact solder tines. The connector must be kept parallel to the full length of the pc board.



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

### 3.8. Soldering



*The boardlocks should be the only means of retaining the connector to the board during soldering. Clinching is not recommended as a method of retention.*

The pc board pads must be solderable in accordance with Test Specification 109-11. Observe guidelines and procedures when soldering contacts. Solder, clean, and dry contacts according to the following:

#### A. Flux Selection

Contact solder tines must be fluxed prior to soldering with a no-clean, rosin base flux. Selection of the flux will depend on the type of pc board and other components mounted on the board. Additionally, the flux must be compatible with the wave solder line, manufacturing, health, and safety requirements. Call Product Information at the number at the bottom of page 1 for consideration of other types of flux. Flux that is compatible with these connectors are provided in Figure 5.

FLUX TYPE	ACTIVITY	RESIDUE	COMMERCIAL DESIGNATION
			ALPHA
NO-CLEAN	Mild	Noncorrosive	EF-9301
	High	Noncorrosive	RF800

Figure 5

SOLDERING PROCESS	TEMPERATURE (Max)	TIME EXPOSED (Max)
Wave	260°C [500°F]	5 Seconds
IR	Oven Peak 225°C [437°F]	40 Seconds
	Ramp 1 - 3°C [33.8 - 37.4°F]	1 Second

Figure 6

### 3.9. Checking Installed Connector

All solder joints should conform to those specified in Test Specification 109-11 and all other requirements specified in this document. The housing standoffs must be seated on the pc board not exceeding the dimension shown in Figure 7.



*Due to the 28-ohm system impedance requirement for the Rambus channel, it is important to minimize tilt of the connector and adhere to the seating requirement.*

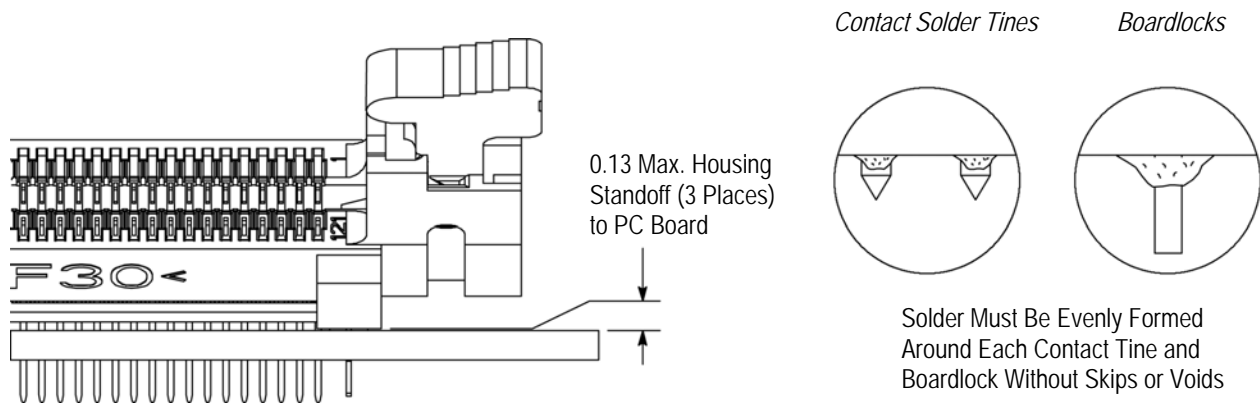


Figure 7

### 3.10. Daughterboard Configuration

Daughterboard configurations must be in accordance with the dimensions and tolerances provided in Figure 8.

Daughter Card Layout for 1658787 and 1658912

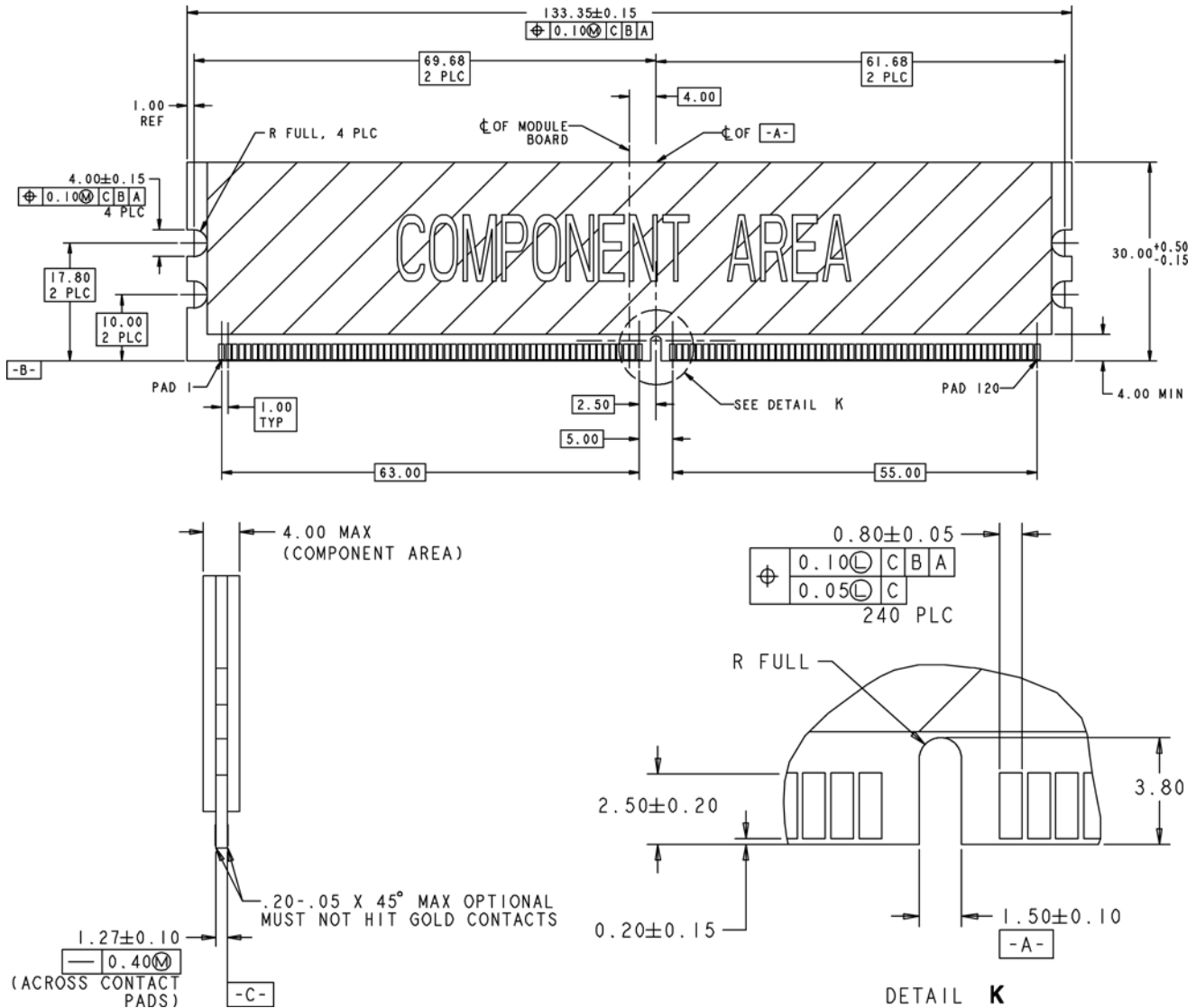


Figure 8

### 3.11. Processor Module Mating and Unmating



*When mating or unmating module, care should be taken to prevent longitudinal rocking of the module with respect to the connector. Angles greater than  $3^\circ$  could cause damage to the housing or misregistration of the contacts and module circuit pads. Refer to Figure 9.*

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

1. The connector extractors must be moved to the open position. See Figure 9.
2. The keying slots of the module must align with the keys of the connector.
3. The module must be slid along the module support towers of the connector and into the card slot. The extractors must rotate inward until there is an audible click. The module must be fully seated, and the extractors must be in the closed position.

The module must be removed from the connector according to the following requirements:

1. The extractors must be simultaneously rotated away from the module. As the extractors rotate outward, the module must move out of the connector. When the extractors are fully rotated ( $90^\circ$  away from end of housing), the module must be completely disengaged from the connector.



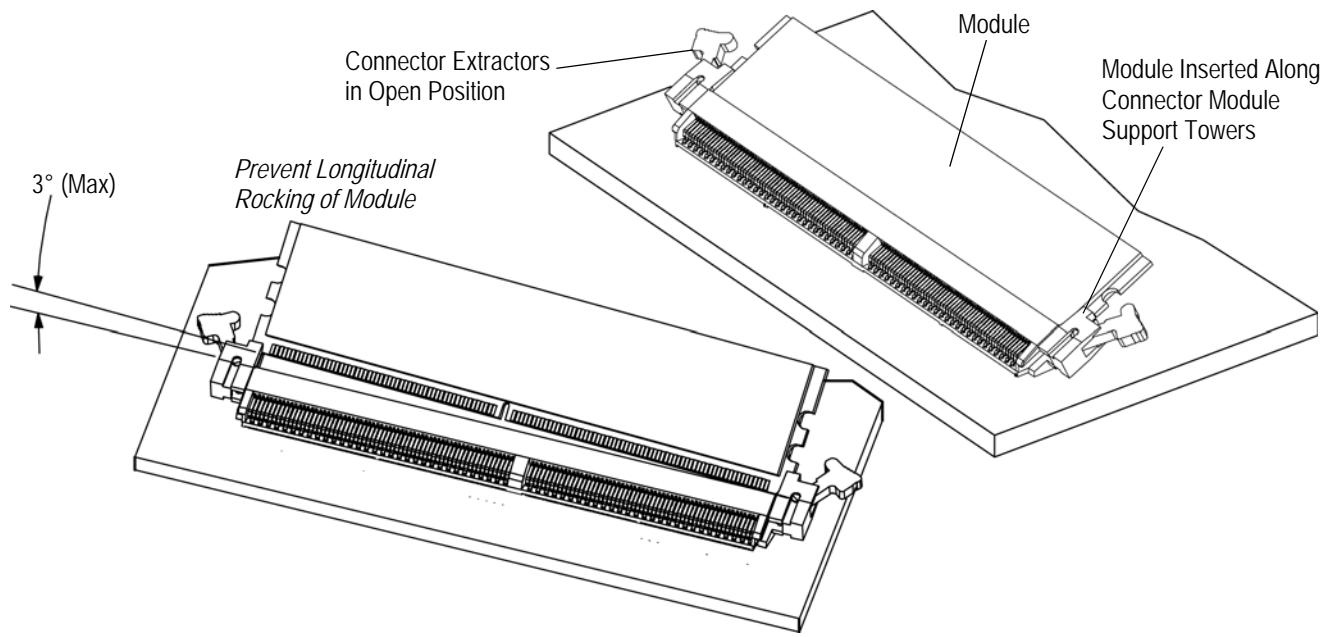


Figure 9

2. The module must be carefully slid straight out of the module support towers.

### 3.12. Repair

Damaged connectors must be removed, discarded, and replaced. The contact solder tines and boardlocks will require desoldering.

### 4. QUALIFICATION

25 Degree DDR II DIMM 240-Position Connectors are Recognized by Underwriters Laboratories Inc. (UL) in File E28476, and Certified by CSA International in File LR 7189.

### 5. TOOLING

No tooling is required for placement of the connectors onto the pc board. A pc board support must be used to prevent damage to the connector components during the placement of connector on the board. See Figure 10. It should have flat surfaces with holes or a channel large enough and deep enough to receive the connector contact solder tines and boardlocks.

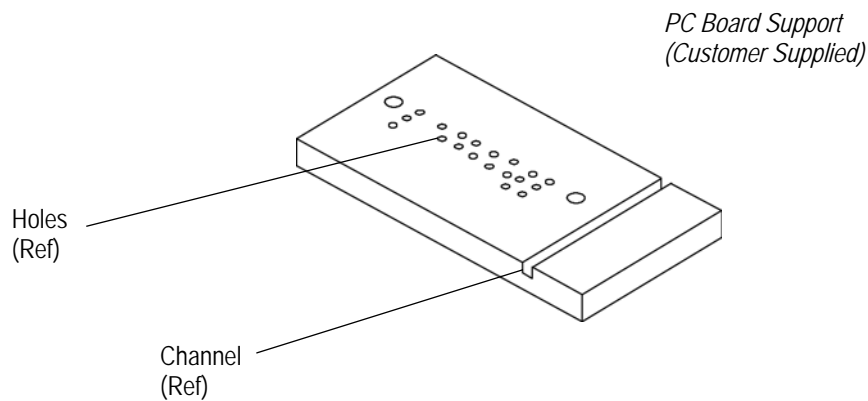
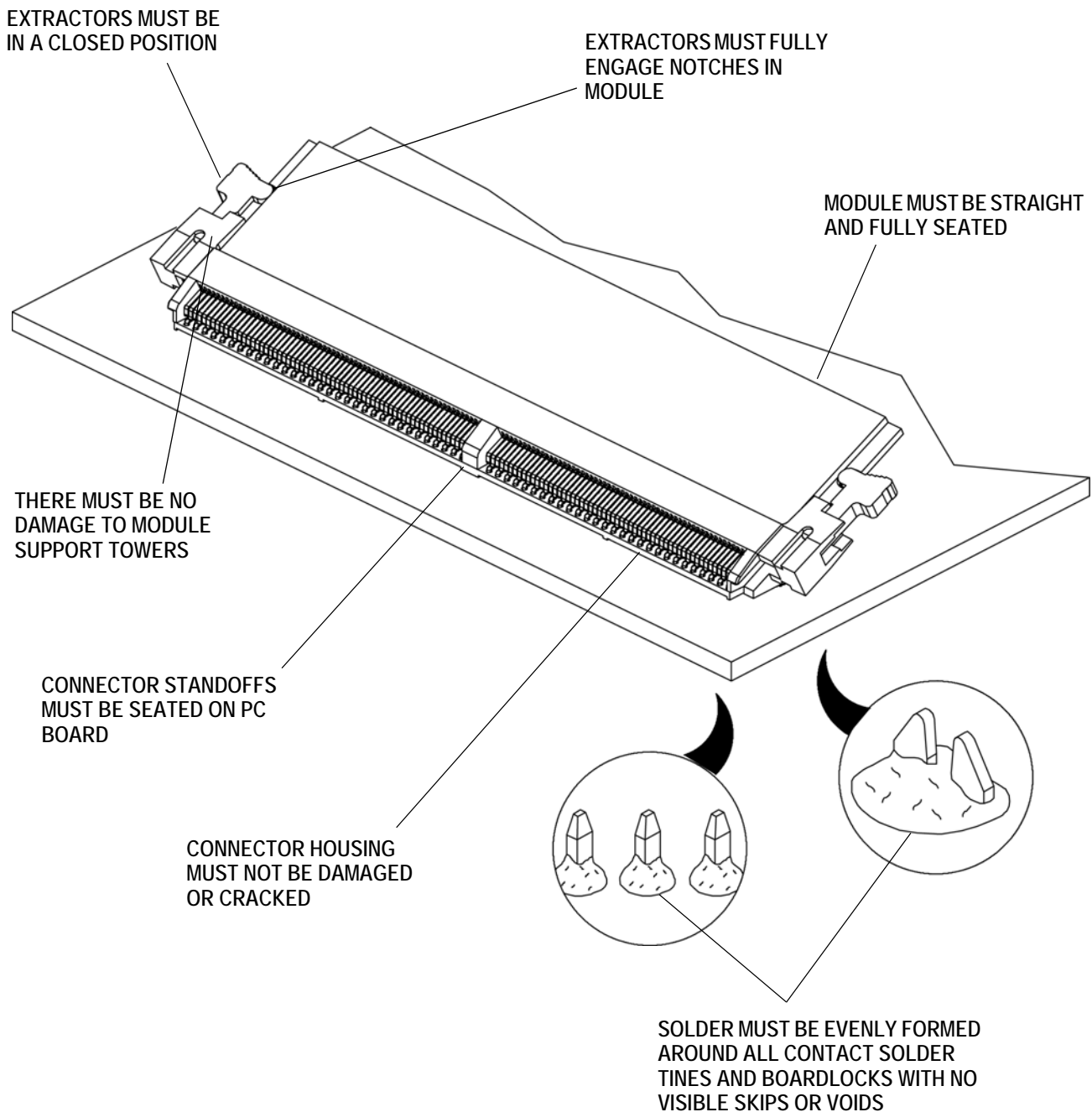


Figure 10



## 6. VISUAL AID

The illustration below shows a typical application of 25 Degree DDR II DIMM 240-Position Connectors. 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 11. VISUAL AID**