



*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 requirements for application of DDR5 SMT Memory Module (DIMM) Sockets–Solder Tail for main memory applications in networking equipment. The sockets are available in a 288–position with contact spacing on 0.85 mm centerlines (0.85mm pitch). The sockets are designed to connect processor modules (daughterboard) to printed circuit (pc) boards (motherboard).

The socket consists of a polarized housing containing pre–installed through hole contacts. Each contact is a solid one–piece construction with a tapered lead. The socket features module support towers and latches designed to support and hold the module in the mated position, and a card slot which contains a molded–in key and function key to ensure polarization with the mating daughterboard (which must be slotted to accept the keys). The socket features Boardlocks or Tabs to provide retention for the socket during soldering or alignment posts to aid in pc board alignment during mating. The socket also features standoffs and molded–in circuit identification on the mating face. The sockets are designed for manual placement 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.

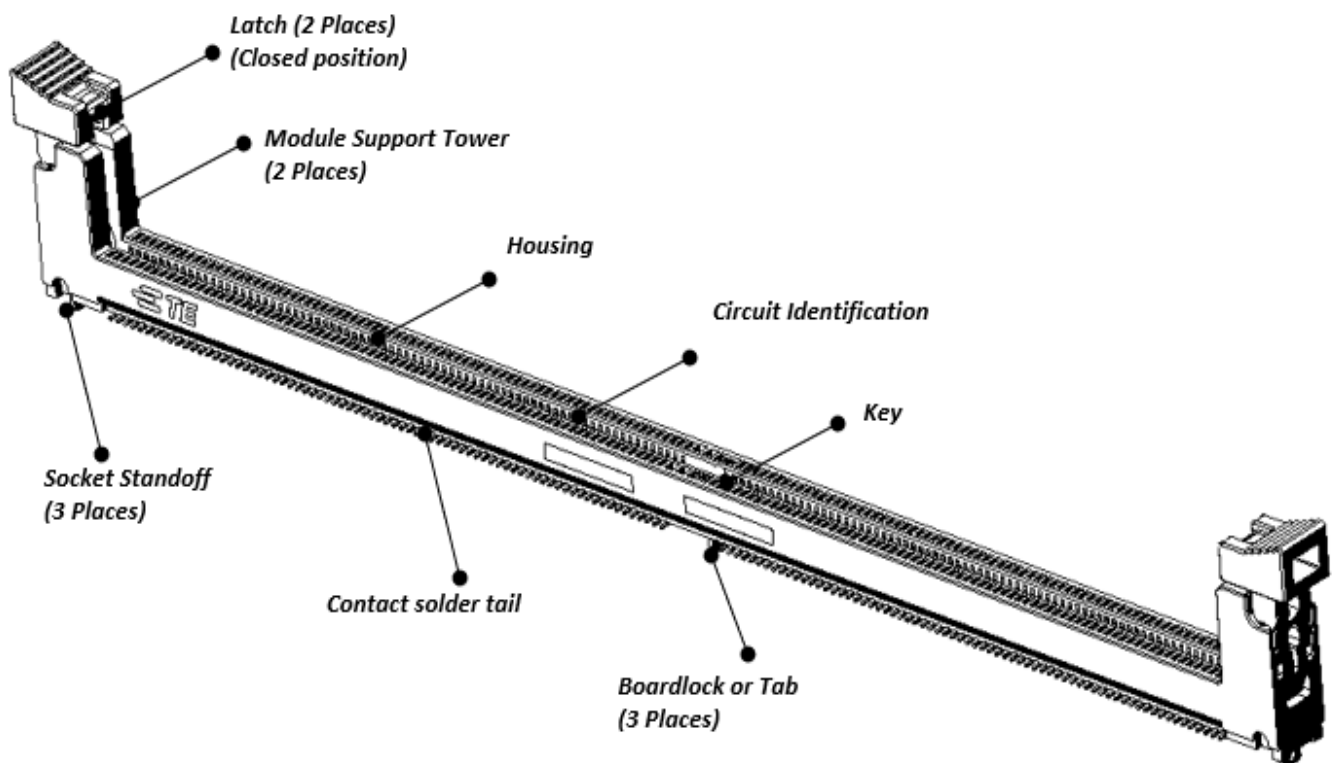


Figure 1

## 2. REFERENCE MATERIAL

### 2.1 Revision Summary

- Updated document to corporate requirements
- New format

### 2.2 Customer Assistance

Reference Base Product Part Number 2355626 and Product Code X947 are representative numbers of DDR5 DIMM Sockets–SMT. 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 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 108–115141 and Test Report 501–115156 provide product performance requirements and test information. Test Specification 109–11 provides solderability requirements and evaluation methods. Workmanship Specification 101–21 provides solder fillet requirements.

## 3. REQUIREMENTS

### 3.1 Safety

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

### 3.2 Special Feature

The socket supports memory capacity to 128 GB.

### 3.3 Limitations

Socket assemblies are designed to operate in a temperature range of –55° to 105°C [–67° to 221°F].

### 3.4 Material

The housing and extractors are made of high temperature nylon. The contacts are made of copper alloy and the solder tines are plated with tin matte over nickel. The boardlocks are made of stainless steel.

### 3.5 Storage

#### A. Shelf life

The sockets should remain in the shipping containers until ready for use to prevent deformation to the contacts. The sockets 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 sockets 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

### 3.6 PC Board

#### A. Material and Thickness

The pc board material must be glass epoxy (FR–4 or G–10). Refer to the customer drawing for various tail lengths and corresponding pc board thicknesses.



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

**B. Tolerance**

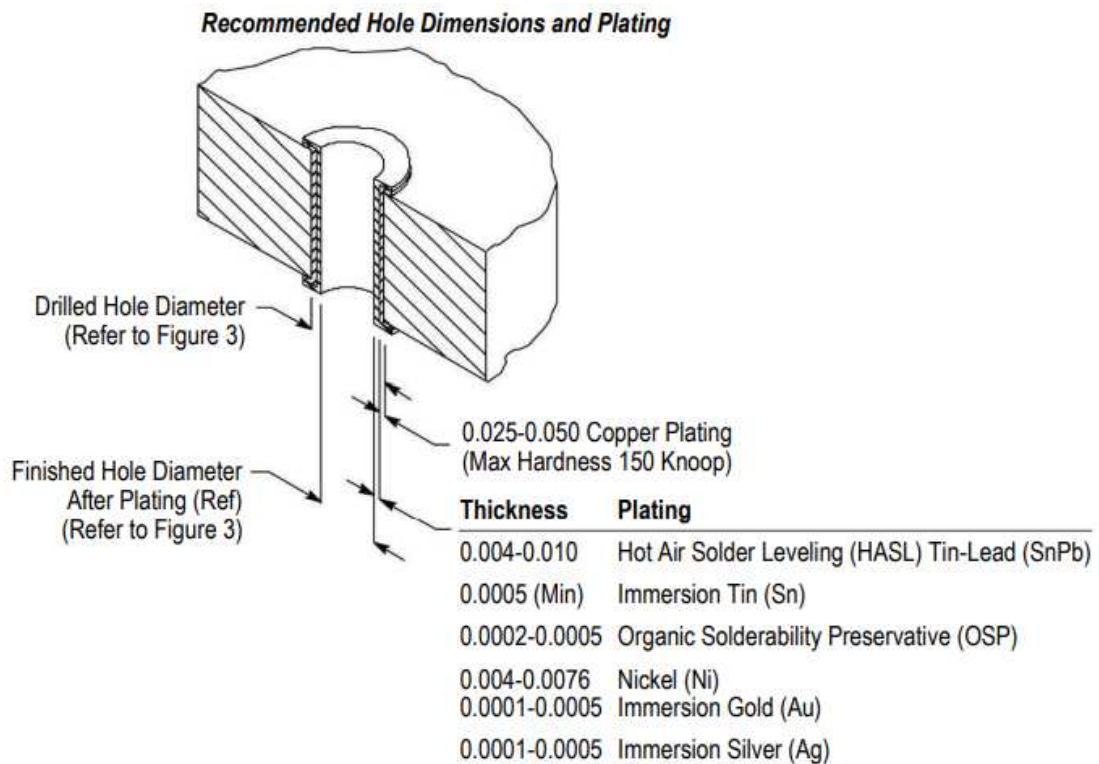
Maximum allowable bow of the board shall be 0.08 over the length of the connector. The coplanarity of the pc board circuit pads must be 0.03.

**C. Circuit Pads**

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

**D. Hole Dimensions**

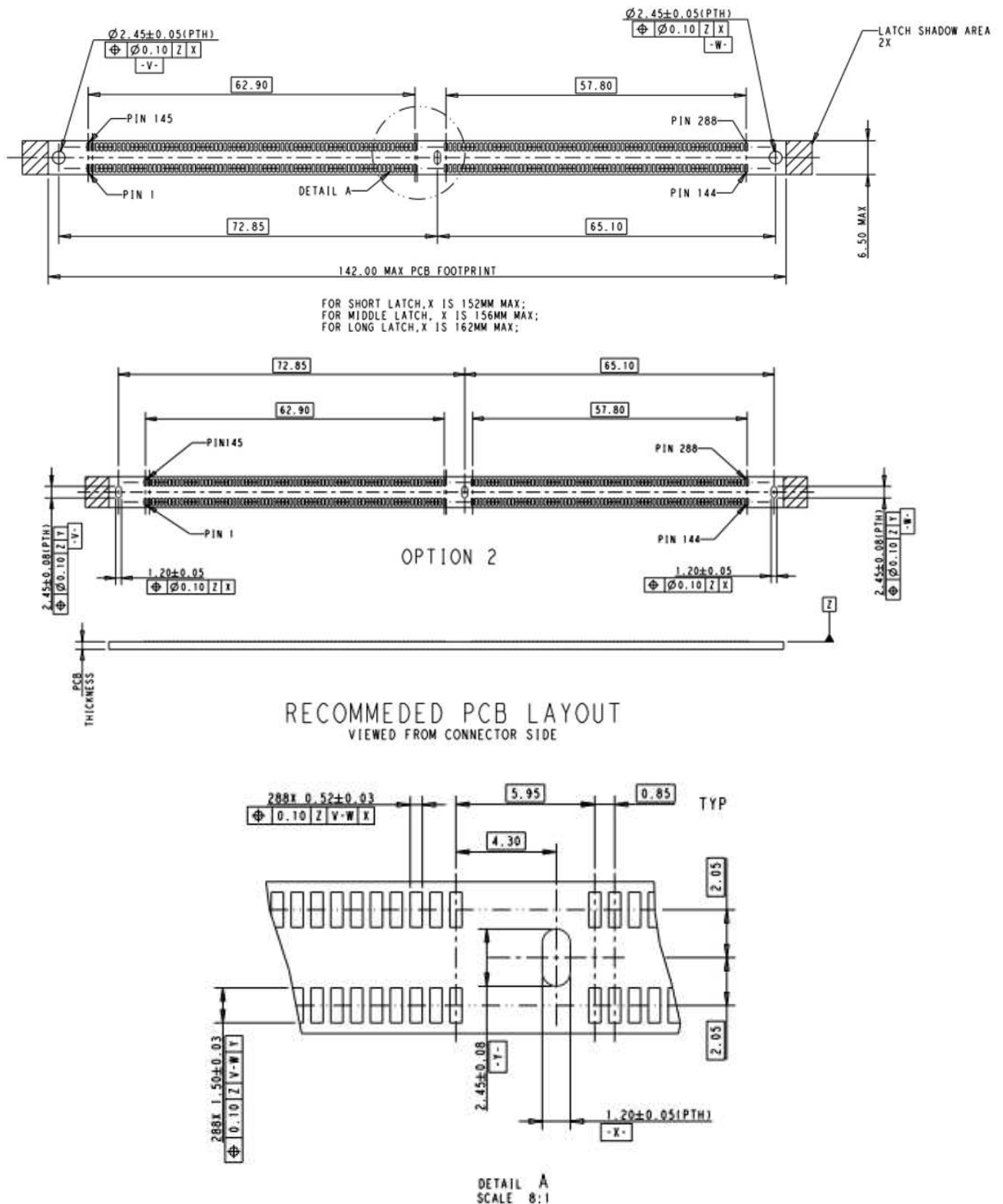
Holes for the Tabs and Boardlocks must be drilled, and plated through for Tabs. Recommended drilled hole diameters, plating type and thickness, and finished hole size are given in Figure 2&3.



**Figure 2**

**E. 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 drawing for the specific connector. A reference sample of the recommended pc board layout is given in Figure 3.



- 1 DATUM Z IS THE TOP SIZE OF PCB.
- 2 HOLD DOWN HOLE SHOULD BE PLATED THROUGH HOLE.

**Figure 3**

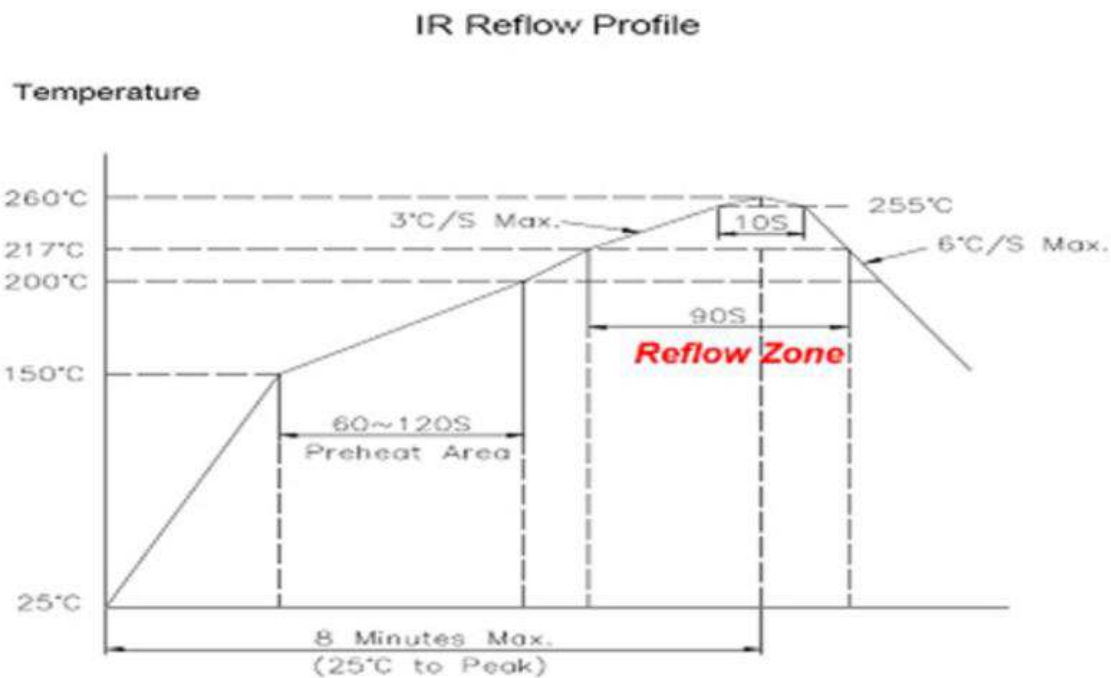
### 3.7 Soldering

#### A. Process

Assure the latch no semi-half before reflow, and the connector must be soldered using non-focused infrared (IR) reflow 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 4.



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



**Reflow Profile Comply With J-STD-020**

**Figure 4**

#### B. Solder Paste Characteristics

1. Alloy type for tin-lead solder shall be 63 Sn/37 Pb, 60 Sn/40 Pb, or 62 Sn/36 Pb/2 Ag.
2. 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)
3. Flux incorporated in the paste shall be rosin, mildly active (RMA) type.
4. Paste will be at least 80% solids by volume.
5. Mesh designation shall be -200 to +325 (74 to 44 square micron openings, respectively).
6. Minimum viscosity of screen print shall be 5×10% cp (centipoise).
7. Minimum viscosity of stencil print shall be 7.5×10% cp (centipoise).

#### C. Solder Volume

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

$$1.5 (\text{pad length}) \times 0.52 (\text{pad width}) \times 0.15 (\text{stencil thickness}) = 0.11 \text{ mm}^3 (V).$$

Minimum solder volume (V) for each stabilizer is calculated as follows:

$$\pi \times 0.6^2(\text{radius}) \times 0.15 (\text{stencil thickness}) = 0.16 \text{ mm}^3 (V)$$



**NOTE**

Solder volume may vary depending on solder paste composition.

**D. Solder Paste Thickness**

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

**E. Stencil**

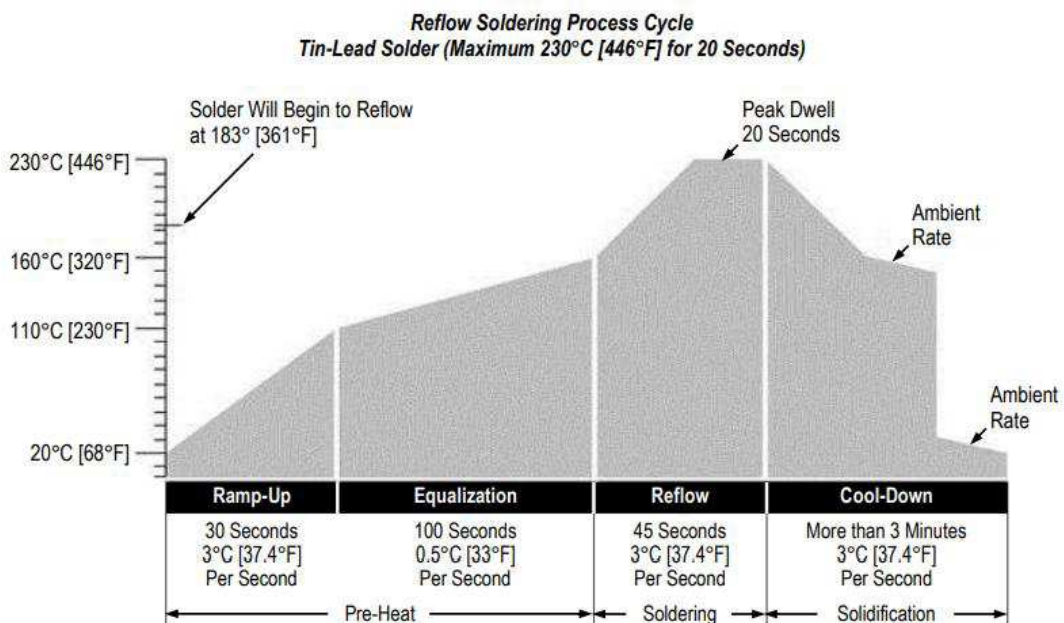
The stencil aperture is determined by the circuit pad size and stencil thickness. It may be any shape as long as it prevents solder bridging from one pad to another. The stencil should be 0.15 thick.

The stencil should include circuit pads for the contacts and holes for the stabilizers and hold-downs. 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.

It is recommended that component temperatures not exceed the temperatures and times given in Figure 5.



**Figure 5**

### 3.8 Socket 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.

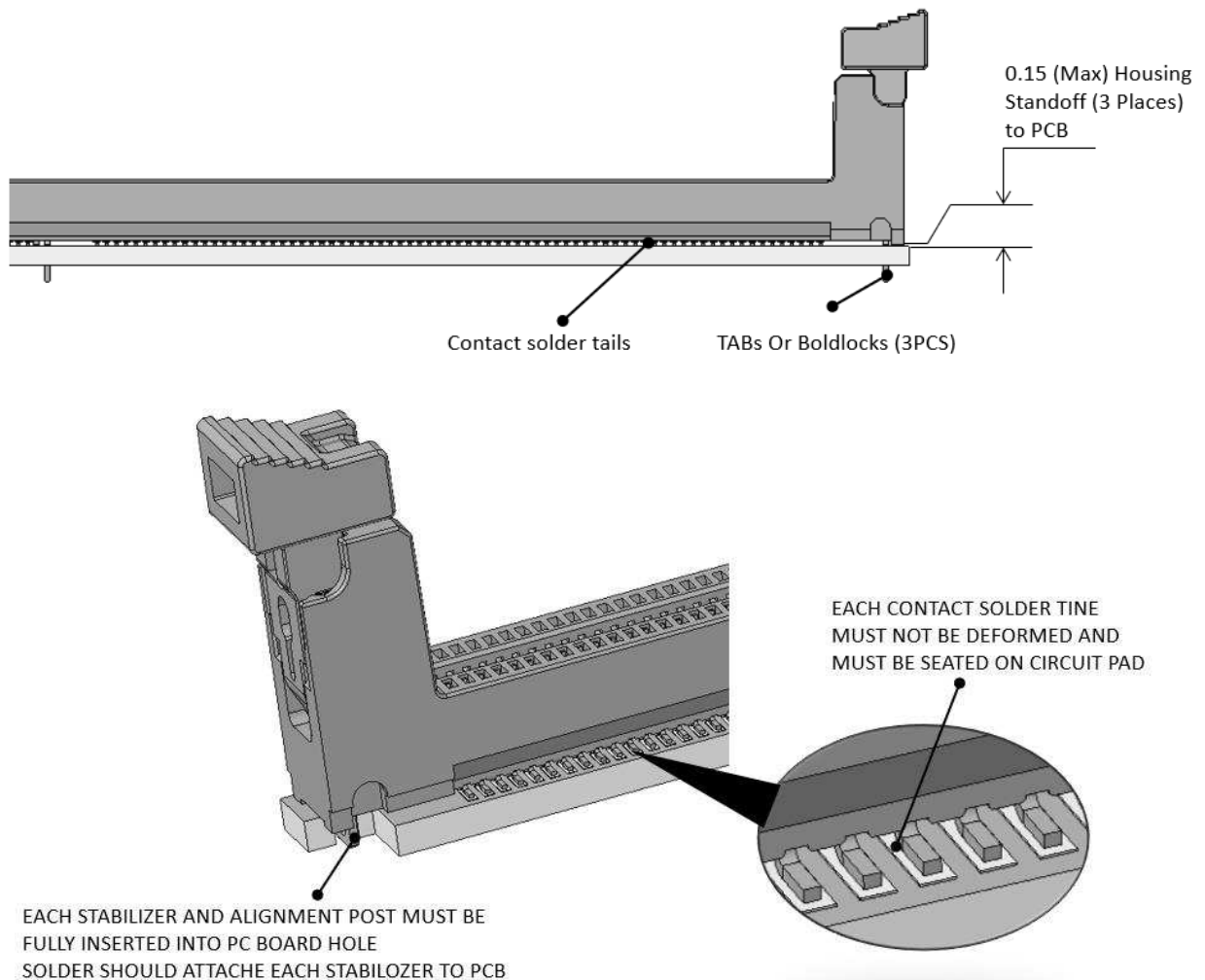
When placing sockets on the pc board, make sure that the socket number one position is aligned with the number one position board hole. Boardlocks or Tabs must be aligned and started into the matching holes before seat the contact solder tails on the pc pad. Avoid applying in-line force which could cause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



**Socket should be handled only by the housing to avoid deformation, contamination, or damage to the contact solder tails**

### 3.9 Checking Installed Socket

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 6.



**Figure 6**

### 3.10 Daughterboard Configuration

Daughterboard configuration must be in accordance with the dimensions and tolerances provided in Figure 7.

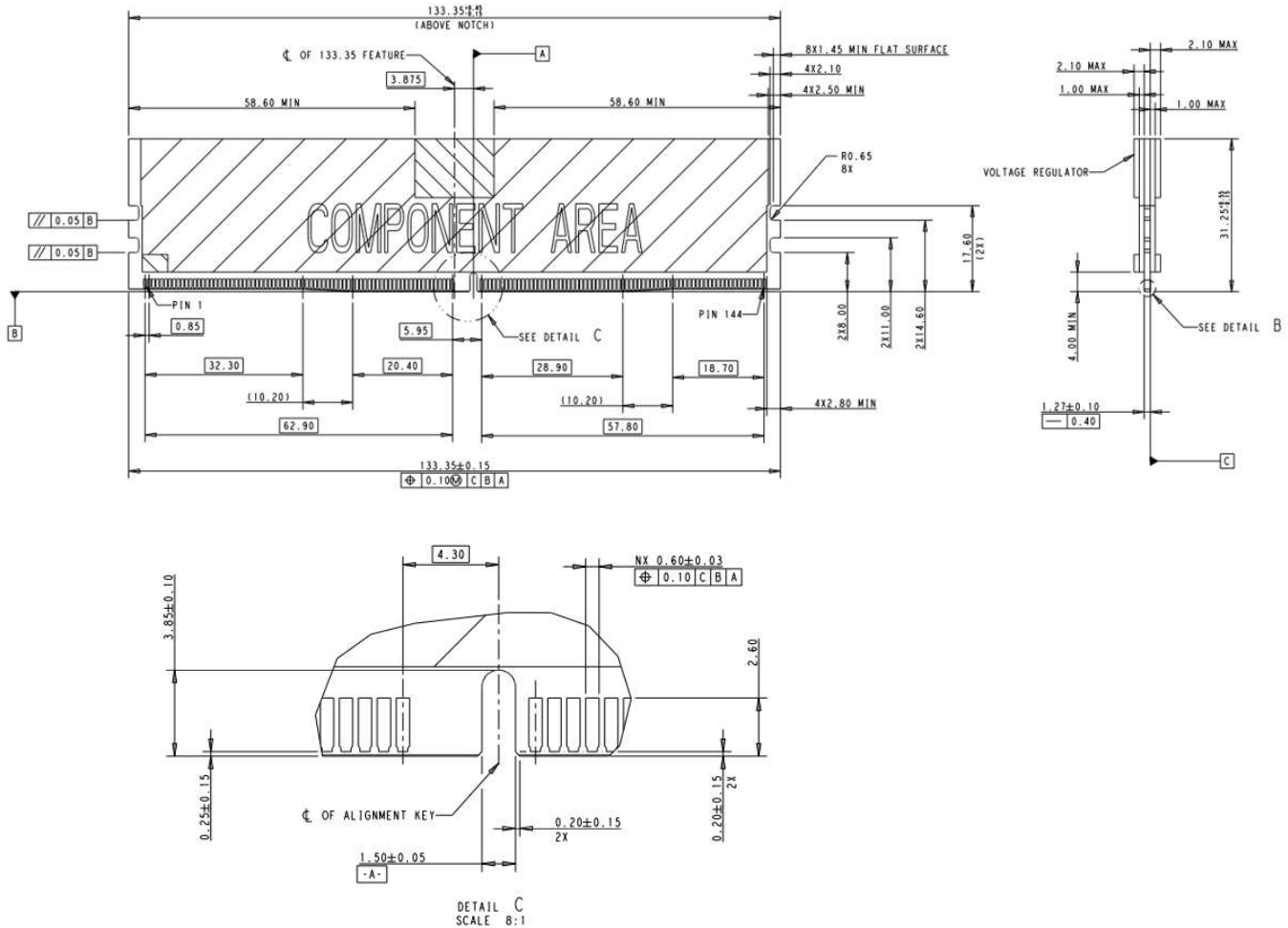


Figure 7

### 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 socket, Angles greater than 3° could cause damage to the housing or misregistration of the contacts and module circuit pads, refer to Figure 8.**

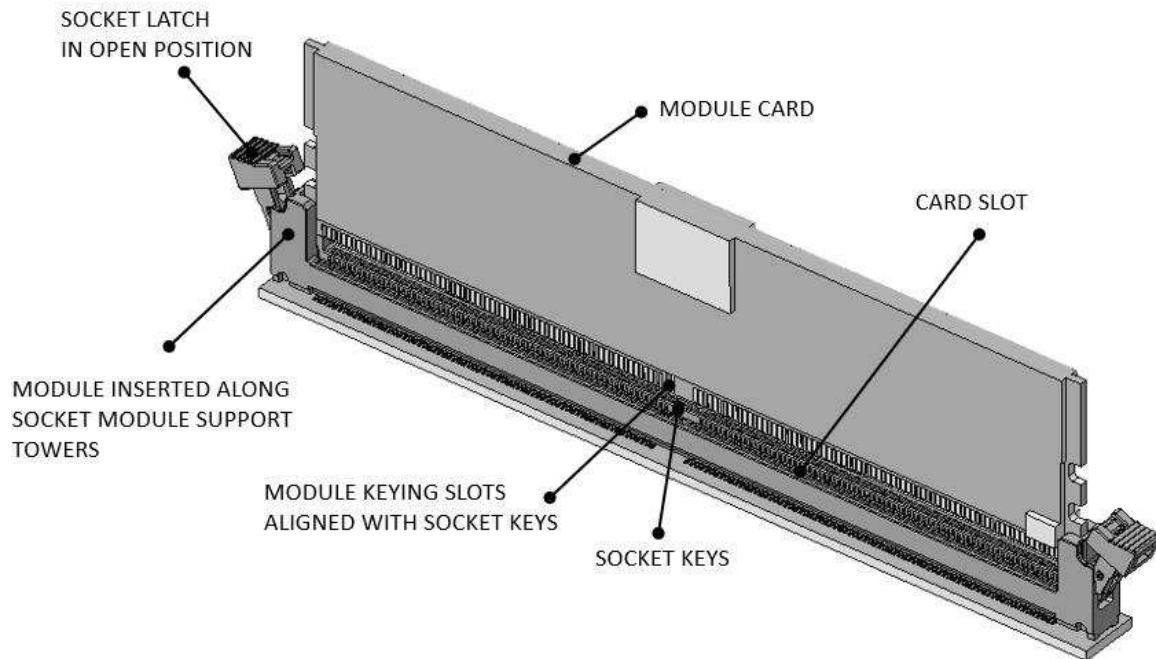
The module must be mated to the socket according to the following requirements:

1. The socket extractors must be moved to the open position. See Figure 8.
2. The keying slots of the module must align with the keys of the socket.
3. The module must be slid along the interior walls of the module support towers of the socket 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.

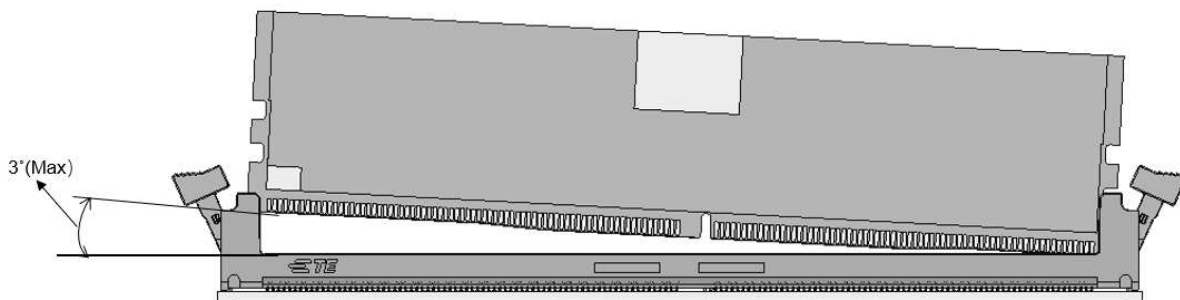
The module must be removed from the socket according to the following requirements:



1. The extractors must be simultaneously rotated away from the module. As the extractors rotate outward, the module must move out of the socket. When the extractors are fully rotated open (25° away from end of housing), the module must be completely disengaged from the socket.
2. The module must be carefully slid straight out of the module support towers.



### PREVENT LONGITUDINAL ROCKING OF MODULE



**Figure 8**

### 3.12. Repair

Damaged sockets must be removed, discarded, and replaced. The contact solder tails and boardlocks & Tabs will require desoldering.

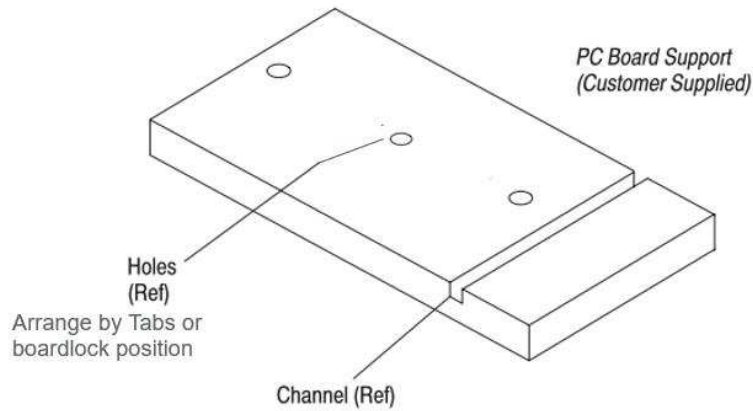
### 4. QUALIFICATION

DDR5 DIMM Sockets are Qualified to INTEL 288 Pin DDR5 Memory Connector Specification.

### 5. TOOLING

No tooling is required for placement of the sockets onto the pc board. A pc board support must be used to prevent damage to the socket components during the placement of socket on the board. It should have

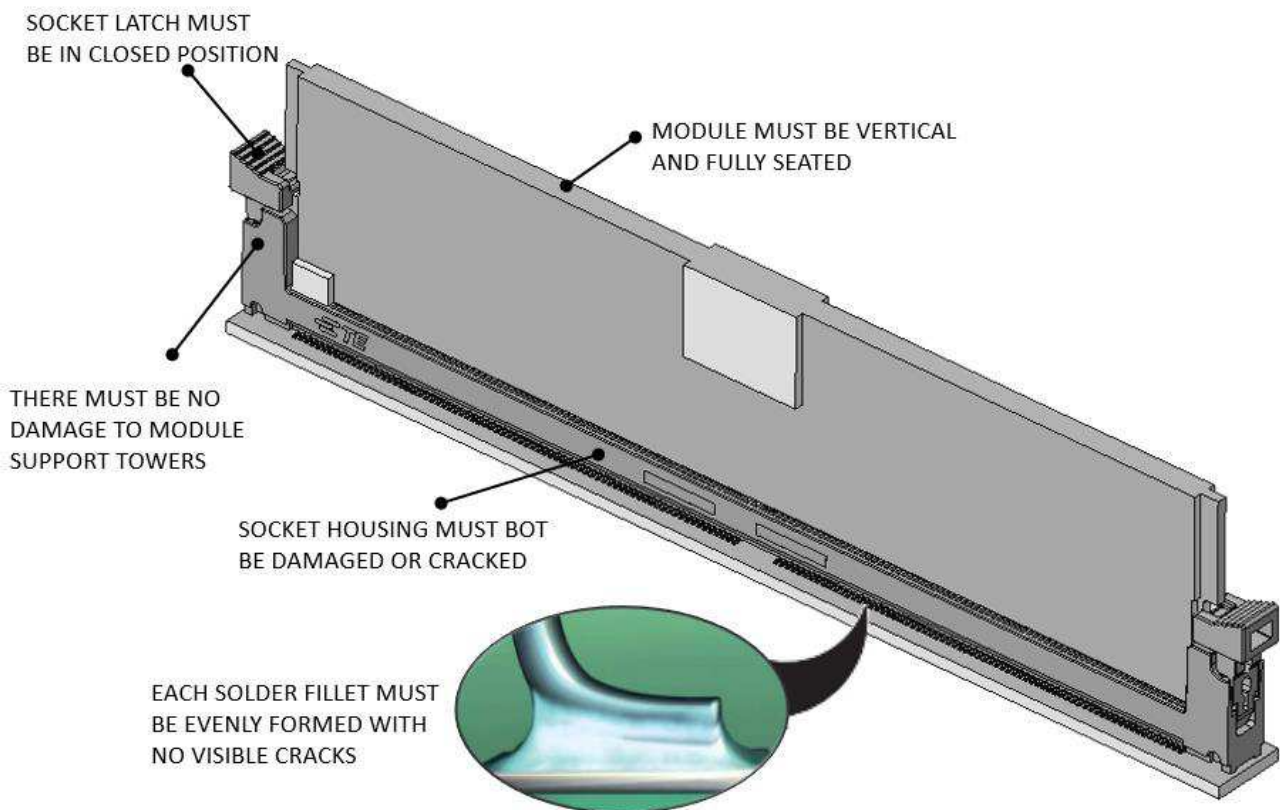
flat surfaces with holes or a channel large enough and deep enough to receive the socket contact solder tails and boardlocks. See Figure 9.



**Figure 9**

## 6. VISUAL AID

Figure 10 shows a typical application of a DDR5 DIMM Socket. 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 10. VISUAL AID**