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 ±0.13 mm 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 Signal Grace Inertial (SGI) 2.0 connector system includes through hole header(T/H), Surface Mount Technology Header (SMT) and Insulation Displacement Crimp (IDC) plug assembly used in the wire-to-board interconnections. Connectors are available in 2 through 10 contact positions. 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.

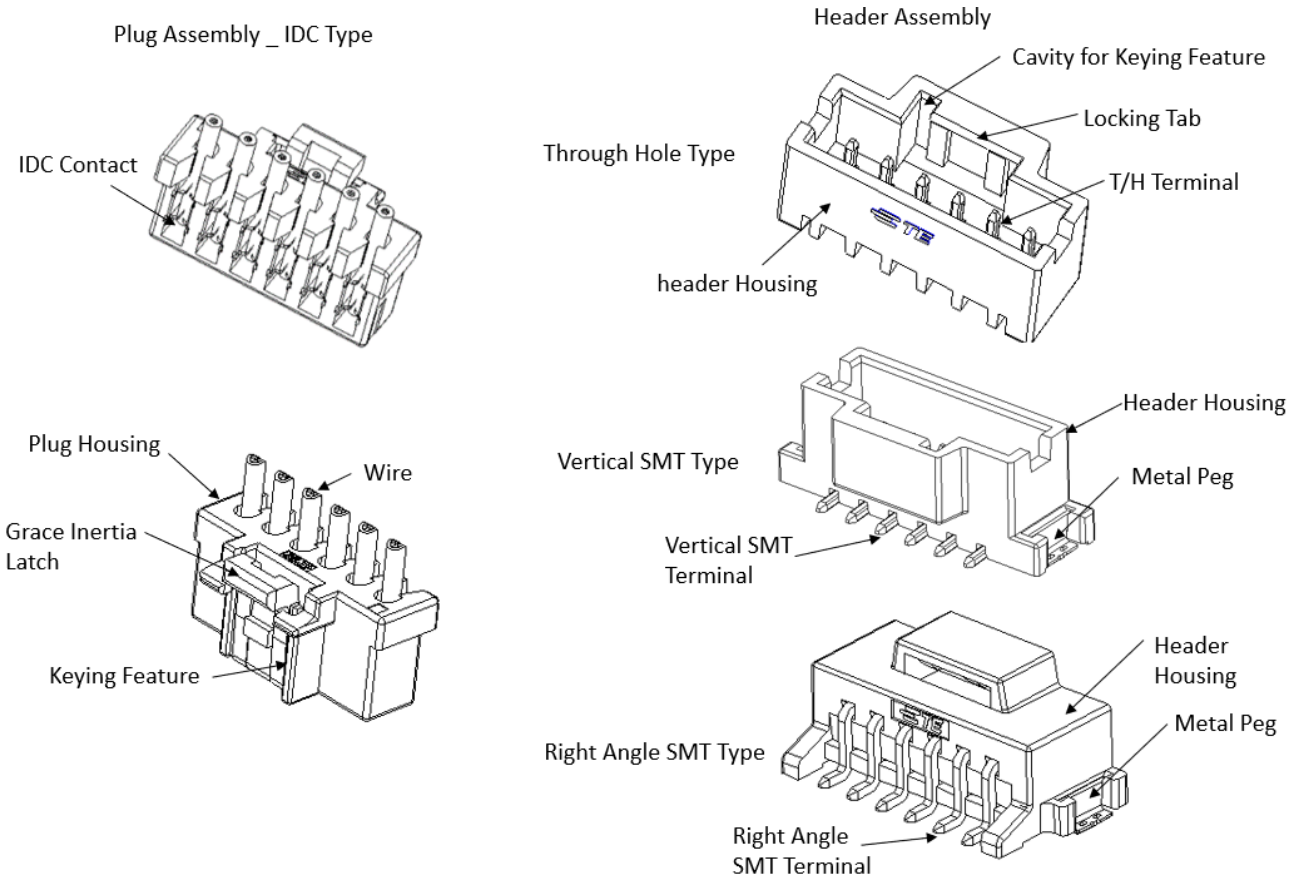


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- First released.

© 2019 TE Connectivity family of companies
All Rights Reserved
| Indicates Change

*Trademark. TE Connectivity, TE connectivity (logo), and TE (logo) are trademarks. Other logos, product, and/or company names may be trademarks of their respective owners.

2.2. Customer Assistance

Reference Product Base Part Numbers 2232826 (Header_ Through hole), 2232829 (Header_ Vertical SMT),2336678 (Header_ Right Angle SMT) and 2232979 (IDC Plug assembly) are representative of SGI2.0 Connectors. 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, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of Page 1.

2.3. Drawings

Customer Drawings for specific products 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. Manuals

Manual 402-40 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 108-106266 provides product performance and test information.

3. REQUIREMENTS

3.1. Safety

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

3.2. Material

The plug housing is made of flame-retardant thermoplastic, and the header housings are made of flame retardant high-temperature thermoplastic to facilitate the soldering process. The header pin and receptacle contacts are made of copper alloy.

3.3. Storage

A. Ultraviolet Light

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

B. Shelf Life

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

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

3.4. Wire Selection and Preparation

The contacts accept stranded copper wire.

Applicable Wire Size: AWG #28, #26 (Cross Sectional Area 0.08~0.14mm)

Insulation Diameter: Φ0.85~1.00mm.

Wire insulation hardness: 88~98A

Wire concentricity and Wire length of twist please see Figure 2

All wires, including the above mentioned, need to be approved prior to usage.

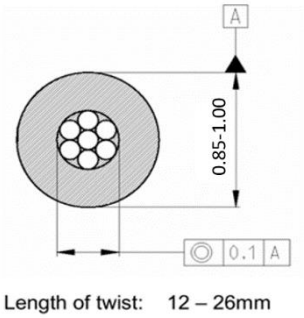


Figure 2

3.5. Visual inspection of the terminated connectors

For all following requirements a visual inspection is sufficient. In case of uncertainty a dimensional check is required.

A. Contact

Scratch mark is allowable. Scraping is allowable on condition that the plating is not fully removed.

B. Wire

Any inserted wire being damaged with broken insulation, resulting visible conductor shall be rejected.

C. Housing

Tool mark is allowable. However, it shall be free from crack, bulge and so on.

3.6. Depth of Wire Insertion

Wire insertion depth shall be controlled within 0.70±0.12mm. Please do cross section to measure and control this dimension, regardless of the wire size and insulation diameter. Please see figure 3.

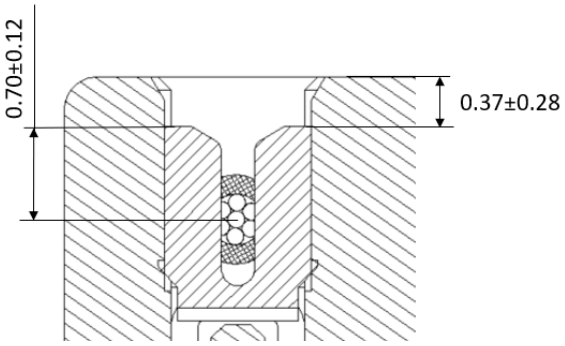


Figure 3

3.7. Contact insertion depth

After termination, the contact should be on his position correctly, and the contact insertion depth should meet the specification of 0.37±0.28mm, please see Figure 3.

3.8. Wire Position inside housing

The inserted wire must have dimensions 0.15±0.15mm as shown in Figure 4. A deformation of the wire or the housing caused by an excess length of the wire is not permitted.

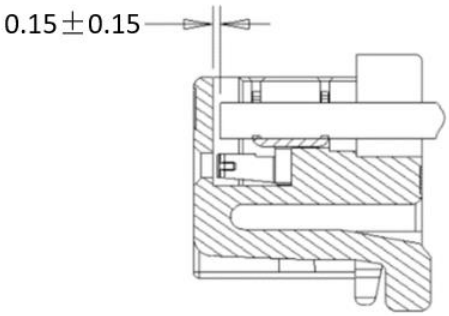


Figure 4

3.9. Wire Retention over the Cavity

Termination wire shall be perfectly inserted into the wire support hole of the housing. Elongation if wire insulation is acceptable if it does not adversely affect the required function.

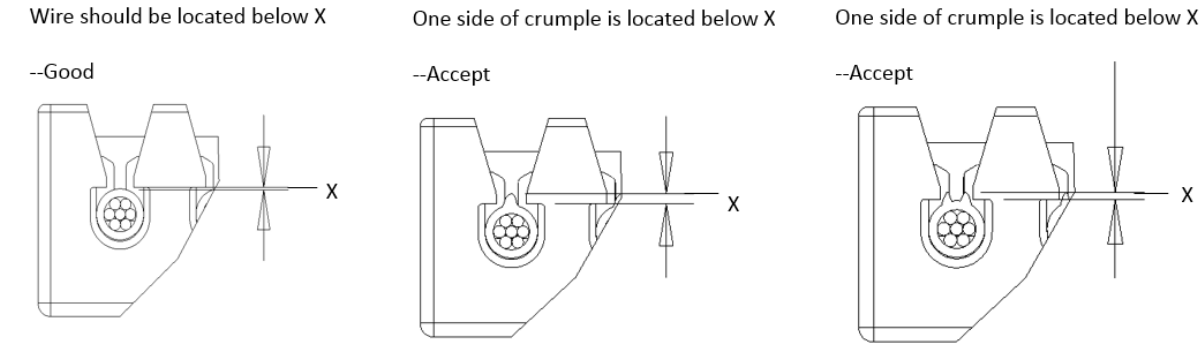


Figure 5

3.10. Position Uniformity of Upper Edges of Contact Slot

After termination, the upper edges of inserted contact slot shall be of inline uniformity. Please see figure 6.

Wire tip shall be recessed under top surface of housing. Please see Figure 7.

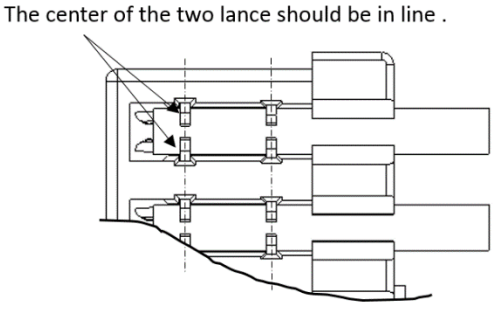


Figure 6

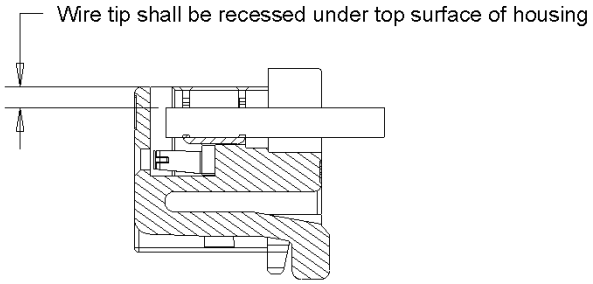


Figure 7

3.11. Wire Retention Force

26 AWG 19.6N minimum in Axial direction, 11.8N minimum in Perpendicular direction

28 AWG 14.7N minimum in Axial direction, 11.8N minimum in Perpendicular direction

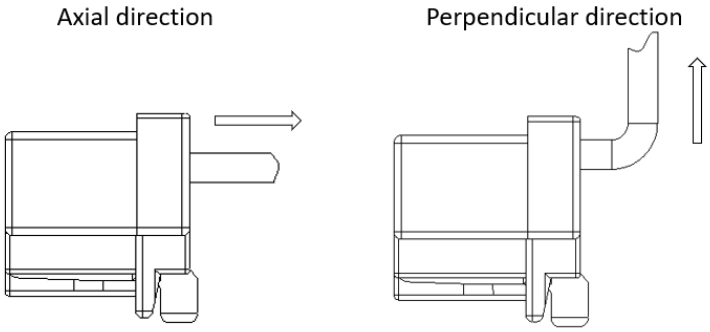


Figure 8

3.12. Others

Any contact once terminated, shall not be reused. All wires need to be approved prior to usage. The item listed below has to be checked.

Item	Characteristic	Specification
1	Wire insulation diameter	See chapter 3.4, 0.85-1.00mm
2	Wire length of twist	See chapter 3.4, 12-26mm
3	Wire insulation hardness	See chapter 3.4, 88-98A
4	Wire concentricity	See chapter 3.4, 0.1mm max.
5	Wire retention force	See chapter 3.11 Axial direction: 26 AWG 19.6N minimum, 28 AWG 14.7N minimum; Perpendicular direction:11.8N minimum.
6	Wire insertion depth	See chapter 3.6, 0.70± 0.12mm
7	Distance between Wire protrusion and housing wall	See chapter 3.8, 0.15± 0.15mm
8	Contact insertion depth	See chapter 3.7, 0.37 ± 0.28mm
9	Visual inspection	See chapter 3.5

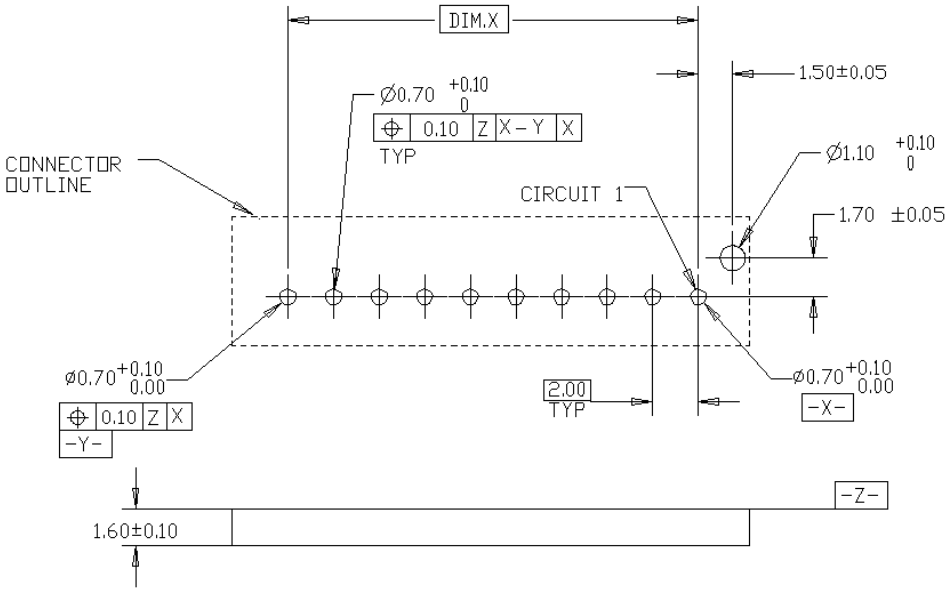
3.13. PC Board

A. Layout for Through Hole Mount Connectors

a. The mounting and contact holes in the PC board must be precisely located to ensure proper placement and optimum performance of the header assembly. Design the PC board using the dimensions provided in Figure 9. The layout shows the top (component) side of the board.

b. PC Board Solder Tine Holes in the pc board for the solder tines must be drilled and plated through to specific dimensions. See Figure 10. The drilled hole size, plating types, and plating thickness will depend on application requirements.

Vertical Through Hole Type Layout



Position	Dim X / mm
2P	2.00
3P	4.00
4P	6.00
5P	8.00
6P	10.00
7P	12.00
8P	14.00
9P	16.00
10P	18.00

Figure 9

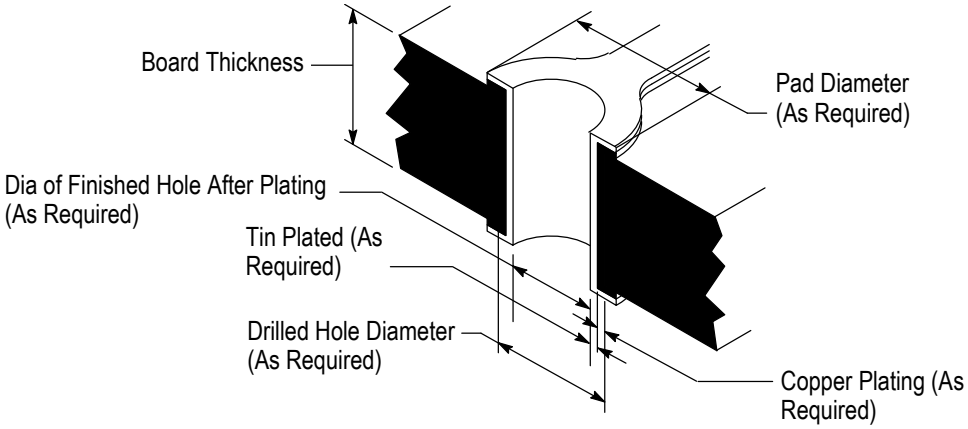


Figure 10

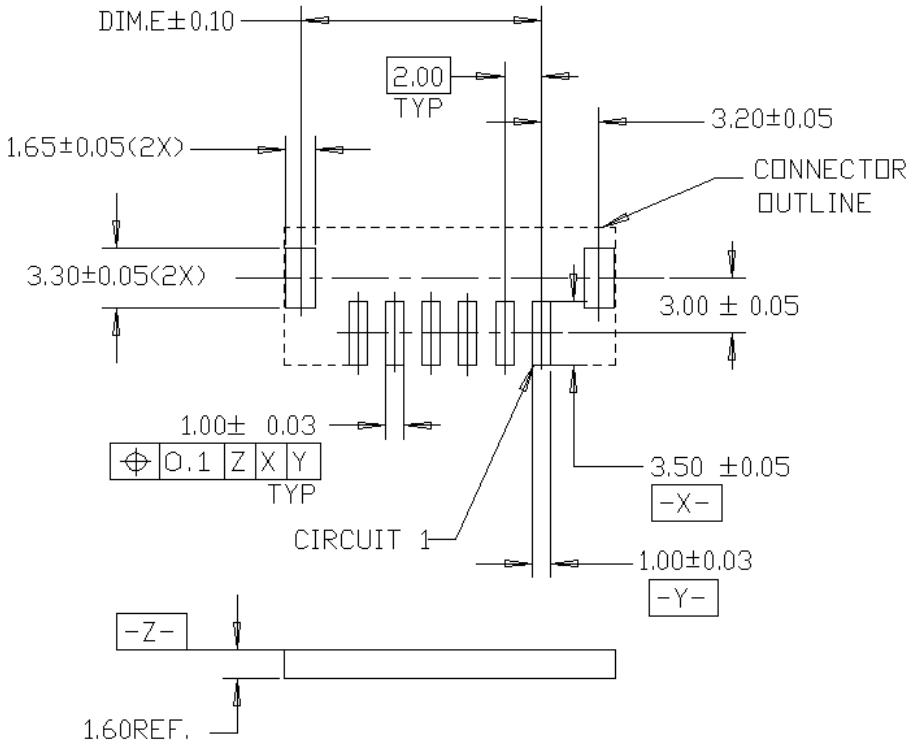
B. Layout for Surface Mount Connectors

a. The PC board pads must be solderable in accordance with EIA-638(Electronic Industries Alliance).

b. Recommended PC board pad pattern, dimensions, and tolerances are shown in Figure 11 for Vertical SMT Type.

c. Recommended PC board pad pattern, dimensions, and tolerances are shown in Figure 12 for Right Angle SMT Type.

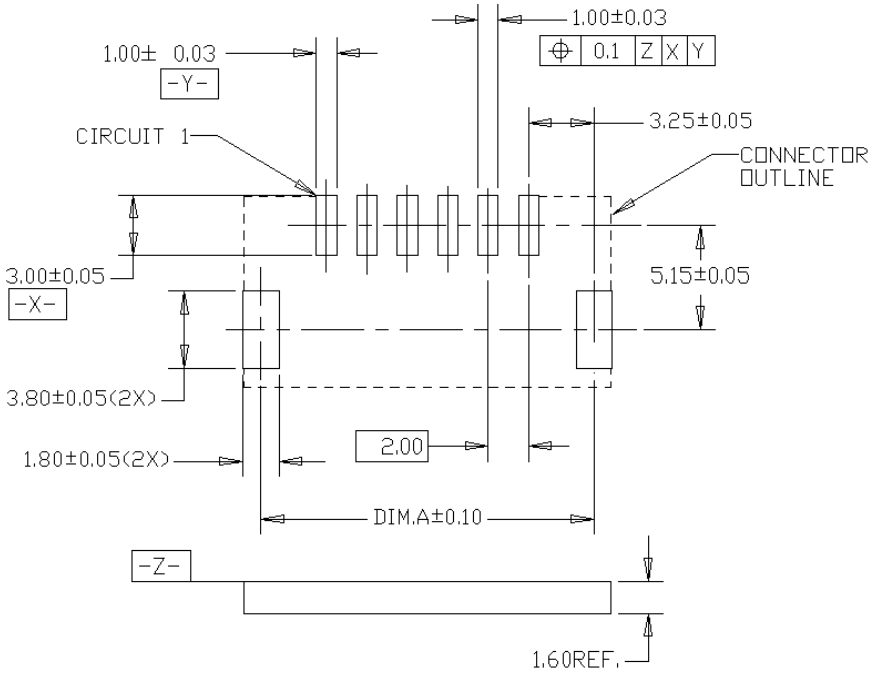
Vertical SMT Type Layout



Position	DIM.E /mm
2P	5.20
3P	7.20
4P	9.20
5P	11.20
6P	13.20
7P	15.20
8P	17.20
9P	19.20
10P	21.20

Figure 11

Right Angle SMT Type Layout



Position	DIM.A /mm
2P	8.50
3P	10.50
4P	12.50
5P	14.50
6P	16.50
7P	18.50
8P	20.50
9P	22.50
10P	24.50

Figure 12

C. Soldering

These header assemblies can be soldered using a variety of soldering techniques. The temperatures and exposure time shall be within the ranges specified in Figure 13.

NOTE
Manual 402-40 provides some guidelines for establishing soldering practices. Refer to Paragraph 2.4, Manuals.

SOLDERING PROCESS	MAXIMUM TEMPERATURE	TIME (At Max Temperature)
Wave soldering	260°C [500°F] (Wave Temperature)	5 Seconds
IR reflow	260°C [500°F]	5 Seconds

Figure 13

3.14. PC Board Header Assembly Placement

CAUTION
If connectors are placed on the board manually, the connector should be handled only by housing to avoid deformation, contamination, or damage to the contact solder tines and metal pegs.

A. Manual Placement

1. Through Hole Mount Connectors When placing through hole mount connectors on the PC board, make sure that the contact solder tines are aligned and started into the matching holes before seating the connector onto the PC board.

2. Surface Mount Connectors Optimally, the contact solder tines should be centered on the PC board circuit pads. However, slight misalignment is permissible as shown in Figure 14.

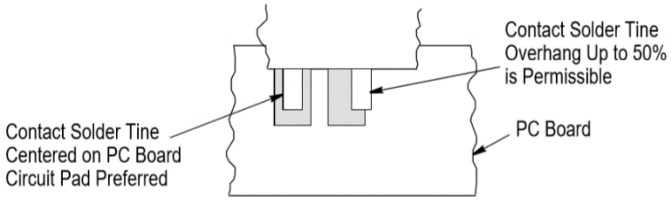


Figure14

B. Robotic Placement

The robotic equipment must be adjusted to feed, pick up, and place the headers on the PC board with an accuracy as required. The header assembly datum surfaces detailed on the customer drawing will ensure correct placement of the header.

3.15. Polarization

The design of keying feature assures polarization for mating connectors.

3.16. Repair

Damaged connectors must be removed, discarded, and replaced.

A. The connectors must be unmated by releasing the Grace Inertia latch on the plug from the locking tab on the pin header and pulling the plug straight out.

B. The whole plug assembly should be replaced if there are one or more damaged contacts, because the contact cannot be reused once it was terminated.

C. Pin header will require standard de-soldering of all contact solder tines. Individual solder type contacts cannot be replaced.

4. TOOLING

4.1 Hand Tool

SGI Hand tool part number is 2350873-1.



4.2 Semi-auto machine

Benchtop machine

Part number: 2358632-1



DCT - (Discrete Cable Termination)

Part number: 2348821-1



Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

TE Connectivity:

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