



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 $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of Signal Grace Inertial (SGI) 1.25 & 1.50 connector system includes SMT header assembly and plug assembly used in the wire-to-board interconnections.

The SGI 1.25 connector system is available in 2 through 18 positions, and SGI 1.50 connector system is available in 2 through 12 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.

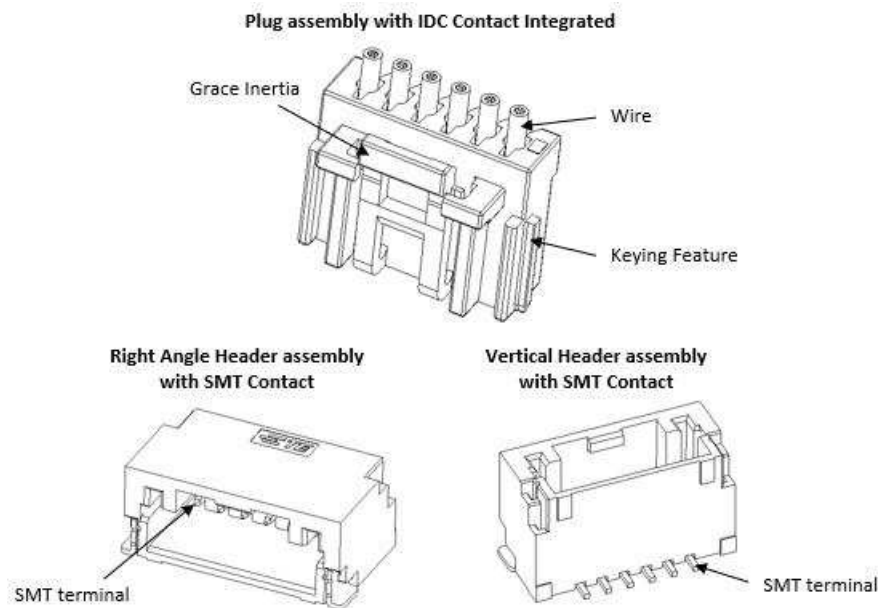


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Preliminary

2.2. Customer Assistance

Reference Product Base Part Numbers are stated in Figure 2. 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.

SGI 1.25 connector		SGI 1.50 connector	
Product Type	Base PN	Product Type	Base PN
Header assembly, SMT, right angle	2360538	Header assembly, SMT, right angle	2360545
Header assembly, SMT, vertical	2360540	Header assembly, SMT, vertical	2360547
Plug assembly	2360539	Plug assembly	2360546

Figure 2

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 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 [108-106451](#) provides product performance and test results.

3. REQUIREMENTS

3.1. Safety

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

3.2. Material

The housings are made of flame retardant rated thermoplastic (UL 94 V-0). The contacts and soldering peg 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

D. Reeled Products

When using reeled contacts, store coil wound reels horizontally and traverse wound reels vertically.

3.4. Wire Selection and Preparation

The contacts accept stranded copper wire with requirement stated in Figure 3. Contact TE for diameter greater than spec.

Product Type Wire Spec	SGI 1.25 connector	SGI 1.50 connector
Applicable wire size	AWG #28, #30	AWG #26, #28, #30
Number of Strands	7	7
Cross Sectional Area (mm ²)	0.05-0.08	0.05-0.13
Insulation Diameter (mm)	0.7-0.9	0.7-1.0

Figure 3

Wire insulation hardness: 88~98A

Wire concentricity and Wire length of twist please see Figure 4

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

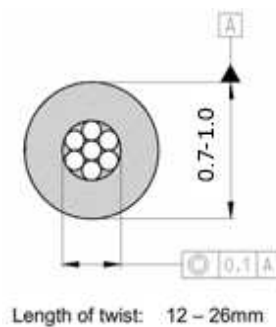


Figure 4

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 as Figure 5. Please do cross section to measure and control this dimension per the wire size. Please see Figure 6.

	SGI 1.25 connector		SGI 1.50 connector		
Wire Size	AWG #28	AWG #30	AWG #26	AWG #28	AWG #30
Wire Insertion Depth (DIM A)	0.60	0.60	0.60	0.60	0.60

Figure 5

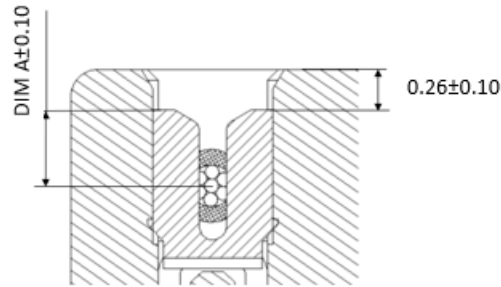


Figure 6

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 0.26 ± 0.10 mm, please see Figure 6.

3.8. Wire Position inside housing

The inserted wire must have dimensions as shown in Figure 7. A deformation of the wire or the housing caused by an excess length of the wire is not permitted.

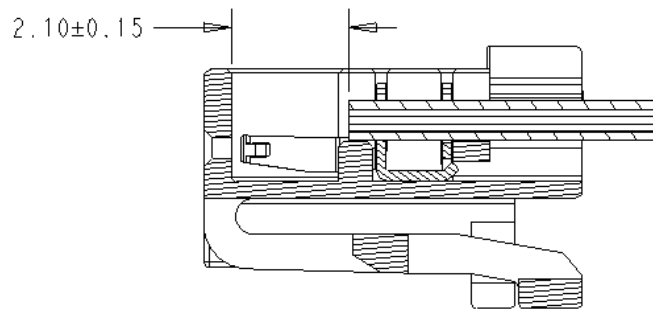


Figure 7

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.

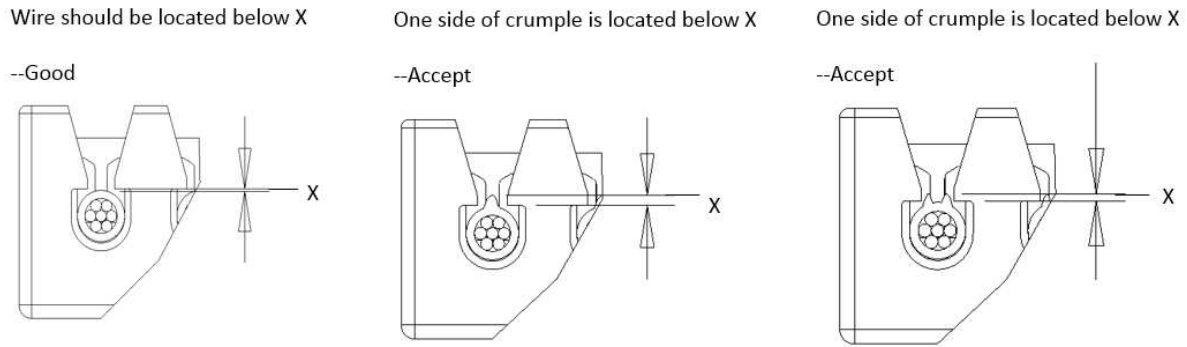


Figure 8

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 9.
Wire tip shall be recessed under top surface of housing. Please see Figure 10.

The center of the two lance should be in line.

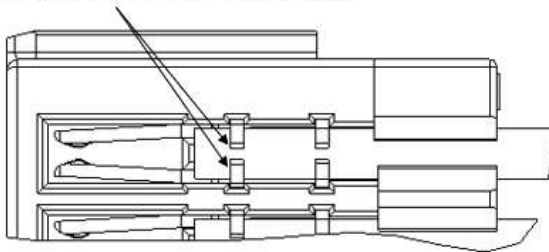


Figure 9

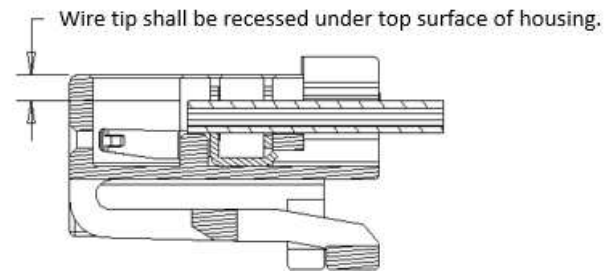


Figure 10

3.11. Wire Retention Force

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

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

30 AWG 4.4N minimum in Axial direction, 11.8N minimum in Traverse direction

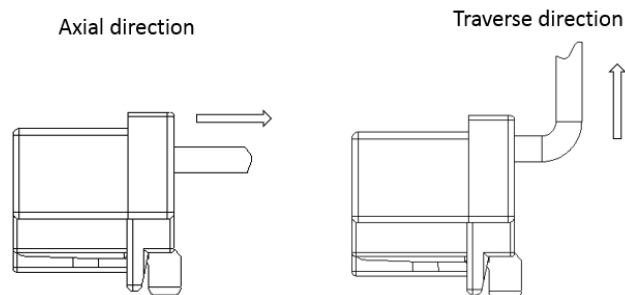


Figure 11

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, 0.7-1.0mm
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, 30 AWG 4.4N minimum Traverse direction: 11.8N minimum
6	Wire insertion depth	See chapter 3.6, 0.60± 0.10mm
7	Distance between Wire protrusion and housing wall	See chapter 3.8, 2.10± 0.15mm
8	Contact insertion depth	See chapter 3.7, 0.26 ± 0.10mm
9	Visual inspection	See chapter 3.5

Figure 12

3.13. PC Board

A. Material and Thickness

Board material will be glass epoxy (FR-4, G-10).

Contact the PRODUCT INFORMATION number at the bottom of Page 1 for suitability of other pc board materials.

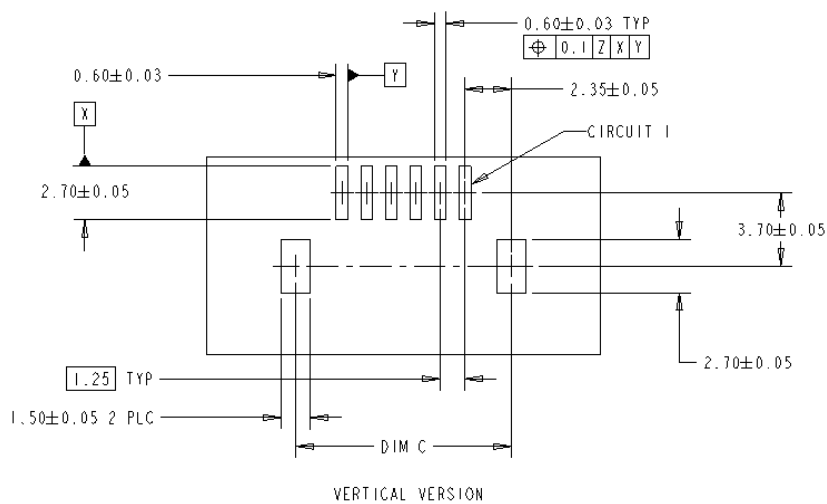
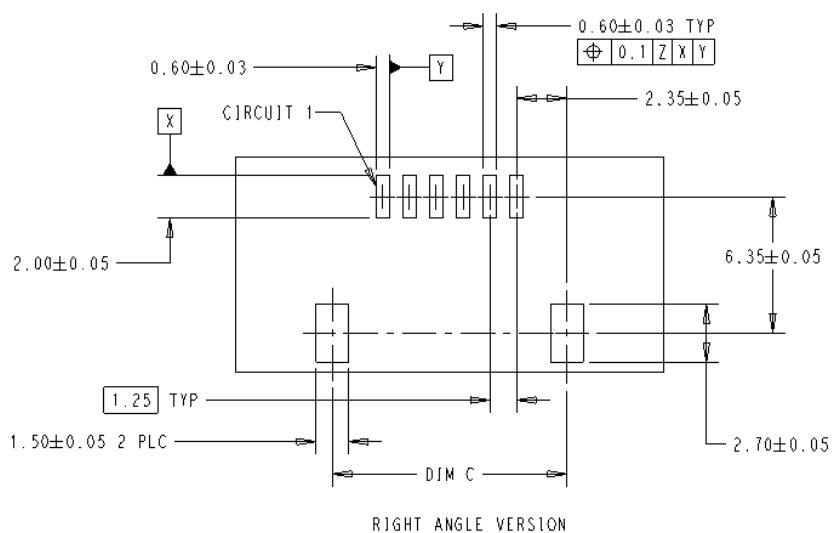
B. Tolerance

Maximum allowable bow of the PC board shall be 0.03 mm over the length of the header assembly.

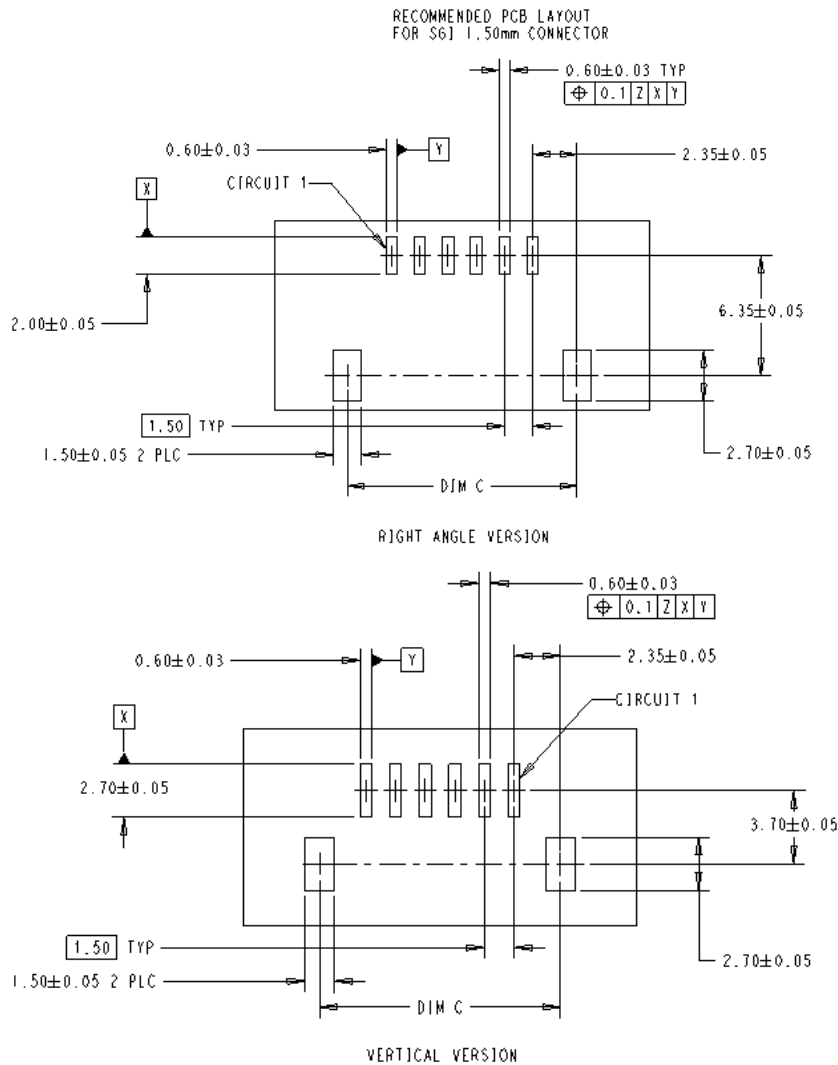
C. PC Board Layout for Surface Mount Connectors

The pc board pads must be solderable in accordance with EIA-638 (Electronic Industries Alliance). Recommended pc board pad pattern, dimensions, and tolerances are shown in Figure 13.

RECOMMENDED PCB LAYOUT
FOR SG1 1.25mm CONNECTOR



Position	DIM.B /mm
2P	5.95
3P	7.2
4P	8.45
5P	9.7
6P	10.95
7P	12.2
8P	13.45
9P	14.7
10P	15.95
11P	17.2
12P	18.45
13P	19.7
14P	20.95
15P	22.2
16P	23.45
17P	24.7
18P	25.95



Position	DIM.B /mm
2P	6.2
3P	7.7
4P	9.2
5P	10.7
6P	12.20
7P	13.7
8P	15.2
9P	16.7
10P	18.2
11P	19.7
12P	21.2

Figure 13

3.14. 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 14. We recommend using SN60 or SN62 solder for these header assemblies.



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 14

3.15. PC Board Header Assembly Placement

**CAUTION**

The header assemblies should be handled only by the housing to prevent deformation or other damage to the solder tines.

A. Manual Placement

Align the header assembly solder tines with the appropriate holes in the PC board. Start all solder tines into the board, then press on the header until it seats on the PC board.

B. Robotic Placement

The robotic equipment must be adjusted to feed, pick up, and place the headers on the PC board with an accuracy of 0.25 mm. The header assembly datum surfaces detailed on the customer drawing will ensure correct placement of the header.

3.16. Polarization

The design of each contact cavity assures polarization for mating connectors.

3.17. Repair

Damaged connectors must be removed, discarded, and replaced.

- A. The connectors must be unmated by releasing the locking 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 is 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

Tooling part numbers and instructional material packaged with the tooling are given in Figure 15.

4.1 Hand Tool

4.2 Semi-auto machine

4.3 Automatic machine