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## SIM CONNECTOR 5 DIRECTIONAL

### 1. SCOPE .

### 1.1 Content.

This specification covers the requirements for application of a Tyco* SIM connector 5 directional. The connector is designed to make a connection between a Subscriber Identity Module (SIM) according to ISO 7816-2 and a printed circuit board.
The physical characteristics of the SIM card connector are in accordance with GSM 11.11.

### 2. REFERENCE DOCUMENTATION.

**2.1** For applicable performance requirements see *Tyco electronics* Product Specification 108-19280

**2.2** For configuration details see customer drawing(s):

C-1705300 Customer drawing of “SIM connector 5 directional, 6 positions”

### 3. NOMENCLATURE.

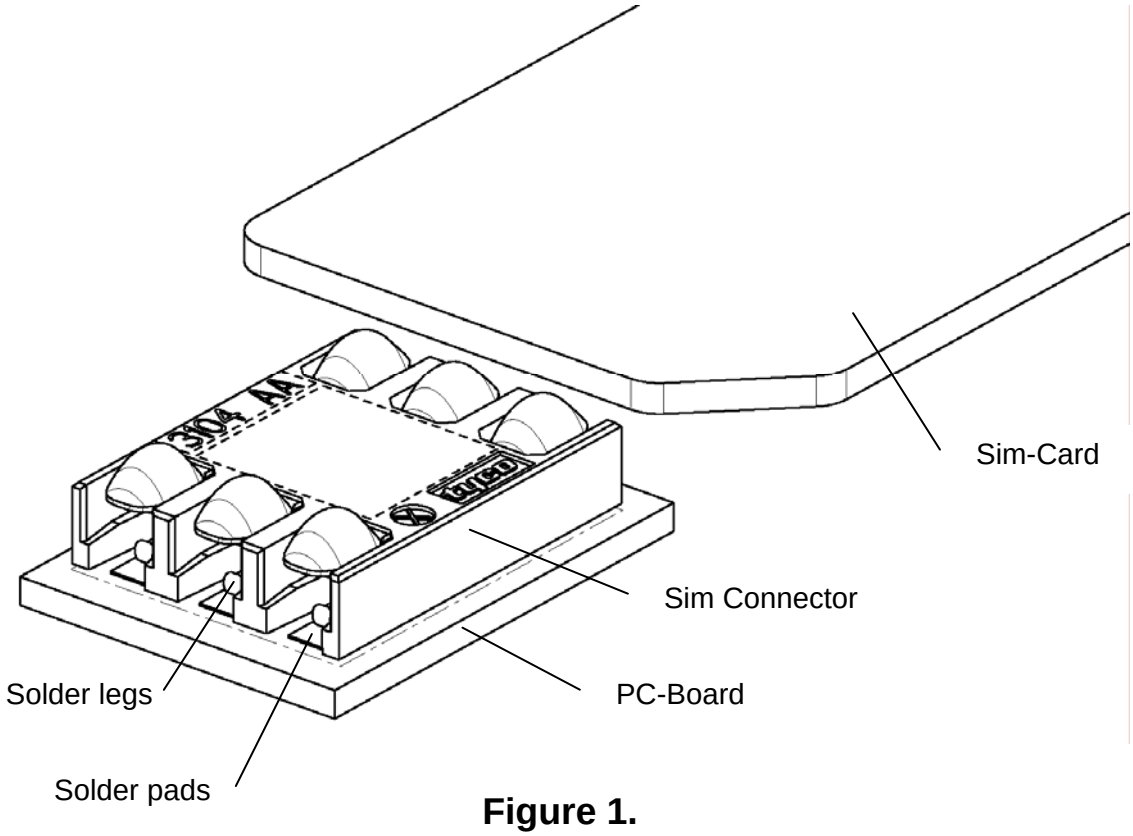


**Figure 1.**

| DR. W. Jansen | DATE 05 Apr 04 | APVD P.D. Jaeger | DATE 08 Apr 04 |
|---|---|---|---|

EC EH10-0250-05

## 4. REQUIREMENTS.

### 4.1 Connector Packaging, Storage and Handling.

Connectors are packaged and shipped in boxed reels of embossed tape packaging that conforms to Electronics Industry Association, EIA 481-B Packaging Standards. Boxes should remain unopened until ready for use to prevent damage to the tape and to prevent contamination of the solder legs. They should be used on a first-in / first-out basis to prevent possible storage contamination and to insure maximum solderability.

The leading end of each new reel starts with empty covered pockets, followed by X covered pockets containing connectors (see customer drawing C-1705300), empty covered pockets and a certain length of plain covertape fixed to the core of the reel. (see figure 2.)

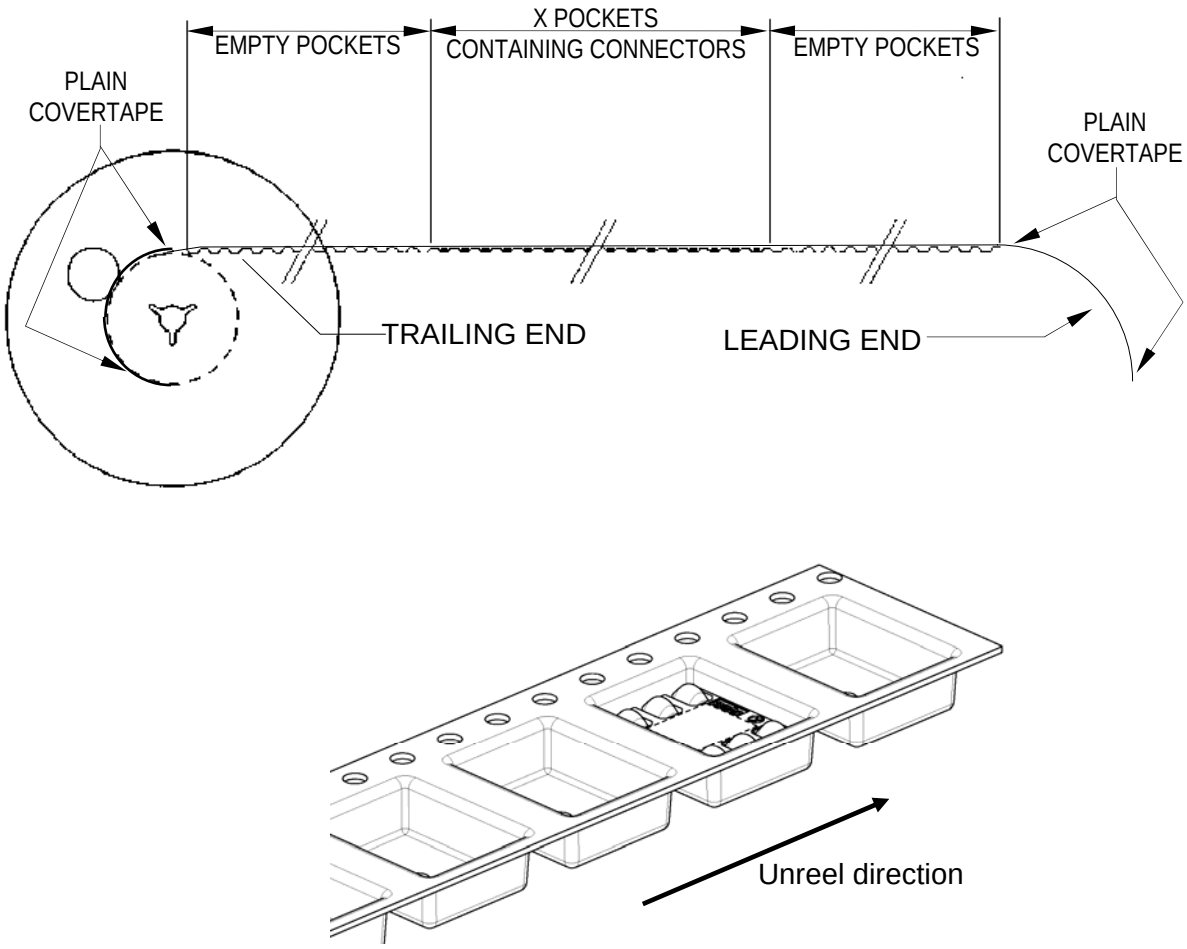


**Figure 2**

### 4.2 Product Selection.

For product selection see updated customer drawing C- 1705300.

## 4.3 Connector Interface.

### A. Interface pad layout and plating

SIM-Cards contact-pads layout shall be in accordance with ISO 7816-2.

### B. Mating with interface

Clearance between SIM connector surface and SIM card shall be as specified in figure 3.
Once mated, a stop in the construction of the application shall assure the proper position of the SIM card regarding the contact spring.

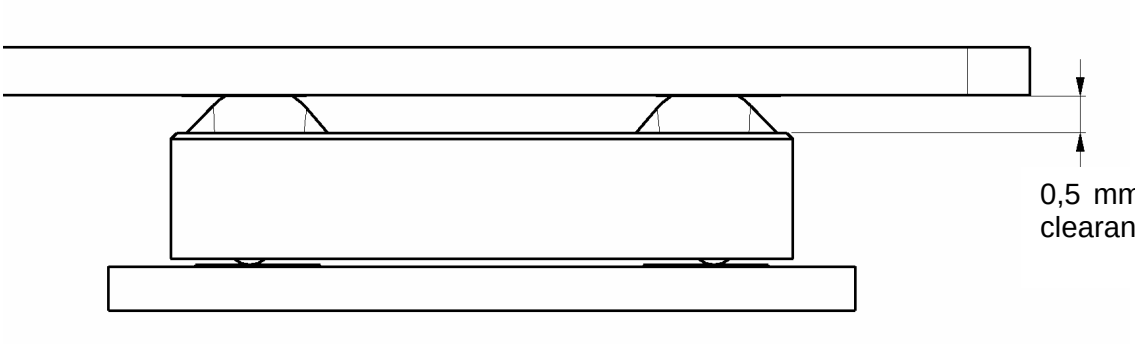


**Figure 3.**

### C. SIM card insertion/removal directions of SIM connector 5 directional

Insertion/removal of SIM card can be in +X, -X, +Y, -Y or –Z direction as specified in figure 4.

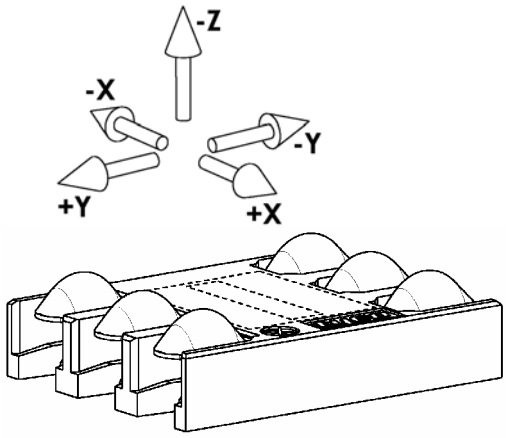


**Figure 4.**

### D. Mechanical stability

The constructions in the application shall provide mechanical stability of the SIM connector in relation to the interface pads (contact pads of SIM card), in order to comply with the requirements specified in 4.3.A and 4.3.B.

This is to avoid unacceptable force load on the connector as well as on the SMD solder joints and to prevent deformation of the SIM-card.

## 4.4 Printed Circuit Board.

### A. Lay-out

The PC-Board solder pad layout shall be as specified on the Customer print 1705300

### B Solderability

Plated parts on the PC-Board shall be solderable as defined in Tyco specification 109-11-2.
Additional information on solderability and soldering variables can be found in Tyco Electronics AMP Corporate Bulletin 52.
Solder paste-height shall be 0.2 mm max..

## 4.5 Component positioning

A. The connectors are pre-positioned in the EIA packaging to accommodate easy robotic Pick & Place (P&P) see figure 2.

B. Area for vacuum P&P is located on the connector mating surface.
Minimum available area is 4,5 mm x 5,0 mm.
See figure 6 and customer drawing C-1705300.

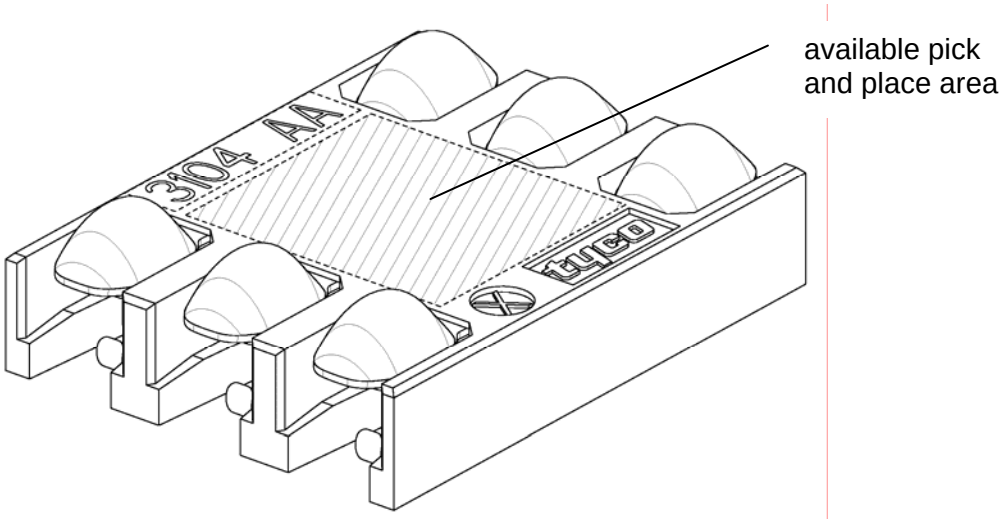


**Figure 6.**

## 4.6 Soldering process

Resistance to soldering-heat test shall cover the Forced hot air convection (reflow) heat curve as indicated in figure 7,
ref. IPC/JEDEC J-STD-020B with increased T peak ($T_P$).

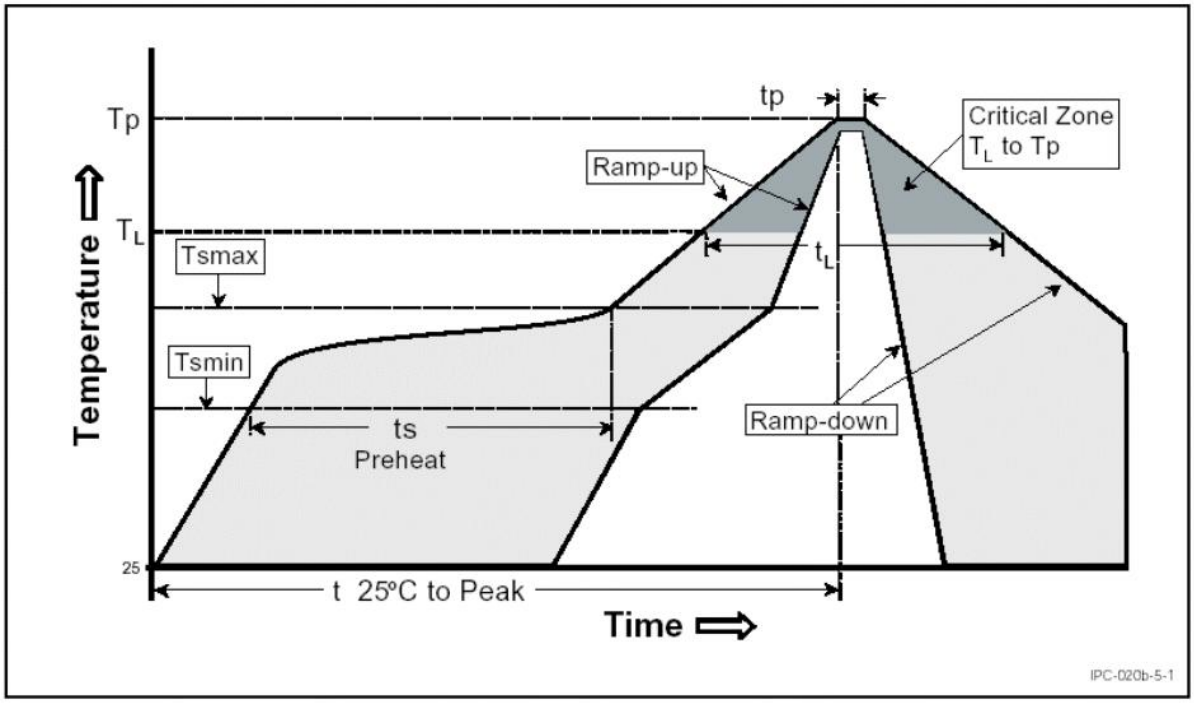


**Figure 7. Forced hot air convection (reflow) heat curve.**

| Profile feature | Pb-Free Assembly<br>Small Body |
|---|---|
| Average ramp-up rate<br>($T_L$ to $T_P$) | 3°C /second max. |
| Preheat<br>- Temperature Min ($T_{S\ min}$)<br>- Temperature Max ($T_{S\ max}$)<br>- Time (min to max) ($t_S$) | <br>150°C<br>200°C<br>60-180 seconds |
| $T_{S\ max}$ to $T_L$<br>- Ramp-up Rate | <br>3°C /second max. |
| Preheat<br>- Temperature Min ($T_L$)<br>- Time ($t_L$) | <br>217°C<br>60-150 seconds |
| Peak temperature ($T_P$) | 260 +0/-5°C |
| Time within 5°C of actual Peak Temperature ($t_P$) | 20-40 seconds |
| Ramp-down Rate | 6°C /second max. |
| Time 25°C to Peak Temperature | 8 minutes max. |

Note: All temperatures refer to topside of the package, measured on the package body surface.

## 4.7 Handsoldering during removal and replacement.

### A. Connector removal from PC-Board

Manual hotgas soldering method shall be used to remove battery connector from board. Damaging of the removed connector is allowed. Solder conditions shall be as follows:

| | |
|---|---|
| Max. air temperature | + 300° C |
| Max. air velocity | 10 m/s |
| Max. exposure time | 30 s |

### B. Connector replacement on PC-Board

Manual soldering iron method shall be used to solder the replacing connector to the PC-Board. Damage to the replacing connector is not allowed. Care shall be taken here not to melt the connector housing. Solder conditions shall be as follows:

| | |
|---|---|
| Tip diameter | Selected to fit application |
| Max. tip temperature when iron is removed from heater | + 370° C |
| Max. tip temperature when applied to connector solder leg | below 250° C |
| Antistatic protection | Required |
| Max. exposure time | 3 s |

## 4.8 Visual examination

### A. Contact damage

SIM connector (see figure 1) shall not be deformed and their plating shall not be scratched by collision with vacuum nozzle during Pick & Place actions or by any other cause during the Pick&Place, soldering process and assembly process in the final product.

### B. Solder connection

All solder legs shall be properly soldered on the appropriate PC-Board pads, and shall not show any cracks in their solder joints.
The criteria mentioned in Tyco Workmanship specification 101-21 must be fulfilled.