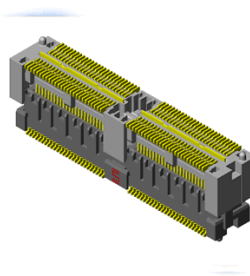


Series: QMS/QFS Rugged High Speed Terminal 0.635 mm pitch



1.0 SCOPE

- 1.1 This specification covers performance, tests and quality requirements for the Samtec QMS/QFS High Speed Terminal/Socket 0.635 mm pitch Series.

2.0 ELECTRICAL

- 2.1 Dielectric Withstanding Voltage, DWV, per EIA-364-20
 - 2.1.1 1125 VAC
- 2.2 Insulation Resistance, IR, per EIA-364-21
 - 2.2.1 > 5,000 Meg Ohms --- PASS
- 2.3 Low Level Contact Resistance, LLCR, per EIA-364--23
 - 2.3.1 27.9 milli Ohms Average - Contact System
- 2.4 Current Carrying Capacity for a 30°C temp rise, CCC, per EIA-364-70
 - 2.4.1 1.5 A (6 Contacts in series)
 - 2.4.2 7.2 A - GND System, Two Banks

3.0 MATERIALS

- 3.1 Insulator Material
 - 3.1.1 LCP
- 3.2 Contact
 - 3.2.1 Copper Alloy with Gold over 50 microInches Nickel

4.0 MECHANICAL

- 4.1 Operational Temperature
 - 4.1.1 -55 degrees C to 125 degrees C
- 4.2 Mating/Unmating forces, per EIA-364-13
 - 4.2.1 6.2/4.1 lbs respectively - Two Banks
- 4.3 Durability after 1000 cycles per EIA-364-23
 - 4.3.1 LLCR change < 15.0 milli-Ohms (L- plating) --- PASS
- 4.4 Normal Force at 0.006 inches deflection, per EIA-364-04
 - 4.4.1 141.9 gr.

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5.0 ENVIRONMENTAL

5.1 Thermal Aging per EIA-364-17

- 5.1.1 No Evidence of Physical Damage seen --- PASS
- 5.1.2 Change in Contact LLCR did not exceed +15.0 milli-Ohms (L- plating) --- PASS
- 5.1.3 Test Conditions
 - 5.1.3.1 105 degrees C
 - 5.1.3.2 250 hours

5.2 Cyclic Humidity per EIA-364-31

- 5.2.1 No Evidence of Physical Damage seen --- PASS
- 5.2.2 Insulation Resistance > 5000 Meg Ohms --- PASS
- 5.2.3 No evidence of Breakdown or Arcing when applying 750 VAC --- PASS
- 5.2.4 Change in LLCR not to exceed +15.0 milli-Ohms (L- plating) --- PASS
- 5.2.5 Test Conditions
 - 5.2.5.1 Cyclic 25 degrees C to 65 degrees C for 240 hours, at 90% to 95% RH
 - 5.2.5.2 Time Condition "B" (240 hours) for Method III, excluding sub-cycle 7A and 7B

5.3 Thermal Shock per EIA-364-32

- 5.3.1 No Evidence of Physical Damage seen --- PASS
- 5.3.2 Change in Signal LLCR did not exceed +15 mOhm --- PASS
- 5.3.3 No evidence of Breakdown or Arcing when applying 700 VAC
- 5.3.4 Insulation Resistance > 5000 Meg Ohms --- PASS
- 5.3.5 Test Conditions
 - 5.3.5.1 # Thermal Cycles: 100
 - 5.3.5.2 Hot Temperature: 85 degrees C +3 degrees C/-0 degrees C
 - 5.3.5.3 Cold Temperature: -55 degrees C +0 degrees C/-3 degrees C
 - 5.3.5.4 Dwell/Configuration: 30 Minutes, Mated and Mounted
 - 5.3.5.5 Hot/Cold Transition: Instantaneous

5.4 Mechanical Shock per EIA-364-27

- 5.4.1 Change in Signal LLCR did not exceed +15 mOhm --- PASS
- 5.4.2 Test Conditions
 - 5.4.2.1 Peak Value: 100 G
 - 5.4.2.2 Duration: 6 milliSec
 - 5.4.2.3 Waveform: Sawtooth
 - 5.4.2.4 Velocity: 11.3 FPS
 - 5.4.2.5 # Shocks/Direction: 3 Shocks/3 Axes (18 total)

5.5 Mechanical Shock per EIA-364-27

- 5.5.1 No Evidence of Physical Damage seen --- PASS
- 5.5.2 No Contact Interruptions greater than 1.0 microSec --- PASS
- 5.5.3 Test Conditions
 - 5.5.3.1 Test Condition: "C"
 - 5.5.3.2 Peak Value: 100 G
 - 5.5.3.3 Duration: 6 milliSec
 - 5.5.3.4 Waveform: Half Sine
 - 5.5.3.5 Velocity: 12.3 FPS
 - 5.5.3.6 # Shocks/Direction: 3 Shocks/3 Axes (18 total)

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5.6 Vibration per EIA-364-28

- 5.6.1 No Evidence of Physical Damage seen --- PASS
- 5.6.2 Change in Signal LLCR did not exceed +15 mOhm --- PASS
- 5.6.3 No Contact Interruptions greater than 1.0 microSec --- PASS
- 5.6.4 Test Conditions
 - 5.6.4.1 Test Condition: V, Letter "B", Random
 - 5.6.4.2 Frequency: 50 to 2000 Hz
 - 5.6.4.3 PSD: 0.04
 - 5.6.4.4 Duration: 2 Hour/Axis, 3 Axes Total
 - 5.6.4.5 G's: 7.56 G rms

5.7 Vibration per EIA-364-28

- 5.7.1 No Evidence of Physical Damage seen --- PASS
- 5.7.2 No Contact Interruptions greater than 1.0 microSec --- PASS
- 5.7.3 Test Conditions
 - 5.7.3.1 Test Condition: B
 - 5.7.3.2 Frequency: 50 to 2000 Hz
 - 5.7.3.3 Duration: 2 Hours/Axis, 3Axes Total
 - 5.7.3.4 G's: 7.56 G rms

5.8 Solderability/Solvent Resistance

- 5.8.1 Processing to printed circuit boards at 230, 260 and 280 degrees C produced no blistering, distortion or discoloration --- PASS
- 5.8.2 No Evidence of discoloration, degradation or physical damage to the plastic housing. --- PASS

6.0 MIXED FLOWING GAS, MFG

6.1 Change in Signal LLCR after 10 days mated did not exceed +15 mOhm --- PASS

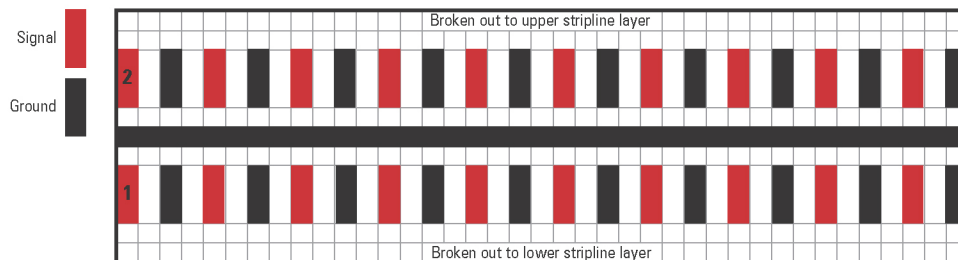
- 6.1.1 Test Conditions
 - 6.1.1.1 Temperature: 30 C
 - 6.1.1.2 RH: 70%
 - 6.1.1.3 Chlorine, CL₂: 10 ppb
 - 6.1.1.4 Nitrogen Oxide, NO₂: 200 ppb
 - 6.1.1.5 Hydrogen Sulfide, H₂S: 10 ppb
 - 6.1.1.6 Sulfur Dioxide, SO₂: 100 ppb

7.0 HIGH FREQUENCY PERFORMANCE

7.1 Empirical Boundaries on Performance with Sinusoidal Signals

- 7.1.1 DV configuration, readings based on using – 3dB insertion loss point on Impedance and Crosstalk.
- 7.1.2 System Impedance: 50Ω and 100Ω for Single-Ended and Differential Pair respectively.
- 7.1.3 For complete test information, click **HERE**

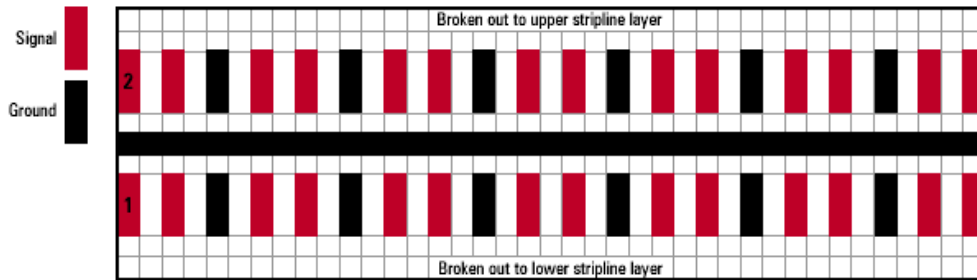
7.2 Standard configuration single-ended signaling, 1:1



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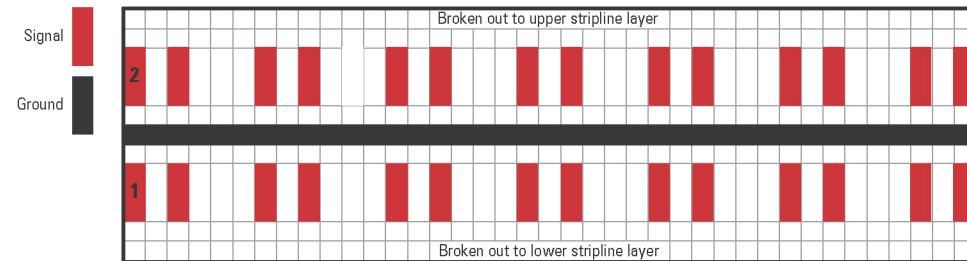
Standard configuration, single-ended signaling					
Socket	Header	Mated height	Configuration	Signaling	Performance
QFS-XXX-01-X-D-A	QMS-XXX-11-D-A	11mm	Standard	Single-ended	5 GHz

7.3 Standard Configuration, Differential Pair Signaling



Standard configuration, differential signaling pair					
Socket	Header	Mated height	Configuration	Signaling	Performance
QFS-XXX-01-X-D-A	QMS-XXX-11-D-A	11mm	Standard	Differential	5.5 GHz

7.4 Differential Configuration, Differential Pair Signaling



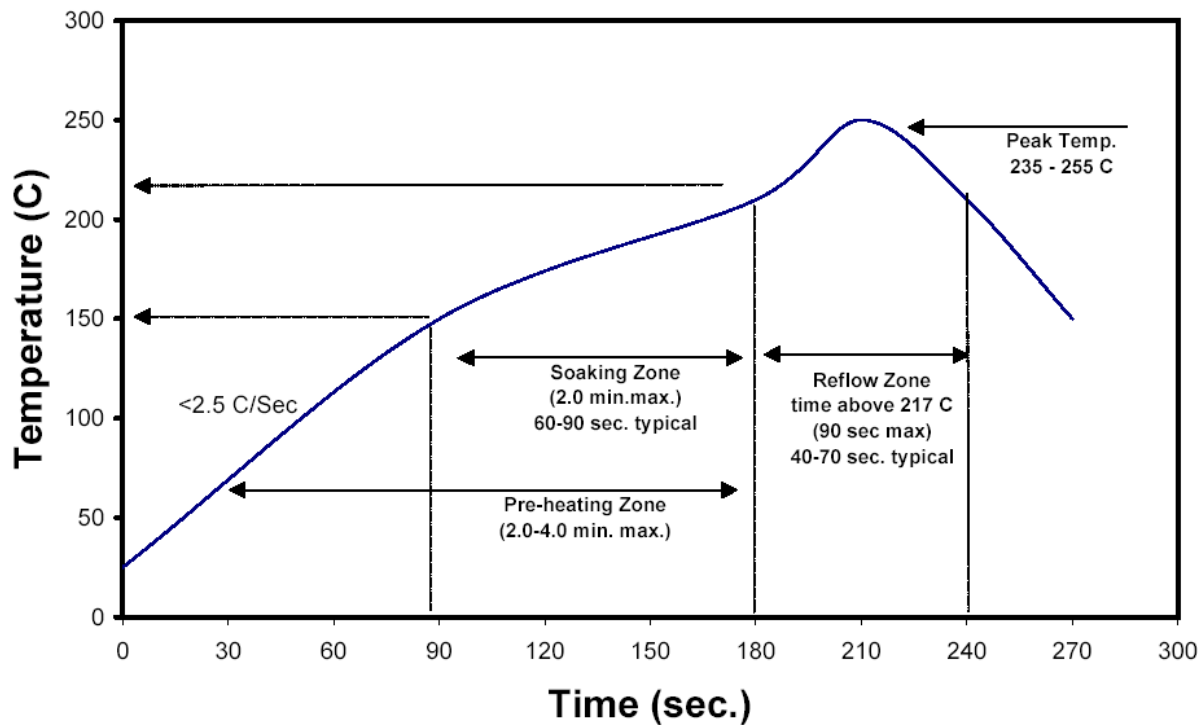
Differential configuration, differential signaling pair					
Socket	Header	Mated height	Configuration	Signaling	Performance
QFS-XXX-01-X-D-DP-A	QMS-XXX-11-X-D-DP-A	11mm	Differential	Differential	5.5 GHz

For additional information, contact Samtec Signal Integrity Group sig@samtec.com or 1-(800)-726-8329.

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8.0 PROCESSING, LEAD-FREE

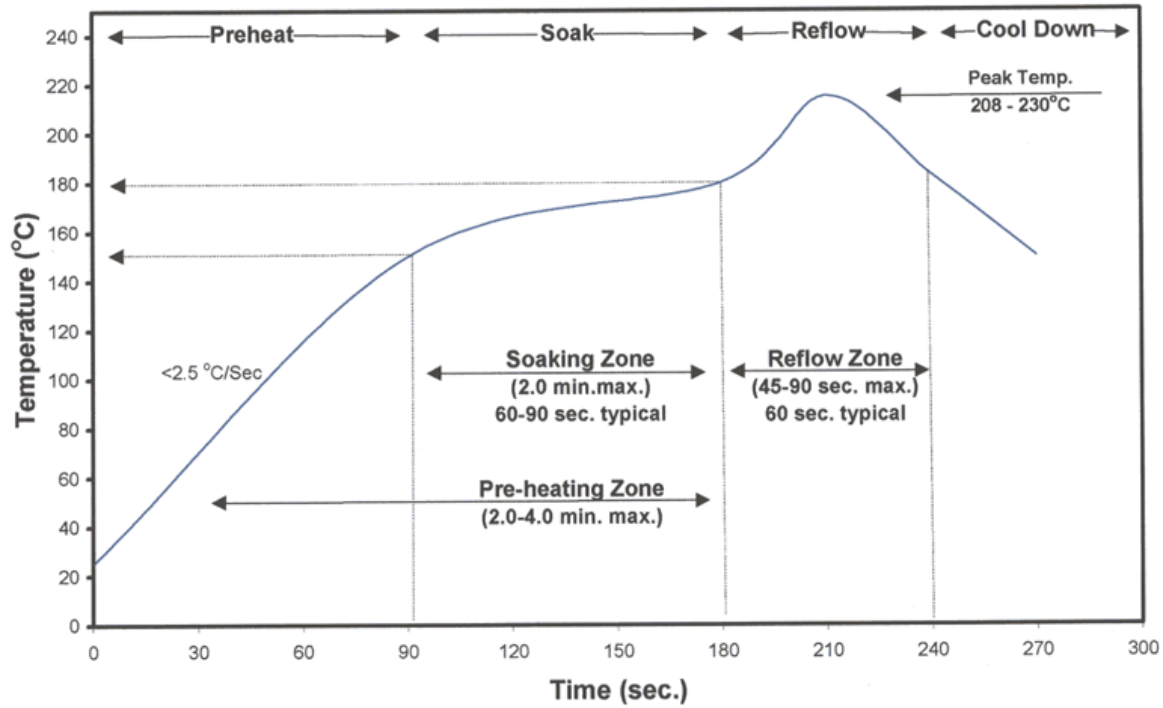
Kester Lead Free Reflow Profile Alloys: Sn96.5/Ag3.0/Cu0.5 and Sn96.5/Ag3.5



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9.0 PROCESSING, Sn63/Pb37

Standard Solder Paste Reflow Profile for Kester Paste Containing Alloys: Sn63Pb37 or Sn62Pb36Ag02



Series: QMS/QFS Rugged High Speed Terminal 0.635 mm pitch

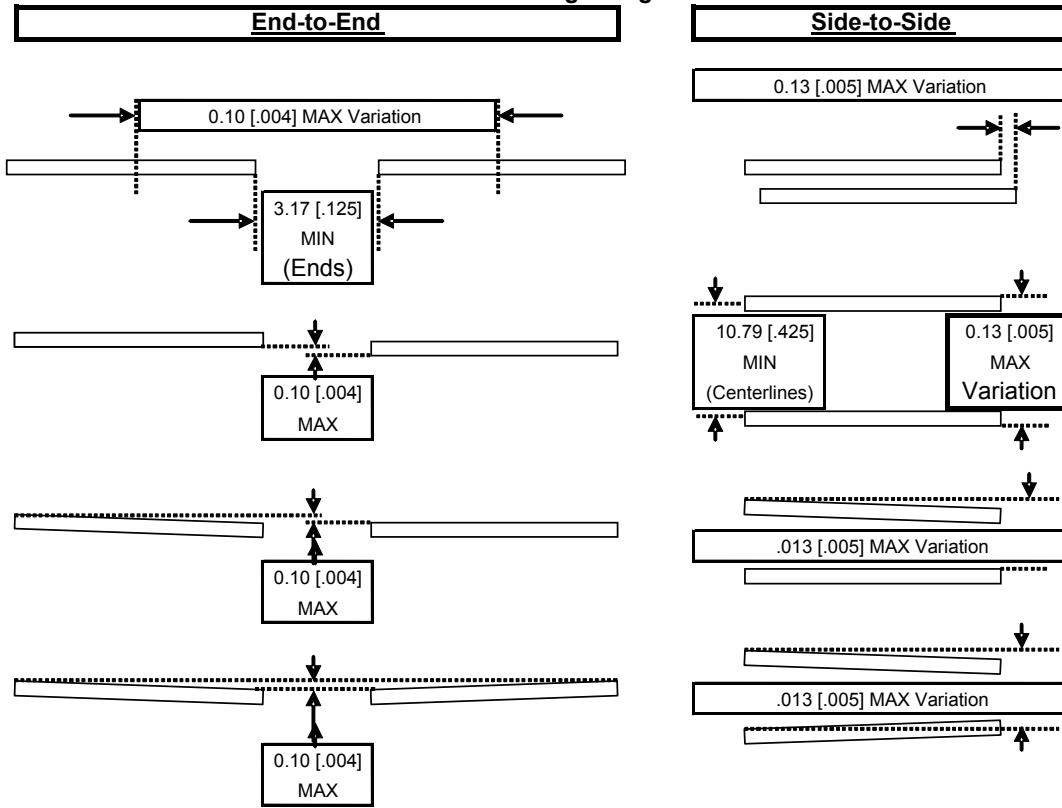
10.0 Multi Connector Processing Placement Limitations – See Following Figures

10.1 When using multiple connectors on a printed circuit board, care must be taken to ensure proper alignment and the following figures illustrate the placement limitations for these connectors, but do not take into account the spacing required for additional components, or automatic placement / rework equipment.

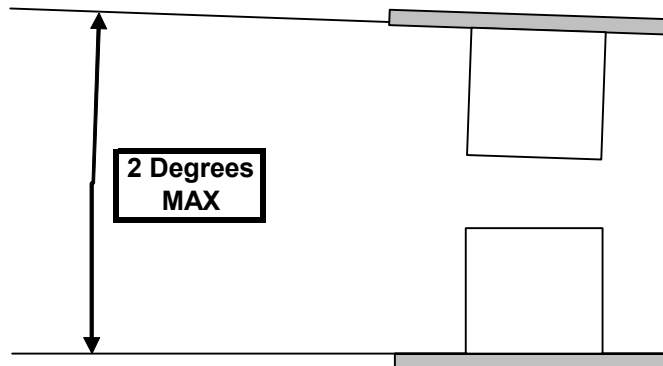
10.2 For applications requiring more than two connectors per board, please contact Samtec's Interconnect Processing group at ipg@samtec.com

10.3 Multi Connector processing – Constrained Board Alignment

Constrained Board Alignment-multi connectors processed to boards
 CTE differences between PCB / fixturing during re-flow
 must be considered regarding connector locations



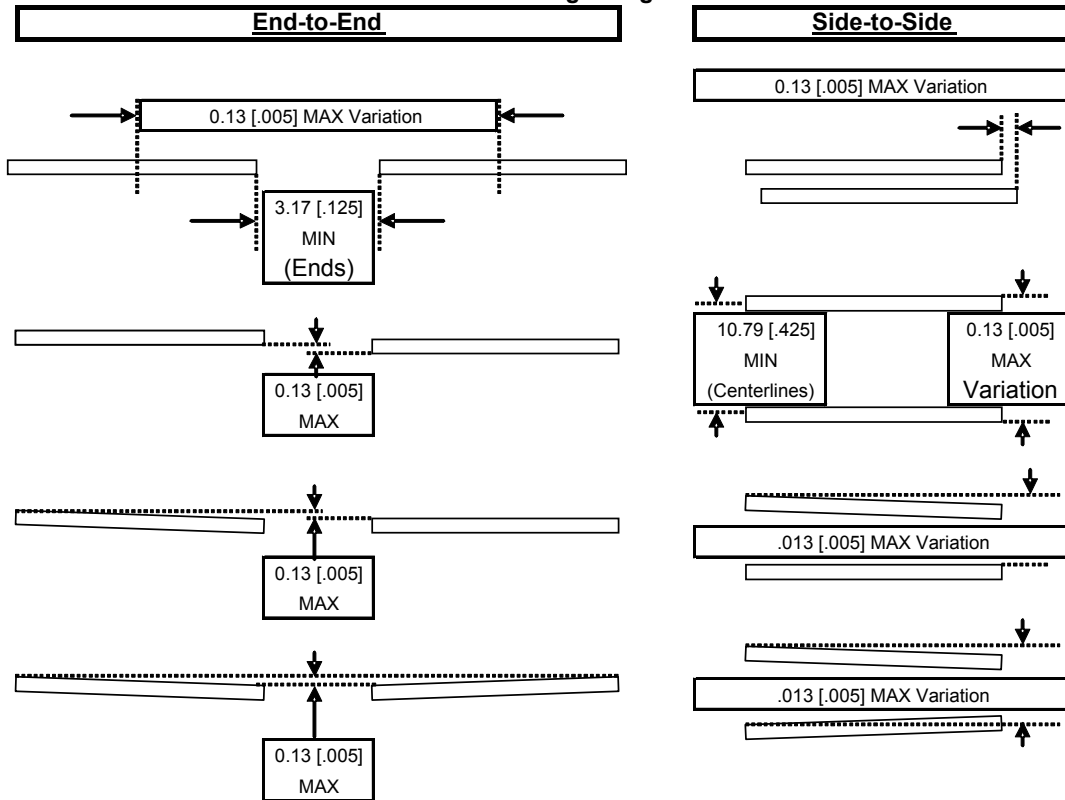
Constrained Board Alignment-multi connectors processed to boards



Series: QMS/QFS Rugged High Speed Terminal 0.635 mm pitch

10.4 Multi Connector Processing - Free Floating Alignment

Free Floating Board Alignment-multi connectors processed to boards
 CTE differences between PCB / fixturing during re-flow
 must be considered regarding connector locations



Free Floating Board Alignment-multi connectors processed to boards

