THE DATASHEET OF

705430251

TABLE OF CONTENTS

1.0 SCOPE

This specification is intended to define the mechanical, electrical and environmental requirements for the SL .100" (2.54) pitch modular, single row wire-to-board and wire-to-wire system.

SL is designed for high density signal applications. The system includes: low profile latching vertical and right angle headers; low profile housings for male and female crimp terminals; pre-assembled, single piece pin and receptacle connectors for Insulation Displacement Technology (IDT); panel mounts for modular wire-to-wire remote interconnections; and SL offers design flexibility and automated harness-making capabilities when combined with our tooling.

2.0 *PRODUCT DESCRIPTION:*

2.1 The following Series are covered by this product specification:

70021, male, crimp terminal
70058, female box, crimp terminal
71851, female box, high force crimp terminal
70066 & 70107, single row, crimp housing
70450 & 74130, dual row, crimp housing
70400, female, single row, insulation displacement, connector assembly
70475 & 71178 ,male, single row, insulation displacement, connector assembly

Headers:
70541, single row, .120" pocket, wire-to-board, shrouded header, vertical, split peg
70543, single row, .120" pocket, wire-to-board, shrouded header, vertical
70545, single row, .120" pocket, wire-to-board, shrouded header, vertical, tri-peg
70546, single row, .120" pocket, wire-to-board, shrouded header, vertical, tri-peg
70551, single row, .120" pocket, wire-to-board, shrouded header, right angle, split peg
70553, single row, .120" pocket, wire-to-board, shrouded header, right angle
70555, single row, .120" pocket, wire-to-board, shrouded header, right angle, tri-peg
70556, single row, .120" pocket, wire-to-board, shrouded header, right angle, tri-peg
70563, single row, .180" pocket, wire-to-board, shrouded header, vertical
70564, single row, .180" pocket, wire-to-board, shrouded header, vertical
70566, single row, .180" pocket, wire-to-board, shrouded header, vertical, tri-peg
70571, single row, .180" pocket, wire-to-board, shrouded header, right angle, board snaps
70575, single row, .180" pocket, wire-to-board, shrouded header, right angle, tri-peg
70634, single row, .120" pocket, wire-to-board, shrouded header, right angle, tri-peg, SMT
71164, single row, .120" pocket, wire-to-board, shrouded header, voided circuits
74095, single row, .120" pocket, wire-to-board, shrouded header, vertical, compliant pin
74098, single row, .120" pocket, wire-to-board, shrouded header, right angle, split peg, SMT
74099, single row, .120" pocket, wire-to-board, shrouded header, vertical, SMT
74105, single row, .120" pocket, wire-to-board, shrouded header, right angle, SMT

2.2 DIMENSIONS, MATERIALS AND SPECIFICATIONS:

2.2.1 Mating Pin Height

2.2.1.1 Maximum mating pin height: .320" (8.13 mm)
2.2.1.2 Minimum mating pin height: .200" (5.08 mm)

2.2.2 Centerline spacing (pitch): .100" (2.54 mm)

2.2.3 Wire Sizes:
For IDT: #22 - #28 AWG stranded wire, with an insulation diameter of .053" (1.35 mm) max.
For Crimp: #22-#36 AWG wire. See Termination Application Specs for insulation diameter requirements

2.2.4 Molex cable: 7307, 7767, 8996, 8997, 24226, 24241, 24369 and 24389.

2.2.5 Termination Method:

2.2.5.1 Crimp (70021, 70058, 71851)
2.2.5.2 IDT (70400, 70475)
2.2.5.3 Header
2.2.5.3.1 Thru Hole: Wave Solder
2.2.5.3.2 SMT: Reflow
2.2.5.3.3 Compliant: N/A

2.2.6 Housings:
(70066, 70450, 70107, 74130): Black Glass Filled Polyester, UL 94V-0
Header: Black Glass Filled Polyester, UL 94V-0

2.2.7 Terminals: (70021, 70058, 71851): Phosphor Bronze

2.2.8 Pins: Phosphor Bronze

2.2.9 Plating: Gold and Tin

2.2.9.1 Gold: 30 microinches minimum Gold in select area over Nickel overall with 75 microinches Tin in select area over Nickel overall
or
Gold: 15 microinches minimum Gold in select area over Nickel overall with 75 microinches Tin in select area over Nickel overall
2.2.9.2 Tin: 150 microinches minimum Tin over Nickel overall.

See the appropriate Sales Drawing(s) for additional information on dimensions, materials, platings, and markings.

2.3 SAFETY AGENCY APPROVALS:

UL File Number E29179
CSA File Number LR19980

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS:

All documents referenced shall be of the latest revision. The order of precedence shall be as follows.
- Product Drawings
- This product specification
- Reference documents

3.1 REFERENCE DOCUMENTS:

- EIA 364 Electronic Industries Association, Recommended Standard
- MIL-STD-202: Test methods for electronics and electrical component parts.
- UL-94: Tests for flammability of plastic material

4.0 RATINGS:

4.1 VOLTAGE:

250 V

4.2 CURRENT:

1.2 A - 28 AWG
1.8 A - 26 AWG
3.0 A - 24 AWG
3.0 A - 22 AWG

4.2 TEMPERATURE:

Operating: -40 °C to +105 °C
Non-Operating -40 °C to +105 °C
Processing Temperature for Headers: 260°C Maximum for Thru Hole Wave solder only
245°C Maximum for IR reflow SMT and Thru Hole Paste

5.0 PERFORMANCE:

Note: For Specifications of individual Terminals and un-mated Headers please see their respective Product Specs:

PS-70021 – Male, crimp terminal
PS-70058 – Female box, crimp terminal
PS-71851 – Female box, high force crimp terminal
PS-70541 – Vertical and Right Angle Headers
PS-70495 – Compliant Header

5.1 ELECTRICAL PERFORMANCE:

Item	Test Condition	Requirement
Contact Resistance (Low Level)	Mate Connectors with a maximum voltage of 20mV and a current of 100 mA.	**30** milliohm Maximum Initial
Insulation Resistance	Mate Connectors with a voltage of 500 VDC between adjacent terminals and between terminals and ground.	**10000** Megohms Minimum
Dielectric Withstanding Voltage	Mate Connectors with a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals and ground. Or Mate Connectors with a voltage of 500 VDC for 1 minute between adjacent terminals	No breakdown
Voltage Drop	Mate Connectors with a current of 3 amps and the open circuit voltage set to not exceed 15 VDC. Power is applied for a minimum of 30 seconds before the first measurement	**30** millivolt Maximum Initial
Voltage Drop after Vibration	Subject mated connectors to a total of 8 hours of simple harmonic motions. (Apply 4 hours in the Z axis and 2 hours in each of the X and Y axes). Vary the frequency uniformly from 10 Hz to 50 Hz traversed continuously in 8 minutes	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure

Item	Test Condition	Requirement
Voltage Drop after Heat Resistance	Place mated connectors in an air circulating chamber oven exposed to a temperature of 100 degrees for 120 hours.	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure
Voltage Drop after Cold Resistance	Place mated connectors in an air circulating chamber exposed to a temperature of -40°C for 120 hours.	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure
Voltage Drop after Dust Proofness	Place mated connectors 150mm from the walls of a chamber that measure 1000 mm in length, width, and height. Approximately 1.5kg of Portland cement is to be diffused at a rate of 10 seconds per 15 minutes by blowing air onto it. Expose for 1 hour	**30** millivolt Maximum Initial & **60** millivolt Maximum After Endurance Exposure
Leak Current	Apply a potential of 13 volts DC across the adjacent contacts of a mated pair. After 60 seconds, measure the initial leakage current. Place mated pair in a thermostatic chamber at a temperature of 60±5° C and a humidity level of 90-95% for one hour	**10** microamps Maximum Initial & **1** milliamp Maximum Post Environmental
Capacitance	Measure between adjacent terminals at **1** MHz. (Loaded: 50 ohms impedance)	Loaded: **2** picofarad maximum Unloaded: **0.5** picofarad maximum

5.2 MECHANICAL PERFORMANCE:

Item	Test Condition	Requirement
Terminal Insertion and Withdrawal Forces	Insert and withdraw a terminal (male to female) at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	70058 - Insertion force shall be **4.45** N (**1.0** lb) maximum and withdrawal **0.56** N (**0.125** lb) minimum 71851 - Insertion force shall be **13.34** N (**3.0** lb) maximum and withdrawal **1.67** N (**0.375** lb) minimum

Item	Test Condition	Requirement
Retention Force (in Housing) for Crimped/IDT Terminals	Axial pullout force on the terminal in the housing at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	Contact : **17.79** N (**4.0** lbs.) min.
Durability	Mate connectors up to 25 cycles for tin plating and 50 cycles for gold plating at a maximum rate of 10 cycles per minute prior to defined Environmental Tests.	Contact Resistance : **10** milliohms Maximum Change from Initial
Durability – Male Plug (30 Gold Plate Pins)	Male Plug is mated to the receptacle and then unmated at a rate of 500 cycles/hour. The receptacle was replaced every 50 cycles. The male plug was subjected to 500 mate/unmate cycles	Contact Resistance : **10** milliohms Maximum Change from Initial
Vibration Mil-Std-1344 Method 2005.1 Condition I	Amplitude: 1.50mm (.060 inch) peak to peak Sweep: 10-55-10 Hz in one minute Duration: 2 hours in each X-Y-Z axis. (Test module shall be per Section 7.0)	Contact Resistance: **10** milliohms Maximum Change from Initial Discontinuity: not greater than one microsecond
Mechanical Shock Mil-Std-1344 Method 2004.1 Condition A	50 g's with three 1/2 sine wave form shocks in each X-Y-Z axis. (Test module shall be per Section 8.2)	Contact Resistance: **10** milliohms Maximum Change from Initial Discontinuity: not greater than one microsecond
Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	Pullout force - **75%** tensile strength of wire, minimum.
Wire Pullout Force (Right Angle)	Apply a right angle pullout force on the wire at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	Pullout force - **75%** tensile strength of wire, minimum. **20** Newton's and below - no plastic deformation / no electrical discontinuity Above **20** and below **60** Newton's - slight non-functional plastic deformation / no electrical discontinuity.
Insertion Force (into Housing) for Female Terminals	Apply an axial insertion force on the terminal at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute.	13.34 N (3.0 lbs) maximum insertion force.
Wire Flex	Flex cable 180° for 500 cycles.	Contact resistance: 10 milliohms Maximum Change from Initial. Appearance: No Damage

Item	Test Condition	Requirement
Normal Force of Box Crimp	Apply a perpendicular force at a rate of 25 ± 6mm (1 ± 1/4 inch) per minute on the contacts in a manner simulating actual use.	0.49 N (50 grams) minimum end of life, for gold plating 0.98 N (100 grams) minimum end of life, for tin plating.
Connector Insertion	Mate connectors at a rate of 1 in/min until latch engagement was achieved	**29.4** N Maximum
Connector Retention	Unmate connectors at a rate of 1 in/min until latch defeat occurred & Unmate connectors at a rate of 0.8 in/min with latch disengaged	**45** N Minimum with latch engaged & **15** N Minimum with latch disengaged
Connector Retention	Apply a perpendicular force of 45 N to the wire harness using a free hanging weight.	No deformation or Terminal separation

5.3 ENVIRONMENTAL PERFORMANCE

Item	Test Condition	Requirement
Thermal Shock Mil-Std-202F Method 107 E	Mate connectors exposed to 10 cycles of: Temperature °C — Duration (Min) -40 +0/-3 — 30 +25 +/-10 — 5 Max +105 +3/-0 — 30 +25 +/-10 — 5 Max -40 +0/-3 — 30	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial
Thermal Aging Mil-Std-202F Method 108	Mate connectors; expose to 240 hours at 105 ± 3° C	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial
Humidity (Steady State) Mil-Std-202F Method 103	Mate connectors; expose to a temperature of : 85 ± 2°C with a Relative Humidity of 92 ± 3% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial. Dielectric Withstanding Voltage: No Breakdown Insulation Resistance: **10000** Megohms Minimum

Item	Test Condition	Requirement
Humidity (Cyclic) Mil-Std-202 Method 105	Mate connectors; expose for 10 cycles at 90-98% relative humidity with a transition time of 2.5 hours between extremes: Temperature °C — Duration (Min) +25 ± 10 — 5 maximum +65 +3/-0 — 15 maximum Note: Remove surface moisture and air dry for one hour prior to measurements.	Appearance: No Damage Contact Resistance: **10** milliohms maximum change from initial. Dielectric Withstanding Voltage: No Breakdown Insulation Resistance: **10000** Megohms Minimum
Temperature Rise and Current Cycling	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 96 hours. Current Cycling: Mate connectors; measure the temperature rise at the rated current after 500 hours (45 minutes ON and 15 minutes OFF per hour). Measure temperature rise.	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum
Temperature Rise and Vibration	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 45 minutes. Vibration: Subject mated connectors to a total of 8 hours of simple harmonic motions. (Apply 4 hours in the Z axis and 2 hours in each of the X and Y axes). Vary the frequency uniformly from 10 Hz to 50 Hz traversed continuously in 8 minutes. Measure temperature rise.	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum
Temperature Rise and Heat Resistance	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 45 minutes. Heat Resistance: Place mated connectors in an air circulating chamber oven exposed to a temperature of 100 degrees for 120 hours. Measure temperature rise.	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum

Item	Test Condition	Requirement
Temperature Rise and Cold Resistance	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 45 minutes. Cold Resistance: Place mated connectors in an air circulating chamber exposed to a temperature of -40°C for 120 hours	Temperature Rise: **30°**C above ambient maximum Temperature Rise: **30°**C above ambient maximum
Solderability Molex SMES-152	Steam age 1 hr. Solder time 5 ± 0.5 seconds. Solder temperature: 245 ± 5°C Non activated flux.	**95%** of the immersed area must show no voids, pin holes
Flowing Mixed Gas (FMG)	Battelle Class II, 10 ppm Cl_2, 10 ppm H_2S, 100 ppm NO_2, 70 ± 1% R.H., 25 deg. C. 50-60 CFM. 10 days mated and 7 days unmated exposure.	Contact Resistance: **10** milliohms Maximum change from Initial
Resistance to Solder Heats	Solder Time 3 ± 0.5 seconds Solder Temperature: 260 ± 5°C Immerse leads to a depth of 1.57mm (.062 in.) from connector body.	Appearance: No damage or discoloration of connector materials.

6.0 PACKAGING:

Parts are packaged in trays, tubes or bulk packed, refer to appropriate Sales Drawing for specific information.

7.0 QUALITY ASSURANCE PROVISIONS:

7.1 MATERIAL INSPECTION:

Shall consist of certification supported by verifying data.

7.2 ACCEPTANCE INSPECTION:

Acceptance of ongoing production product shall be determined by inspection according to Molex approved quality plans and required PPM levels for critical characteristics.

7.3 CONFORMANCE TESTING:

Shall be performed on production quality manufactured products.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- View 705430251 on WIN SOURCE
- Molex, LLC Information

Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management