PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers the 2.00 mm (0.079 inch) centerline (pitch) three row Mini50 0.50 & 1.20 mm hybrid and non-hybrid unsealed wire to board connection system terminated using wire crimp technology with tin plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Product Name	Series
34/38 Way Mini50 Vertical Header Assembly	34958
34/38 Way Mini50 Right Angle Header Assembly	34961
34/38 Way Mini50 Receptacle Assembly	34959

2.2 ASSOCIATED TERMINALS

Product Description	Vendor Part Number
Molex CTX50 Female Receptacle Terminal (0.35 mm^2)	560023-0428
Molex CTX50 Female Receptacle Terminal (0.22 mm^2)	560023-0421
Molex CTX50 Female Receptacle Terminal (0.13 mm^2)	560023-0422
Tyco MCON 1.2mm Female Receptacle Terminal (1.00 mm^2)	7-1452659
Tyco MCON 1.2mm Female Receptacle Terminal (0.50/0.75 mm^2)	7-1452656
Tyco MOCN 1.2mm Female Receptacle Terminal (0.35 mm^2)	7-1452653

2.3 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Harness Housings: 35% glass fiber nylon
TPAs: 50% glass filled nylon
CPAs: 50% glass filled nylon
Header Housing: 30% glass fiber SPS
Pins & Blades: C26800 Alloy
Tin Plating: Tin with nickel under-plate
Pin Alignment Plate: 30% glass fiber SPS

2.4 SAFETY AGENCY APPROVALS

UL File Number	Not Applicable
CSA File Number	Not Applicable
TUV License number	Not Applicable

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Description	Document Number
34/38 Way Right Angle Sales Drawing	SD-34961-030
34/38 Way Vertical Sales Drawing	SD-34958-300
34/38 Way Connector Sales Drawing	SD-34959-030
Female 0.50mm Receptacle Terminal Sales Drawing	SD-560023-002
Tray Packaging Specification	PK-31302-070
Tube Packaging Specification	PK-31301-688
Bulk Packaging Specification	PK-31301-538
Application Specification	AS-34959-001

4.0 RATINGS

4.1 VOLTAGE

500 VDC MAXIMUM; Per GMW3191, All measured isolation resistances shall be >100MΩ.

4.2 CURRENT AND APPLICABLE WIRES

Current is dependent on connector size, ambient temperature, blade size and related factors. Actual maximum current rating is application dependent and should be evaluated for each use.

AWG	Amperes	Wire range Insulation Diameter
Molex CTX50 TERMINAL SYSTEM:		
0.35mm^2	4.0	1.10 – 1.40 mm (0.043 – 0.055 inch)
0.22mm^2	4.0	0.95 – 1.20 mm (0.037 – 0.047 inch)
0.13mm^2	4.0	0.75 – 1.05 mm (0.030 – 0.041 inch)
Tyco MCON TERMINAL SYSTEM:		
0.35mm^2	10.0	1.50 – 1.65 mm (0.059 – 0.065 inch)
0.50mm^2	12.0	1.70 – 1.85 mm (0.067 – 0.073 inch)
0.75mm^2	13.5	1.91 – 2.06 mm (0.075 – 0.081inch)
1.00mm^2	16.0	2.18 – 2.34 mm (0.086 – 0.092 inch)

4.3 TEMPERATURE

Operating: - 40 Cº to + 105 Cº
Non-operating: - 40 Cº to + 105 Cº

5.0 PERFORMANCE

5.1 ELECTRICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance (Low Level)**	Mate terminal: apply maximum voltage of **20** mV and a max current of **100** mA.	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **10.4** milliohms MAXIMUM
2	**Contact Resistance @ Rated Current (Voltage Drop)**	Mate terminal: apply maximum allowed current to maximum allowed terminal wire gauge	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **10.4** milliohms MAXIMUM
3	**Isolation Resistance**	Apply a voltage of **500** VDC between adjacent terminals and between terminals to ground.	**100** Meg ohms MINIMUM
4	**Dielectric Strength**	Apply an AC rms voltage of 1000V at 60 Hz across each adjacent cavity and between the terminals to ground	No dielectric breakdown or flash-over shall occur between cavities or between the cavities and the outside of a connector at any time during the test.
5	**Temperature Rise (via Current Cycling)**	Mate terminals: measure the temperature rise at the rated current after: **1008** hours of bench top testing (**45** minutes ON and **15** minutes OFF per hour).	Temperature rise over Ambient: **+55** Cº MAXIMUM

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Connector Mate/ Unmate Forces**	Mate and unmate connector (male to female) at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	Mate **82** Newtons MAXIMUM
			Unmate w/o latch **100** Newtons MAXIMUM
			Unmate w/latch **80** Newtons MINIMUM
2	**Terminal Retention Force (in Housing)**	Axial pullout force on the terminal in the housing at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**0.50mm**: TPA in Pre-Lock **20** Newtons MINIMUM
			0.50mm: TPA in Final-Lock **55** Newtons MINIMUM
			1.20mm: TPA in Pre-Lock **50** Newtons MINIMUM
			1.20mm: TPA in Final-Lock **80** Newtons MINIMUM
3	**Terminal Insertion Force (into Housing)**	Apply an axial insertion force on the terminal at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**0.50mm:** TPA in Pre-Lock **15** Newtons MINIMUM
			0.50mm: TPA in Final-Lock **30** Newtons MAXIMUM
			1.20mm: TPA in Pre-Lock **30** Newtons MINIMUM
			0.50mm: TPA in Pre-Lock **40** Newtons MAXIMUM
4	**Connector Position Assurance (CPA) Engage Force**	Apply an axial insertion force on the CPA at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	Mated Connector: **22** Newtons MAXIMUM
			Unmated Conenctor: **50** Newtons MINIMUM
5	**Connector Position Assurance (CPA) Disengage Force**	Apply an axial pullout force on the CPA at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute	**10** Newtons MINIMUM **30** Newtons MAXIMUM
6	**Connector Position Assurance (CPA) Extraction Force**	Apply an axial pullout force on the CPA at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute	**25** Newtons MINIMUM
7	**Connector Audible Feedback**	The connector lock must provide audible feedback during connector mating at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**7**dB over Ambient (C scale)
8	**Polarization Feature Effectiveness**	Connector must be polarized to prevent mating with similar connectors or incorrect orientation	**225** Newtons MINIMUM

9	**Terminal Position Assurance (TPA) Insertion Force (into housing)**	The force to insert the TPA from the preload (as shipped) position to the final position at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**20** Newtons MINUMUM **45** Newtons MAXIMUM
10	**Terminal Position Assurance (TPA) Extraction Force (in housing)**	The force to extract the TPA from the final position to the preload position (as shipped) at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**20** Newtons MINUMUM **45** Newtons MAXIMUM
11	**Header Pin Retention Force (in Housing)**	Axial pushout force on the terminal in the housing at a rate of **50 ± 6** mm (**2 ± ¼** inch) per minute.	**0.50mm** Terminal **15** Newtons MINIMUM
			1.20mm Terminal **50** Newtons MINIMUM
12	**Terminal Cavity Polarization**	Connector must be designed to withstand terminals inserted at any misorientation	**0.50mm** Terminal **15** Newtons MINIMUM
			1.20mm Terminal **22.5** Newtons MINIMUM
13	**Connector Lock Mechanical Overstress**	Pull on connector lock assembly in both horizontal and vertical directions	Horizontal: **70** Newtons MINIMUM
			Vertical: **150** Newtons MINIMUM

5.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Durability**	Mate connectors up to **10** cycles prior to environmental tests.	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **12** milliohms MAXIMUM
2	**Thermal Shock (Electrical)**	Mate connectors per durability; expose to **300** cycles of: Temperature Cº — Duration (Minutes) **-40 +0/-3** — **30** **+105 +3/-0** — **30**	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **10.4** milliohms MAXIMUM
			Discontinuity < **1** microsecond
3	**Vibration/ Mechanical Shock (Electrical)**	Mate connectors per durability. Connector assembly shall be vibrated for (**22** hours / axes @ **2.13** Grms, **132** shocks @ **25** Gs / axes, **3** shocks @ **100** Gs / axes) Not coupled to engine.	**0.50mm** Terminal **20** milliohms MAXIMUM
			2.8mm Terminal **10.4** milliohms MAXIMUM
			Discontinuity < **1** microsecond
4	**Humid Heat Cyclic (Electrical)**	Mate connectors per durability. Subject connector system GMW3191 2012 temperature/humidity profile	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **10.4** milliohms MAXIMUM
5	**Humid Heat Constant (Electrical)**	Mate connectors per durability. Subject connector system to **10** days @ **85 +/-3** °C and **90 +/-5** % humidity	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **10.4** milliohms MAXIMUM
6	**High Temperature Exposure (Electrical)**	Mate connectors per durability. Subject connector system to **105** Cº for **1008** hours.	**0.50mm** Terminal **20** milliohms MAXIMUM
			1.20mm Terminal **10.4** milliohms MAXIMUM
7	**Solderability**	Per **SMES-152**	Solder coverage: **95**% MINIMUM (per **SMES-152**)
8	**IR Process Soldering**	Molex IR Profile: **ES-40000-5013** Maximum Temperature: **260C**	Dimensional: Conformance to Sales Drawing requirements

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.
TPA's may become seated during transit, please refer to PS-34646-001 for more information.

7.0 GAGES AND FIXTURES

All applicable gages and fixtures are referenced in the appropriate control plans.

8.0 OTHER INFORMATION

Products conform to GMW3191 class II environment.