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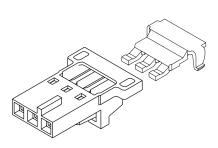
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Jameco Part Number 1298988

# 2.54mm (.100") Pitch SL™ Crimp Housing

70066/73838

Single Row Version N, TPA with Positive Latch



Circuits	70066 Version N TPA Crimp Housing	73838 TPA
	Order No	Order No.
2	<u>50-57-9702</u>	<u>73838-0002</u>
3	<u>50-57-9703</u>	73838-0003
4	<u>50-57-9704</u>	73838-0004
5	<u>50-57-9705</u>	<u>73838-0005</u>
6	<u>50-57-9706</u>	73838-000 <u>6</u>
7	<u>50-57-9707</u>	<u>73838-0007</u>
8	50-57-9708	73838-0008

#### **Features and Benefits**

- Optimizes terminal-to-housing retention
- Virtually eliminates terminal backout when TPA is locked into place
- Upon seating TPA, audible click denotes system activation
- White/black color contrast provides easy identification of TPA system
- Positive locking latch secures housing to mating connector
- Anti-entanglement/overstress ribs prevent discrete wires from catching under latch during harness manufacturing and storage

#### Reference Information

Product Specification: PS-73838, PS-70400

Packaging: Bag UL File No.: E29179 CSA File No.: LR19980

Mates with: 70018, 70107A/B, 70541, 70543, 70545, 70551, 70553, 70555, 70634 and 74099

Use with: 73838 TPA and 70058 or 71851 crimp terminals Designed In: Inches

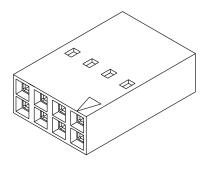
#### Physical

Housing: Black polyester, UL 94V-0 TPA: White polyester, UL 94V-0 Operating Temperature: -40 to +105°C

# 2.54mm (.100") Pitch SL™ Crimp Housing

# 70450

Dual Row Version A, Nonpolarized



#### **Features and Benefits**

- Sizes 4 to 54 circuits
- End-to-end and side-to-side stackable for dual row connections to a 2.54mm (.100") pitch grid pin field

#### **Reference Information**

Product Specification: PS-70400

Packaging: Bag UL File No.: E29179 CSA File No.: LR19980

Mates With: 8724, 70229, 70280, 70287, 70567, 70568, 71308 and 71349 Molex dual row headers
Use With: 70058 and 71851 crimp terminals

Designed In: Inches

#### Physical

Housing: Black polyester, UL 94V-0 Operating Temperature: -40 to +105°C

Delivered on a carrier with 20 pieces per strip.

Actual Size Universal Polarizing Pin 40713-1 Order No. 15-04-0292

#### Not For Use With C-Grid III™ Components

Circuits	Order No.
4	<u>22-55-2041</u>
6	<u>22-55-2061</u>
8	<u>22-55-2081</u>
10	<u>22-55-2101</u>
12	<u>22-55-2121</u>
14	<u>22-55-2141</u>
16	<u>22-55-2161</u>
18	<u>22-55-2181</u>
20	<u>22-55-2201</u>

Circuits	Order No.
22	<u>22-55-2221</u>
24	<u>22-55-2241</u>
26	<u>22-55-2261</u>
28	<u>22-55-2281</u>
30	<u>22-55-2301</u>
32	<u>22-55-2321</u>
34	<u>22-55-2341</u>
36	<u>22-55-2361</u>
38	<u>22-55-2381</u>

Circuits	Order No.
40	<u>22-55-2401</u>
42	<u>22-55-2421</u>
44	<u>22-55-2441</u>
46	<u>22-55-2461</u>
48	<u>22-55-2481</u>
50	<u>22-55-2501</u>
52	<u>22-55-2521</u>
54	<u>22-55-2541</u>







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#### 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, dual row, crimp housing

70400, female, single row, insulation displacement, connector assembly

70475 & 71178 ,male, single row, insulation displacement, connector assembly

70543, single row, .120" pocket, wire-to-board, shrouded header, vertical

70541, single row, 120" pocket, wire-to-board, shrouded header, vertical, split peg

70545, single row, 120" pocket, wire-to-board, shrouded header, vertical, tri-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-peq

70563, single row, .180" pocket, wire-to-board, shrouded header, vertical

70565, single row, 180" pocket, wire-to-board, shrouded header, vertical, tri-peg

70573, single row, 180" pocket, wire-to-board, shrouded header, right angle

70575, single row, 180" pocket, wire-to-board, shrouded header, right angle, tri-peg

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#### 2.2 <u>DIMENSIONS</u>, <u>MATERIALS AND SPECIFICATIONS</u>:

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: #22 - #28 AWG stranded wire, with an insulation diameter of .053" (1.35 mm) max.

**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) **2.2.5.2** IDT (70400, 70475)

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

2.2.7 Terminals: (70021, 70058): Phosphor Bronze

2.2.7 Plating: Gold and tin/Lead

2.2.7.1 Gold: 30  $\mu$ -in. min. Gold in select area over Nickel overall with 75  $\mu$ -in. Tin/Lead in select area over Nickel overall

or

Gold: 15  $\mu$ -in. min. Gold in select area over Nickel overall with 75  $\mu$ -in.

Tin/Lead in select area over Nickel overall

**2.2.7.2** Tin: 150  $\mu$ -in. min. Tin/Lead over Nickel overall.

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

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## 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
Processing: See chart on next page.

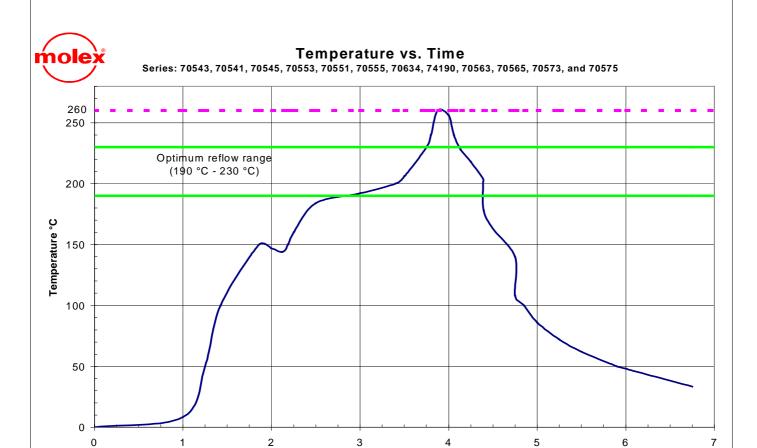
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# 5.0 PERFORMANCE:

# **5.1 ELECTRICAL PERFORMANCE**:

Item	Test Condition	Requirement
Contact Resistance	Mate Connectors with a maximum	30 milliohm Maximum
(Low Level)	voltage of 20mV and a current of 100	Initial
	mA.	
Insulation	Mate Connectors with a voltage of 500	1000 Megohms Minimum
Resistance	VDC between adjacent terminals and	
	between terminals and ground.	
Dielectric	Mate Connectors with a voltage of	No breakdown
Withstanding	1500 VAC for 1 min. between	
Voltage	adjacent terminals and between	
	terminals and ground.	
Capacitance	Measure between adjacent terminals	Loaded: 2 picofarad max.
	at 1 MHz. (Loaded: 50 ohms	Unloaded: 0.5 picofarad
	impedance)	max.

# **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) max. and withdrawal 0.56 N (0.125 lb) min. 71851 - Insertion force shall be 13.34 N (3.0 lb) max. and withdrawal 1.67 N (0.375 lb) min
Terminal Retention Force (in Housing)	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

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Item	Test Condition	Requirement
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.
Terminal Insertion Force (into Housing)	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
Normal Force	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.

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# **5.3 ENVIRONMENTAL PERFORMANCE**

Item	Test Condition	Requirement
	Mate connectors exposed to 10 cycles of:	
Thermal Shock	Temperature °C Duration (Min)	Appearance: No Damage
Mil-Std-202F	-40 +0/-3	Contact Resistance:
Method 107 E	+25 +/-10 5 Max	10 milliohms maximum
	+105 +3/-0 30	change from initial
	+25 +/-10 5 Max	
	-40 +0/-3 30	
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: 1000 Megohms Minimum
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: 1000 Megohms Minimum

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Item	Test Condition	Requirement
Temperature Rise	Temperature Rise: Mate the connectors; and measure the temperature rise at the rated current after 96 hours.	Temperature Rise: 30°C above ambient maximum
and Current Cycling	Current Cycling: Mate connectors; measure the temperature rise at the rated current after 500 hours (45 minutes ON and 15 minutes OFF per hour).	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 <sub>2</sub> , 10 ppm H <sub>2</sub> S, 100 ppm NO <sub>2</sub> , 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 <u>MATERIAL INSPECTION</u>:

Shall consist of certification supported by verifying data.

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#### 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. Sample size shall be per 8.1.

#### 7.4 <u>Gages</u>:

Terminal insertion/withdrawal testing should be performed with the gage pin detailed below.

#### 8.0 QUALIFICATION REQUIREMENTS:

DEVICE ON DO ONLY

#### 8.1 QUALIFICATION TESTING:

- 1. Samples for testing shall be representative of normal production lots.
- 2. Sample groups shall consist of a minimum (5) mated pairs of headers and receptacles. 30 minimum data points per group shall be measured. Measurements shall be taken from the middle and ends of the connectors as a minimum.

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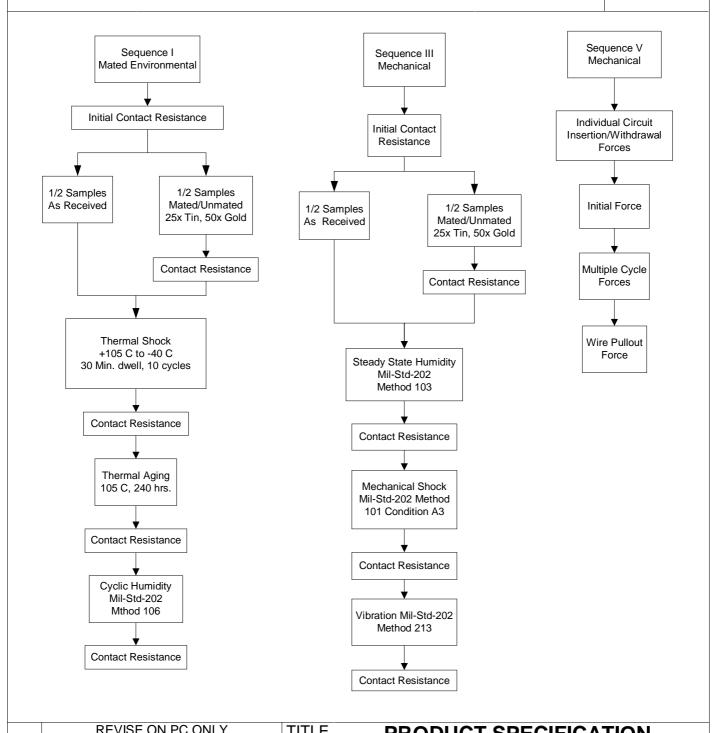
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# 9.0 TEST SUMMARY:

# 9.1 SEQUENCE I - MATED ENVIRONMENTAL:

TEST CONDITION	TREATMENT	REQUIREMENT	UNITS	MEAN	MINIMUM	MAXIMUM
	Initial	30 max.	milliohms	14.47	13.77	15.08
	After Durability	10 max. Change from initial	Δ-milliohms	.09	-0.82	1.40
Contact Resistance	After Shock (Thermal)	10 max. Change from initial	$\Delta$ -milliohms	.02	-1.15	1.32
rtoololarioo	After Thormal Aging	10 may	$\Delta$ -milliohms	.00	-1.06	1.18
	After Humidity (Cyclic)	10 max. Change from initial	Δ-milliohms	.25	-1.00	1.78

# 9.2 SEQUENCE III - MECHANICAL:

TEST CONDITION	TREATMENT	REQUIREMENT	UNITS	MEAN	MINIMUM	MAXIMUM
	Initial	30 max.	milliohms	8.6	8.0	9.4
	After Humidity	10 max.	Δ-milliohms	8.6	8.0 8.1	9.6
Contact	(Steady State)	Change from initial		0.0		3.0
Resistance	After Shock (Mechanical)	10 max.				9.9
	After Shock (Mechanical)	Change from initial				9.9
	After Vibration	10 max.			8.1	9.4
	Alter Vibration	Change from initial	Δ-1111110111113	0.7	0.1	3.4

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## 9.3 ENVIRONMENTAL PERFORMANCE:

TEST CONDITION	TREATMENT	REQUIREMENT	UNITS	MAXIMUM
	22 AWG	**** Minimum	Amps	3
	24 AWG	**** Minimum	Amps	3
	26 AWG	**** Minimum	Amps	1.8
Current Cycling	28 AWG	**** Minimum	Amps	1.2
Temperature Rise and Current Cycling (+30°C)	30 AWG	**** Minimum	Amps	0.70
, ,	32 AWG	**** Minimum	Amps	0.45
	34 AWG	**** Minimum	Amps	0.32
	36 AWG	**** Minimum	Amps	0.21

# 9.4 SEQUENCE V - MECHANICAL:

70058 - MATING FORCE SEQUENCE 5.3							
TEST CONDITION	PLATING	UNITS	MEAN	MINIMUM	MAXIMUM		
	Initial	Tin	LB/(N)	0.73/(3.24)	0.62/(2.74)	0.82/(3.63)	
		Gold	LB/(N)	0.39/(1.75)	0.28/(1.25)	0.59/(2.62)	
Insertion Force	After 25 Cycles	Tin	LB/(N)	0.75/(3.32)	0.64/(2.83)	0.89/(3.94)	
	After 50 Cycles	Gold	LB/(N)	0.44/(1.96)	0.27/(1.19)	0.55/(2.44)	
	Initial	Tin	LB/(N)	0.97/4.31)	0.79/(3.52)	1.05/(4.65)	
		Gold	LB/(N)	0.29/(1.28)	0.20/(0.89)	0.44/(1.97)	
Withdrawal Force	After 25 Cycles	Tin	LB/(N)	0.77/(3.43)	0.68/(3.04)	0.90/(4.02)	
	After 50 Cycles	Gold	LB/(N)	0.38/(1.69)	0.29/(1.29)	0.56/(2.50)	

71851 - MATING FORCE SEQUENCE 5.3							
TEST CONDITION	PLATING	UNITS	MEAN	MINIMUM	MAXIMUM		
	Initial	Tin	LB/N	2.39/10.62	2.24/9.96	2.53/11.25	
	IIIIIIai	Gold	LB/N	0.99/4.39	0.91/4.05	1.05/4.67	
Insertion Force	After 25 Cycles	Tin	LB/N	2.18/9.71	1.60/7.12	2.82/12.54	
	After 50 Cycles	Gold	LB/N	1.01/4.48	0.86/3.83	1.17/5.20	
	Initial	Tin	LB/N	2.68/11.92	2.28/10.14	3.18/14.15	
		Gold	LB/N	0.69/3.07	0.62/2.76	0.77/3.43	
Withdrawal Force	After 25 Cycles	Tin	LB/N	2.70/12.02	1.79/7.96	4.23/18.82	
	After 50 Cycles	Gold	LB/N	1.07/4.76	0.84/3.74	1.25/5.56	

	F	REVISE ON PC ONLY	TITLE PRODUCT SPECIFICATION				
	F	ADD PROCESS TEMPERATURE UDT2002-1016 RSFOX 2/13/02	SINGLE ROW – LINEAR (SL) CONN	STACKAB	LE		
		K3FOX 2/13/02	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO				
	REV	DESCRIPTION	MOLEX INC. AND SHOULD NOT BE USED WIT	HOUT WRITTEN PER	MISSION		
DO	CUMENT	NO.		FILE NAME	SHEET		
		PS - 70400			13		
	BORDER	TEMPLATE: ES-40000-3996	REV. A SHEET 3 95/MAR/10 EC U5	-0926 DCBRD0	3.LWP		





# LANGUAGE

**ENGLISH** 

TEST CONDITION	TREATMENT	PLATING	UNITS	MEAN	MINIMUM	MAXIMUM
	22 AWG with strain relief	**** Minimum	N/LB	65.3/14.67	56.2/12.63	72.4/16.28
	22 AWG w/o strain relief	**** Minimum	N/LB	48.0/10.78	39.2/8.81	54.5/12.24
Wire Dulleut	24 AWG	**** Minimum	N/LB	37.0/8.32	28.5/6.40	44.9/10.10
Wire Pullout Force (Axial)	26 AWG	**** Minimum	N/LB			
Force (Axial)	28 AWG	**** Minimum	N/LB			
	30 AWG	**** Minimum	N/LB			
	32 AWG	**** Minimum	N/LB			
	34 AWG	**** Minimum	N/LB			
	36 AWG	**** Minimum	N/LB			

# 9.5 MISCELLANEOUS:

TEST CONDITION	TREATMENT	REQUIREMENT	UNITS	MEAN	MINIMUM	MAXIMUM
Terminal Retention Force (in Housing)	Initial	**** Minimum	N/LB	37.94/8.53	23.04/5.18	55.74/12.53
	Initial	1000 Min.	Megaohms	Passed		
	After Shock (Thermal)	1000 Min.	Megaohms		Passed	
Insulation Resistance	After Thermal Aging	1000 Min.	Megaohms		Passed	
	After Humidity (Steady State)	1000 IVIII1.	Megaohms		Passed	
	After Humidity (Cyclic)	1000 Min.	Megaohms		Passed	

	F	REVISE ON PC ONLY	TITLE PRODUCT SPE	ECIFICATIO	N
	F	ADD PROCESS TEMPERATURE UDT2002-1016 RSFOX 2/13/02	SINGLE ROW – LINEAR (SL) CONN THIS DOCUMENT CONTAINS INFORMATION	STACKAB ECTOR SY	LE STEM
	REV	DESCRIPTION	MOLEX INC. AND SHOULD NOT BE USED WIT		-
D	OCUMENT I	NO.		FILE NAME	SHEET
		PS - 70400			14
	BORDER	TEMPLATE: ES-40000-3996	REV. A SHEET 3 95/MAR/10 EC U5	-0926 DCBRD0	3.LWP

