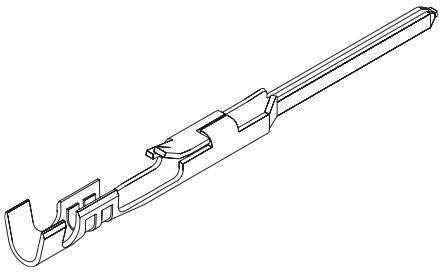
Jameco Part Number 2012890

2.54mm (.100") Pitch SL™ Terminal

70021
Male, Crimp



Features and Benefits
- Dual tab strain relief
- Locking tang secures terminal in housing

Reference Information
Product Specification: PS-70021
Packaging: Reel or bag
Mates With: 70058 and 71851 female crimp terminals, and 70400 and 70430 connector assemblies
Use With: 70066D and 70107 housings
Designed In: Inches

Electrical
Voltage: 250V
Current: 3.0A
Contact Resistance: 15 milliohms max.
Insulation Resistance: 10,000 Megohms min.

Mechanical
Wire Pull-Out Force: 17.79N (4.0 lb) min.
Durability: Tin—25 cycles; Gold—50 cycles

Physical
Contact: Copper Alloy
Plating: See Table
Operating Temperature: -40 to +105°C
Wire Gauge: 22 to 24 and 24 to 30 AWG

Not For Use With C-Grid III™ Components

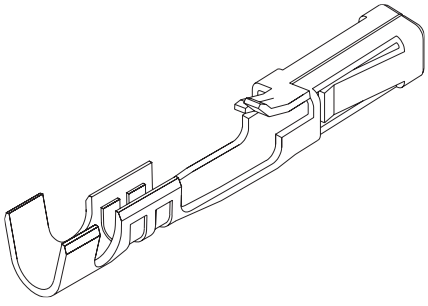
Reel				
Order No.	Plating	Wire Range (AWG) Stranded	Insulation Maximum Outside Diameter	Lead-free
16-02-0116	1	22-24	1.63 (.064)	Yes
16-02-0078		24-30	1.52 (.060)	
16-02-0081	2	22-24	1.63 (.064)	
16-02-0077		24-30	1.52 (.060)	
16-02-0107	3	22-24	1.63 (.064)	
16-02-0105		24-30	1.52 (.060)	

Bag				
Order No.	Plating	Wire Range (AWG) Stranded	Insulation Maximum Outside Diameter	Lead-free
16-02-0117	1	22-24	1.63 (.064)	Yes
16-02-0110		24-30	1.52 (.060)	
16-02-0115	2	22-24	1.63 (.064)	
16-02-0109		24-30	1.52 (.060)	
16-02-0114	3	22-24	1.63 (.064)	
16-02-0108		24-30	1.52 (.060)	

Plating No. 1: 30µ" min. Gold in select area over 50µ" min. Nickel overall with 75µ" Tin in select area
Plating No. 2: 15µ" min. Gold in select area over 50µ" min. Nickel overall with 75µ" min. Tin in select area
Plating No. 3: 150µ" Tin over 50µ" Nickel overall
Each reel contains 20,000 terminals

2.54mm (.100") Pitch SL™ Terminal

70058
Female Box, Crimp



Features and Benefits
- Dual beam, fully-enclosed box contact
- Dual tab strain relief
- Locking tang secures terminal in housing

Reference Information
Product Specification: PS-70058
Packaging: Reel or bag
Mates With: 70021 male crimp terminals and 0.64mm (.025") square pins
Use With: All 70066 and 70450 housings
Designed In: Inches

Electrical
Voltage 250V
Current: 3.0A
Contact Resistance: 15 milliohms max.
Insulation Resistance: 10,000 Megohms min.

Mechanical
Contact Retention to Housing: 17.79N (4.0 lb) min.
Wire Pull-Out Force: 17.79N (4.0 lb) min.
Mating Force: 2.22N (.50 lb) max.
Unmating Force: 0.28N (.06 lb) min.
Normal Force: 0.98N (.22 lb) min.
Durability: Tin—25 cycles; Gold—50 cycles

Physical
Contact: Copper Alloy
Plating: See Table
Operating Temperature: -40 to +105°C
Wire Gauge: 22 to 24 and 24 to 30 AWG

Not For Use With C-Grid III™ Components

Reel				
Order No.	Plating	Wire Range (AWG) Stranded	Insulation Maximum Outside Diameter	Lead-free
16-02-0088	1	22-24	1.63 (.064)	Yes
16-02-0083		24-30	1.52 (.060)	
16-02-0087	2	22-24	1.63 (.064)	
16-02-0082		24-30	1.52 (.060)	
16-02-0086	3	22-24	1.63 (.064)	
16-02-0069		24-30	1.52 (.060)	

Bag				
Order No.	Plating	Wire Range (AWG) Stranded	Insulation Maximum Outside Diameter	Lead-free
16-02-0104	1	22-24	1.63 (.064)	Yes
16-02-0098		24-30	1.52 (.060)	
16-02-0103	2	22-24	1.63 (.064)	
16-02-0097		24-30	1.52 (.060)	
16-02-0102	3	22-24	1.63 (.064)	
16-02-0096		24-30	1.52 (.060)	

Plating No. 1: 30µ" min. Gold in select area over 50µ" min. Nickel overall with 75µ" Tin in select area
Plating No. 2: 15µ" min. Gold in select area over 50µ" min. Nickel overall with 75µ" min. Tin in select area
Plating No. 3: 150µ" Tin over 50µ" Nickel overall
Each reel contains 20,000 terminals

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
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-peg
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

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: #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, 74130): Black Glass Filled Polyester, UL 94V-0

2.2.7 Terminals: (70021, 70058): Phosphor Bronze

2.2.7 Plating: Gold and Tin

2.2.7.1 Gold: 30 µ-in. min. Gold in select area over Nickel overall with 75 µ-in. Tin in select area over Nickel overall
or
Gold: 15 µ-in. min. Gold in select area over Nickel overall with 75 µ-in. Tin in select area over Nickel overall
2.2.7.2 Tin: 150 µ-in. min. 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
Processing: See chart on next page.

5.0 PERFORMANCE:

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.	**1000** Megohms Minimum
Dielectric Withstanding Voltage	Mate Connectors with a voltage of 1500 VAC for 1 min. between adjacent terminals and between terminals and ground.	No breakdown
Capacitance	Measure between adjacent terminals at **1** MHz. (Loaded: 50 ohms impedance)	Loaded: **2** picofarad max. Unloaded: 0.5 picofarad 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

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. 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.
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.
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: 1000 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: 1000 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).	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. Sample size shall be per 8.1.

7.4 Gages:

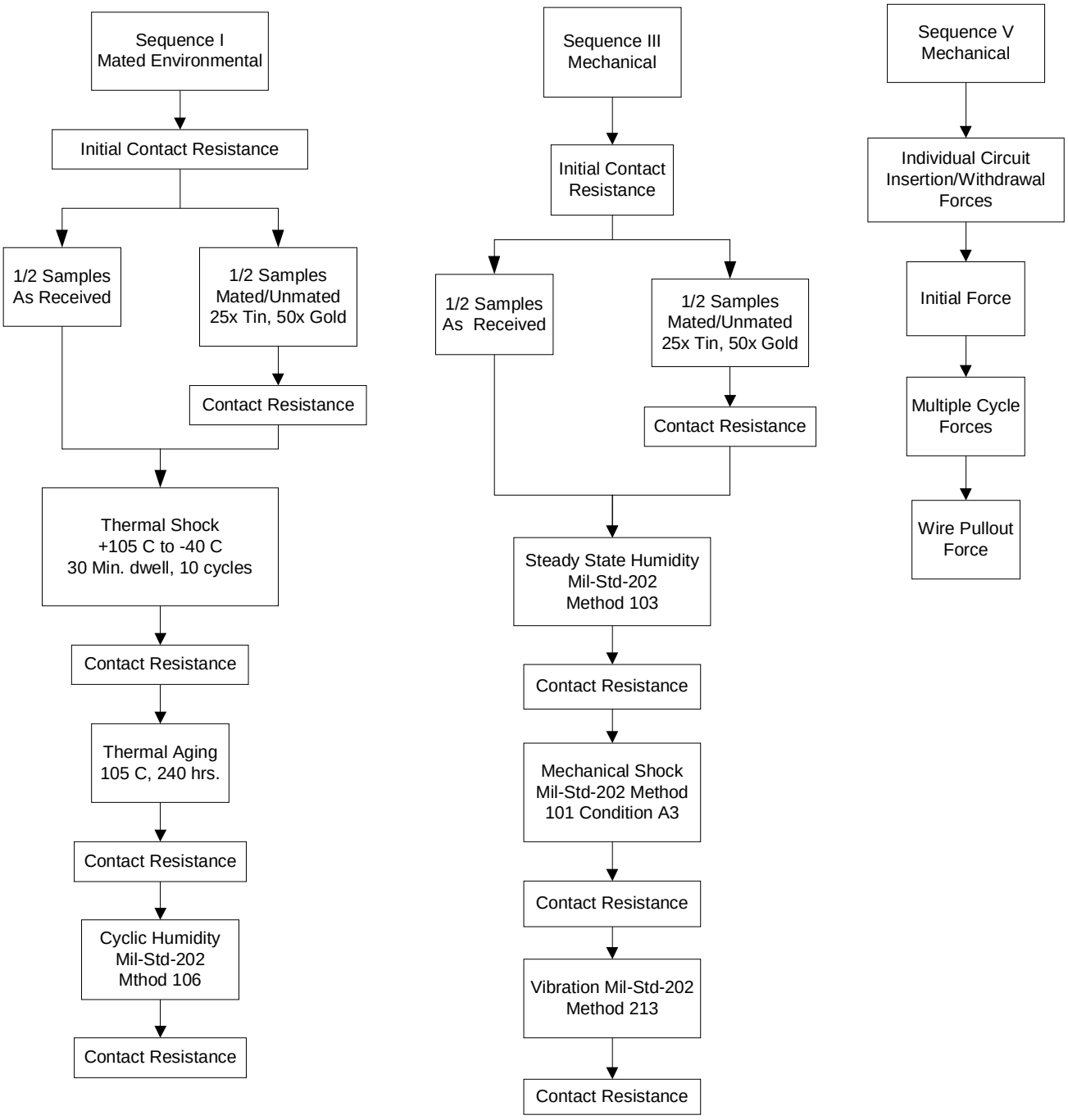
Terminal insertion/withdrawal testing should be performed with the gage pin detailed below.

8.0 QUALIFICATION REQUIREMENTS:

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.



REVISE ON PC ONLY		TITLE	**PRODUCT SPECIFICATION SINGLE ROW – STACKABLE LINEAR (SL) CONNECTOR SYSTEM**
J	ADD CONNECTOR RETENTION CALLOUT UCP2005- MIBARRA 05/05/02		
REV	DESCRIPTION		

9.0 TEST SUMMARY:

9.1 SEQUENCE I - MATED ENVIRONMENTAL:

TEST CONDITION	TREATMENT	REQUIREMENT	UNITS	MEAN	MINIMUM	MAXIMUM
Contact Resistance	Initial	30 max.	milliohms	14.47	13.77	15.08
	After Durability	10 max. Change from initial	Δ-milliohms	.09	-0.82	1.40
	After Shock (Thermal)	10 max. Change from initial	Δ-milliohms	.02	-1.15	1.32
	After Thermal Aging	10 max. Change from initial	Δ-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
Contact Resistance	Initial	30 max.	milliohms	8.6	8.0	9.4
	After Humidity (Steady State)	10 max. Change from initial	Δ-milliohms	8.6	8.0	9.6
	After Shock (Mechanical)	10 max. Change from initial	Δ-milliohms	8.7	8.1	9.9
	After Vibration	10 max. Change from initial	Δ-milliohms	8.7	8.1	9.4

9.3 ENVIRONMENTAL PERFORMANCE:

TEST CONDITION	TREATMENT	REQUIREMENT	UNITS	MAXIMUM
Temperature Rise and Current Cycling (+30°C)	22 AWG	**** Minimum	Amps	3
	24 AWG	**** Minimum	Amps	3
	26 AWG	**** Minimum	Amps	1.8
	28 AWG	**** Minimum	Amps	1.2
	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:

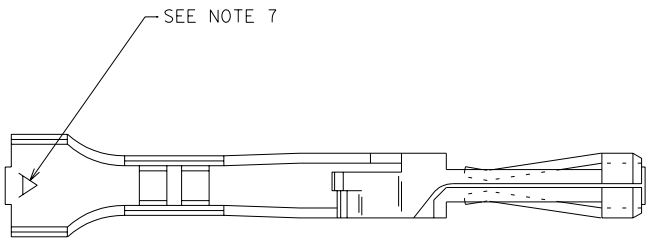
70058 - MATING FORCE SEQUENCE 5.3						
TEST CONDITION	TREATMENT	PLATING	UNITS	MEAN	MINIMUM	MAXIMUM
Insertion Force	Initial	Tin	LB/(N)	0.73/(3.24)	0.62/(2.74)	0.82/(3.63)
		Gold	LB/(N)	0.39/(1.75)	0.28/(1.25)	0.59/(2.62)
	After 25 Cycles	Tin	LB/(N)	0.75/(3.32)	0.64/(2.83)	0.89/(3.94)
	After 50 Cycles	Gold	LB/(N)	0.44/(1.96)	0.27/(1.19)	0.55/(2.44)
Withdrawal Force	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)
	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	TREATMENT	PLATING	UNITS	MEAN	MINIMUM	MAXIMUM
Insertion Force	Initial	Tin	LB/N	2.39/10.62	2.24/9.96	2.53/11.25
		Gold	LB/N	0.99/4.39	0.91/4.05	1.05/4.67
	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
Withdrawal Force	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
	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

TEST CONDITION	TREATMENT	PLATING	UNITS	MEAN	MINIMUM	MAXIMUM
Wire Pullout Force (Axial)	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
	24 AWG	**** Minimum	N/LB	37.0/8.32	28.5/6.40	44.9/10.10
	26 AWG	**** Minimum	N/LB			
	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
Insulation Resistance	Initial	1000 Min.	Megaohms	Passed		
	After Shock (Thermal)	1000 Min.	Megaohms	Passed		
	After Thermal Aging	1000 Min.	Megaohms	Passed		
	After Humidity (Steady State)	1000 Min.	Megaohms	Passed		
	After Humidity (Cyclic)	1000 Min.	Megaohms	Passed		



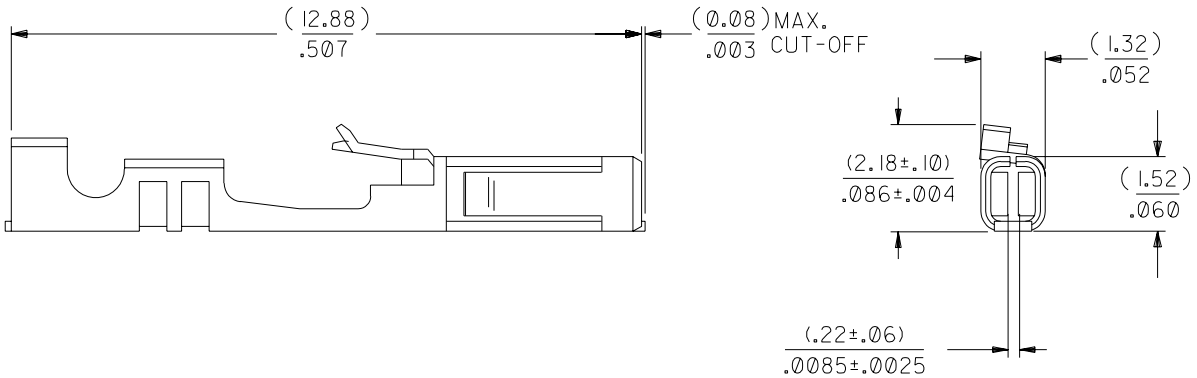
NOTES:

1. TERMINAL TO BE USED IN HOUSINGS 70066-**** AND 70450-****
2. REFER TO PRODUCT SPECIFICATION PS-70058
3. REFER TO MOLEX OPERATIONS AND SERVICE MANUAL FOR CRIMP DETAILS
4. TERMINAL TO BE USED WITH (0.64)/.025 SQUARE PINS
5. TERMINAL TO BE USED WITH 24-30 AWG STRANDED WIRE WITH (1.52)/.060 MAX. DIA. INSULATION
6. TERMINALS SUPPLIED IN REEL FORM
7. CRIMP SIZE INDICATOR A=24-30 AWG

*THE PRIMARY SHIPPING CARTON WILL BE LABELED "COMPLIANT TO RoHS DIRECTIVE 2002/95/EC AND ELV ANNEX II OF DIRECTIVE 2000/53/EC". CARTONS WITHOUT THIS LABEL MAY CONTAIN PRODUCT WITH LEAD.

PLATING:

.000150 MIN. TIN PLATE
OVER NICKEL PLATE.



LTR.	REVISIONS	LTR.	REVISIONS
		F1	REVISED ECR #U80270 MCGRATH 97/07/31
G	LEAD FREE UCP2004-1769 RWHITE 04/03/11	F	164 PLATING WAS 102 PER ECR # U31149 08/17/93 REED
F2	ADD. CRP. SIZE&NOTE 7 ECN UDT1998-0183 MQWANG 04/16/98	E	REDRAWN & REVISED PER ECR #U81133 03/02/88 MJM/JAS

DIMENSIONS SHOWN (METRIC) INCH
UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR ± 1/2°

	INCH	METRIC
3 PLACE	± .005	---
2 PLACE	± .01	± 0.13
1 PLACE	---	± 0.25

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DRWG. BY JAS | CHK'D. BY MJM
APP'D. BY WAZ | SCALE 10:1

C = 0 ▼ = 0 REVISE ONLY ON CAD SYSTEM

TITLE: TERMINAL - BOX/CRIMP

MOLEX INCORPORATED LISLE,ILL. 60532 U.S.A.
SHEET NO. 1 OF 1
DATE 03/02/88
PART NO. 016-02-0069
DRWG. NO. SD-70058-0004
FILE NAME S70058A3 DGN

DIV. DA SIZE B