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ELECTRONICS

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Jameco Part Number 881215

FEATURES AND SPECIFICATIONS

Features and Benefits

- Wire-to-wire plug for panel-mounted or free-hanging applications
- Positive housing locks to mate with Mini-Fit, Jr. receptacle
- Fully isolated terminals to protect contacts from damage
- Uses standard Mini-Fit series terminals

Reference Information

Product Specification: PS-5556-0001

Packaging: Tray or bag

UL File No.: E29179

CSA File No.: LR19980

TUV License No.: R75142

Mates With: [5557](#) dual row receptacle

Use With: [5558](#), [30490](#) or 44478 terminals

Designed In: Millimeters

Mechanical

Contact Insertion Force: 1.5kg max.

Contact Retention to Housing: 3.0kg min.

Wire Pull-Out Force: 9.0kg min.

Insertion Force to PCB: 5.0kg max.

Mating Force: 0.7kg (1.54 lb) max.

Unmating Force: 0.35kg (0.7 lb) min.

Normal Force: 200g min.

Durability: 30 cycles

Physical

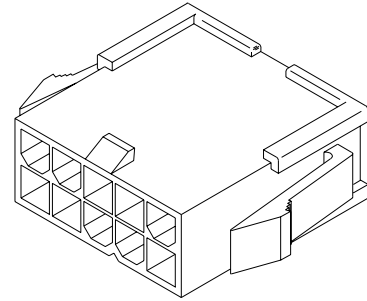
Housing: 6/6 nylon, UL 94V-2 or 94V-0

Operating Temperature: -40 to +105°C

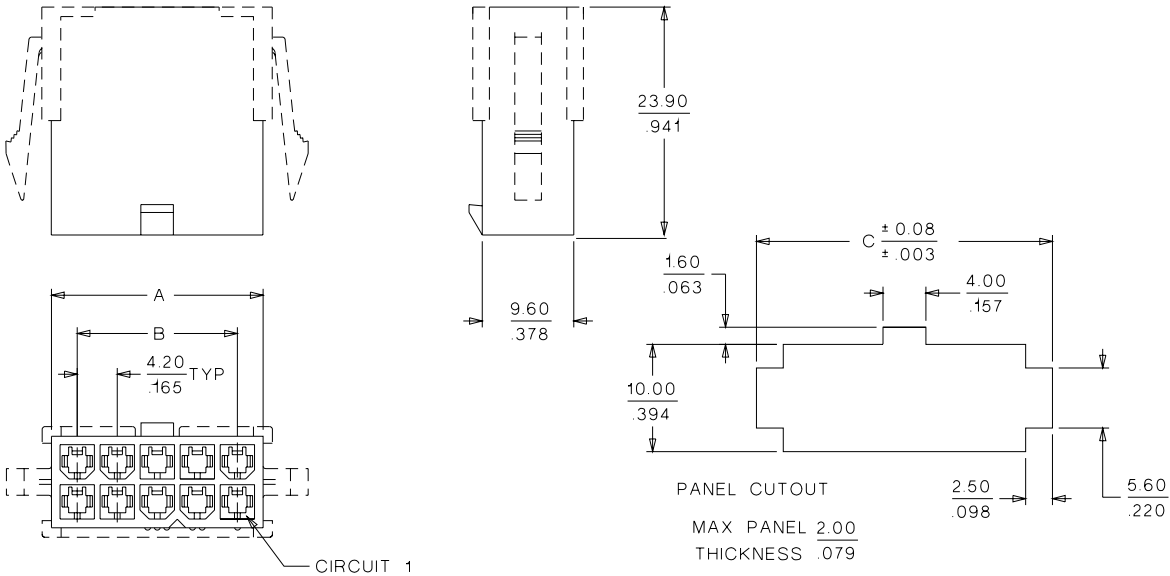
molex® 4.20mm (.165") Pitch Mini-Fit, Jr.™ Plug

5559

Dual Row With and without Panel Mount Ears



CATALOG DRAWING (FOR REFERENCE ONLY)



ORDERING INFORMATION AND DIMENSIONS

Circuits	Order No.				Dimension		
	Panel Mount		Free Hanging		A	B	C
	94V-2	94V-0	94V-2	94V-0			
2	• 39-01-2021	• 39-01-2026	• 39-01-3023	• 39-01-3029	5.40 (.213)		10.80 (.425)
4	• 39-01-2041	• 39-01-2046	• 39-01-3043	• 39-01-3049	9.60 (.378)	4.20 (.165)	15.00 (.591)
6	• 39-01-2061	• 39-01-2066	• 39-01-3063	• 39-01-3069	13.80 (.543)	8.40 (.331)	19.20 (.756)
8	• 39-01-2081	• 39-01-2086	• 39-01-3083	• 39-01-3089	18.00 (.709)	12.60 (.496)	23.40 (.921)
10	• 39-01-2101	• 39-01-2106	• 39-01-3103	• 39-01-3109	22.20 (.874)	16.80 (.661)	27.60 (1.087)
12	• 39-01-2121	• 39-01-2126			26.40 (1.039)	21.00 (.827)	31.80 (1.252)
14	• 39-01-2141	• 39-01-2146	• 39-01-3143	• 39-01-3149	30.60 (1.205)	25.20 (.992)	36.00 (1.417)
16	• 39-01-2161	• 39-01-2166	• 39-01-3163	• 39-01-3169	34.80 (1.370)	29.40 (1.158)	40.20 (1.583)
18	• 39-01-2181				39.00 (1.535)	33.60 (1.323)	44.40 (1.748)
20	• 39-01-2201				43.20 (1.701)	37.80 (1.488)	48.60 (1.913)
22	• 39-01-2221				47.40 (1.866)	42.00 (1.654)	52.80 (2.079)
24	• 39-01-2241				51.60 (2.031)	46.20 (1.819)	57.00 (2.244)

• US Standard Product, available through Molex franchised distributors



PRODUCT SPECIFICATION

MINI-FIT HCS (High Current System)

1.0 SCOPE

This Product Specification covers performance requirements for the MINI-FIT HCS 4.20 mm (.165 inch) centerline (pitch) printed circuit board (PCB) connector series with Tin or Gold plating, and The MINI-FIT HCS connector series terminated with 16 to 28 AWG wire using Crimp technology with Tin or Gold plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

<u>PRODUCT NAME</u>	<u>PART NUMBER</u>
Female Crimp Terminal (Mini-Fit HCS)	44476-****
Male Crimp Terminal (Mini-Fit HCS)	44478-****
Receptacle Housing (Mini-Fit Jr.)	5557-****
Receptacle Housing (Mini-Fit PTA)	30067-****
Receptacle Housing (Mini-Fit BMI)	42474-****
Receptacle Header Assembly (Mini-Fit BMI)	44475-****
Plug Housing (Mini-Fit Jr.)	5559-****
Plug Housing (Mini-Fit TPA)	30068-****
Plug Housing (Mini-Fit BMI)	42475-****
Vertical Header Assembly (Mini-Fit HCS)	44472-****
Vertical Header Assembly (Mini-Fit TPA)	44473-****
Vertical Header Assembly (Mini-Fit (BMI)	44474-****
Vertical Header Assembly (Mini-Fit SMC)	44068-****
Right Angle Header Assembly (Mini-Fit Jr.)	5569-****
Right Angle Header Assembly (Mini-Fit TPA)	30070-****
Right Angle Header Assembly (Mini-Fit BMI)	42404-****
Right Angle Header Assembly (Mini-Fit SMC)	43810-****

Mating the Mini-Fit receptacles to Mini-Fit plugs or Mini-Fit headers using 44476 or 44478 terminals allow it to qualify as a Mini-Fit HCS system.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings for the information on dimensions, materials, platings and markings.

2.3 SAFETY AGENCY APPROVALS

UL File #E29179
CSA Certificate #LR 19980
TUV Certificate #R75142-8

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See sales drawings and the other sections of this specification for the necessary referenced documents and specifications

REVISION: D	ECR/ECN INFORMATION: <u>EC No:</u> UCP2003-2604 <u>DATE:</u> 2003 / 06 / 12	TITLE: PRODUCT SPECIFICATION FOR MINI-FIT HCS CONNECTOR SYSTEM	SHEET No. 1 of 5
DOCUMENT NUMBER: PS-44476-001	CREATED / REVISED BY: C.STEWART	CHECKED BY: Y. MARGULIS	APPROVED BY: Y. MARGULIS



PRODUCT SPECIFICATION

NGS

4.1 VOLTAGE

600 Volts AC (RMS) (or 600 Volts DC)

4.2 CURRENT AND APPLICABLE WIRES

Maximum Insulation Diameter and Applicable Wire Gauges	16 AWG: 3.10/. 122 MAXIMUM			
	18-24 AWG: 3.10/. 122 MAXIMUM			
MAXIMUM CURRENT RATING (Amperes)				
Ckt. Size Wire	2 & 3	4 - 6	7 - 10	12 - 24
AWG #16	12	11	10	9
AWG #18	12	11	10	9
AWG #20	9	9	8	8

4.3 TEMPERATURE

Operating: * - 40°C to + 105°C

Nonoperating: - 40°C to + 105°C

**Including 30°C terminal temperature at rated current*

4.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. Wire resistance shall be removed from the measured value.	10 milliohms MAXIMUM [initial]
2	Contact Resistance @ Rated Current	Mate connectors: apply a maximum voltage of 20 mV at rated current.	10 milliohms MAXIMUM [initial]
3	Contact Resistance of Wire Termination (Low Level)	Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA.	5 milliohms MAXIMUM [initial]

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PS-44476-001	C.STEWART	Y. MARGULIS	Y. MARGULIS



PRODUCT SPECIFICATION

4	Insulation Resistance	Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
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5.1 ELECTRICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Dielectric Withstanding Voltage	Mate connectors: apply a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown. Current leakage < 5 mA
6	Temperature Rise (via Current Cycling)	Mate connectors. Measure the temperature rise at the rated current after 96 hours, during current cycling (45 minutes ON and 15 minutes OFF per hour) for 240 hours, and after final 96-hour steady state.	Temperature rise: +30°C MAXIMUM

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Terminal Mate and Unmate Forces	Insert and withdraw terminal (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	14.7 N (3.30 lbf) MAXIMUM insertion force & 1.0 N (0.02 lbf) MINIMUM withdrawal force
2	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	30 N (6.74 lbf) MINIMUM retention force
3	Durability	Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	20 milliohms MAXIMUM
4	Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
5	Shock (Mechanical)	Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes, (18 shocks total).	20 milliohms MAXIMUM & Discontinuity < 1 microsecond

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		<u>APPROVED BY:</u> Y. MARGULIS	



PRODUCT SPECIFICATION

6	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch).	16 Awg = 88.0 N (19.8 lbf) Min. 18 Awg = 88.0 N (19.8 lbf) Min. 20 Awg = 59.0 N (13.3 lbf) Min. 22 Awg = 39.0 N (8.78 lbf) Min. 24 Awg = 29.0 N (6.52 lbf) Min. 26 Awg = 19.0 N (4.27 lbf) Min. 28 Awg = 9.80 N (2.20 lbf) Min.
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5.2 MECHANICAL REQUIREMENTS (continued)

7	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch).	15.0 N (3.37 lbf) MAXIMUM insertion force
8	Normal Force	Apply a perpendicular force.	0.49 N (50 grams) MINIMUM [Gold (noble) plating] OR 1.47 N (150 grams) MINIMUM [Tin (non-noble) plating]
9	PCB Engagement and Separation Forces	Engage and separate a connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	49.0 N (11.0 lbf) MAXIMUM insertion force & 10.0 N (2.24 lbf) MINIMUM withdrawal force
10	Panel Insertion and Withdrawal Forces	Insert and withdraw a connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	225 N (50.7 lbf) MAXIMUM insertion force & 157 N (35.3 lbf) MINIMUM withdrawal force

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Thermal Shock	Mate connectors: expose for 5 cycles between temperatures -55 and 105°C; dwell 0.5 hours at each temperature.	20 milliohms MAXIMUM Visual: No Damage Dielectric Strength per 5.1.5 Insulation Resistance per 5.1.4
2	Thermal Aging	Mate connectors; expose to: 96 hours at 105 ± 2°C	20 milliohms MAXIMUM & Visual: No Damage
3	Humidity (Steady State)	Mate connectors: expose to a temperature of 60 ± 2°C with a relative humidity of 90-95% for 96 hours.	20 milliohms MAXIMUM Dielectric Strength per 5.1.5 Insulation Resistance per 5.1.4 Visual: No Damage

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PRODUCT SPECIFICATION

4	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
5	Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 235 ± 5°C	Visual: No Damage to insulator material

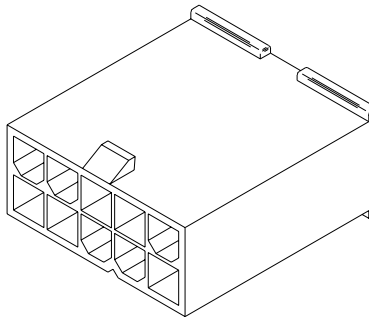
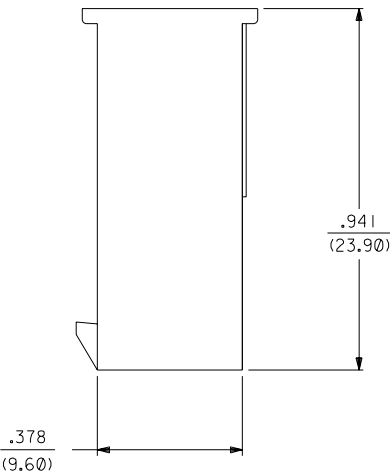
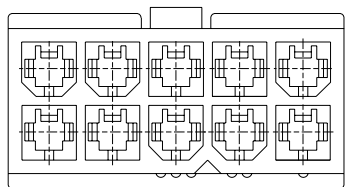
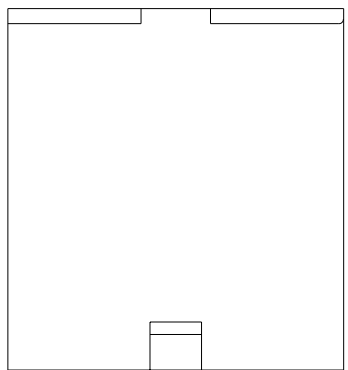
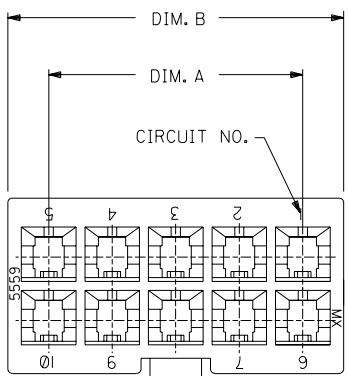
5.3 ENVIRONMENTAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6	Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM Visual: No Damage
7	Corrosive Atmosphere: Sulfur Dioxide Gas (SO₂)	Mate connectors: Duration: 24 hours exposure. Atmosphere: 50 parts per million (ppm) SO ₂ Gas. Temperature: 40 ± 3°C	20 milliohms MAXIMUM Visual: No damage

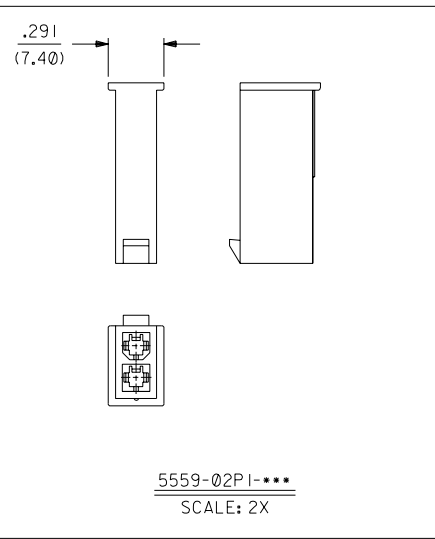
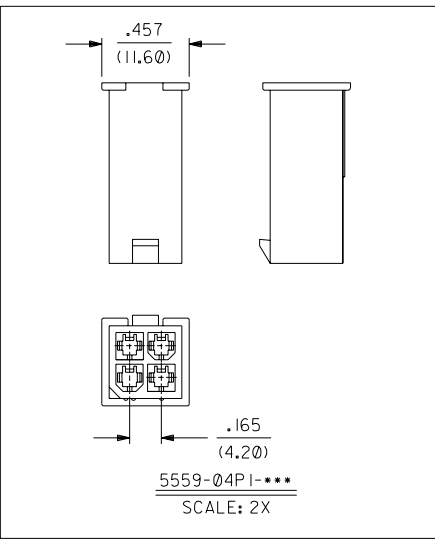
5.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

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CKT. SIZE	DIM. A	DIM. B
6	.331 (8.40)	.543 (13.80)
8	.496 (12.60)	.709 (18.00)
10	.661 (16.80)	.874 (22.20)
12	.827 (21.00)	1.039 (26.40)
14	.992 (25.20)	1.205 (30.60)
16	1.157 (29.40)	1.370 (34.80)
18	1.323 (33.60)	1.535 (39.00)
20	1.488 (37.80)	1.701 (43.20)
22	1.654 (42.00)	1.866 (47.40)
24	1.819 (46.20)	2.031 (51.60)



- NOTES:**
- MATERIAL; BLANK=NYLON 6/6, UL 94V-2, COLOR: NATURAL.
210=NYLON 6/6, UL 94V-0, COLOR: NATURAL.
220=NYLON 6/6, UL 94V-2, U. V. STABILIZED, COLOR: BLACK.
 - THIS PART MATES WITH RECEPTACLE #5557.
 - PART IS DESIGNED IN METRIC.
 - THIS PART IS FOR USE WITH MOLEX MALE TERMINAL #5558-.*.
 - PRODUCT SPECIFICATION; PS-5556-001

LTR.	REVISIONS	LTR.	REVISIONS
		C1	REV. '220' MAT'L. 94V-2 WAS 94V-0 ECN U11607 GEP 7-30-91 RJF
D	REV PS NOTE UCP2003-0396 9/2/2002 SAMIEC	C	REMOVED 'NO P.S.' ADDED NOTE 5 ECN U11273 GEP 7-26-91 RJF
C2	ADDED VIEWS FOR 2 AND 4-CIRCUIT ECR U20221 2-12-92 RJF	B	REDRAWN AND ADDED '220' MAT'L. PER ECR U91052 10-27-89 RF

DIMENSIONS SHOWN (METRIC) INCH	
3 PLACE ± .015	---
2 PLACE ± ---	± 0.38
1 PLACE ---	± ---

DIMENSIONS SHOWN (METRIC) INCH
 UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR ± 1/2°
 DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS
 DRWG. BY: RJF CHK'D. BY: BAP
 APP'D. BY: RAS SCALE: 4: 1
 TITLE: MINI-FIT JR SERIES PLUG W/O MTC. EARS
 MOLEX INCORPORATED
 SHEET NO. 1 OF 2
 DATE 9/22/89
 PART NO. SD-5559-NP1*
 SEE CHART
 THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.

2	C1
1	D

MFG. SH. REV.

13				12				11				10				9				8				7				6				5559				4				3				2				1			
PART NUMBER		ENG. NUMBER		CIRCUIT SIZE		MATERIAL		PART NUMBER		ENG. NUMBER		CIRCUIT SIZE		MATERIAL		PART NUMBER		ENG. NUMBER		CIRCUIT SIZE		MATERIAL		PART NUMBER		ENG. NUMBER		CIRCUIT SIZE		MATERIAL																					
J	39-01-3023	5559-02P1	2	94V-2					39-01-3029	5559-02P1-210	2	94V-0					15-04-6020	5559-02P1-220	2	94V-2, U.V. STABILIZED	J																														
	39-01-3043	5559-04P1	4	94V-2					39-01-3049	5559-04P1-210	4	94V-0					NO E.D.P.	5559-04P1-220	4	94V-2, U.V. STABILIZED																															
	39-01-3063	5559-06P1	6	94V-2					39-01-3069	5559-06P1-210	6	94V-0					NO E.D.P.	5559-06P1-220	6	94V-2, U.V. STABILIZED																															
I	39-01-3083	5559-08P1	8	94V-2					39-01-3089	5559-08P1-210	8	94V-0					NO E.D.P.	5559-08P1-220	8	94V-2, U.V. STABILIZED	I																														
	39-01-3103	5559-10P1	10	94V-2					39-01-3109	5559-10P1-210	10	94V-0					NO E.D.P.	5559-10P1-220	10	94V-2, U.V. STABILIZED																															
	39-01-3123	5559-12P1	12	94V-2					39-01-3129	5559-12P1-210	12	94V-0					NO E.D.P.	5559-12P1-220	12	94V-2, U.V. STABILIZED																															
H	39-01-3143	5559-14P1	14	94V-2					39-01-3149	5559-14P1-210	14	94V-0					NO E.D.P.	5559-14P1-220	14	94V-2, U.V. STABILIZED	H																														
	39-01-3163	5559-16P1	16	94V-2					39-01-3169	5559-16P1-210	16	94V-0					NO E.D.P.	5559-16P1-220	16	94V-2, U.V. STABILIZED																															
	39-01-3183	5559-18P1	18	94V-2					39-01-3189	5559-18P1-210	18	94V-0					NO E.D.P.	5559-18P1-220	18	94V-2, U.V. STABILIZED																															
G	39-01-3203	5559-20P1	20	94V-2					39-01-3209	5559-20P1-210	20	94V-0					NO E.D.P.	5559-20P1-220	20	94V-2, U.V. STABILIZED	G																														
	39-01-3223	5559-22P1	22	94V-2					39-01-3229	5559-22P1-210	22	94V-0					NO E.D.P.	5559-22P1-220	22	94V-2, U.V. STABILIZED																															
	39-01-3243	5559-24P1	24	94V-2					39-01-3249	5559-24P1-210	24	94V-0					NO E.D.P.	5559-24P1-220	24	94V-2, U.V. STABILIZED																															

LEGEND

5559-** P1 - *
 BASE NO ———
 CIRCUIT SIZE (02-24) ———
 PLUG WITHOUT MOUNTING EARS ———
 MATERIAL OPTION: (SEE NOTE 1 ON SHEET 1.)

DIMENSIONS SHOWN (METRIC) INCH UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR .01° / .125°		▽ = 0 ▽ = 0 REVISE ONLY ON CAD SYSTEM	
INCH METRIC		TITLE MINI-FIT JR SERIES PLUG W/O MTG. EARS	
3 PLACE ± .010	---	MOLEX INCORPORATED SHEET NO. 2 DATE 9/22/89	
2 PLACE ± .015	± 0.25	LITTLE, J.L.L. U.S.A.	
1 PLACE ---	± 0.38	PART NO. DRWG. NO.	
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE CHART SD-5559-NP1	
DRWG. BY: RJF CHK'D. BY: BAP	FILE NAME: SD5559X2	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.	
APP'D. BY: RAS SCALE: :	DRG. NO. 68532	CP C	

5559