

## FEATURES AND SPECIFICATIONS

## Features and Benefits

- Blind mating panel mounted plug
- Positive housing locks to mate with Mini-Fit, Jr.
- Fully isolated terminals to protect contacts from damage
- Uses standard Mini-Fit series terminals
- 43770 provides first-mate/last-break capability

## Reference Information

Product Specification: PS-5556-0002

Packaging: Tray and bag

UL File No.: E29179

CSA File No.: LR19980

TUV License No.: R75142

Mates With:

42475—5557, 42385 and 42474 receptacles

43770—43760 receptacle

Use With:

42475—5558, 44475 (HCS) and 44478 terminals

43770—5558, 44475 (HCS) and 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.

Mating Force: 0.7kg (1.54 lb) max.

Unmating Force: 0.35kg (0.7 lb) min.

Normal Force: 200g min.

Durability: 30 cycles

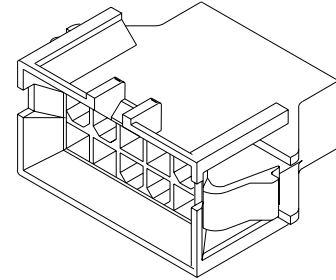
## Physical

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

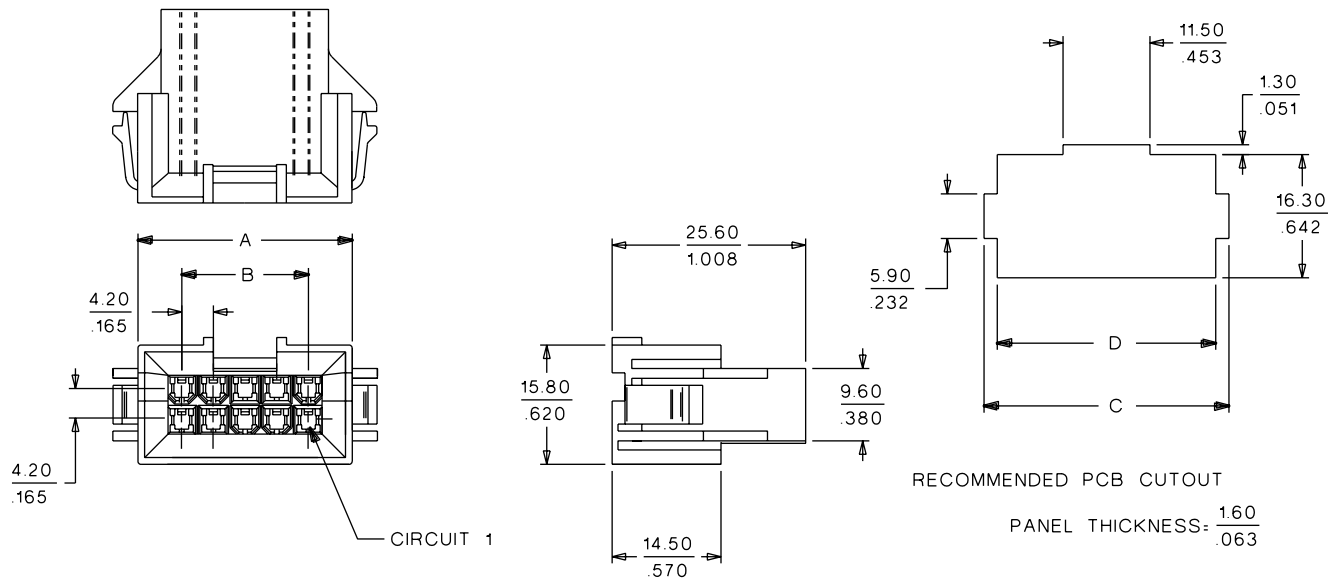
Contact: Brass or Phosphor Bronze

Plating: Tin, select Gold or overall Gold

Operating Temperature: -40 to +105°C


**4.20mm (.165") Pitch  
Mini-Fit, BMI™  
Plug**
**42475/43770****Dual Row  
With Panel Mount Ears**

## CATALOG DRAWING (FOR REFERENCE ONLY)



## ORDERING INFORMATION AND DIMENSIONS

Circuits	Order No.		Dimension			
	94V-2	94V-0	A	B	C	D
4	• 15-06-0045	• 15-06-0046	15.80 (.622)	4.20 (.165)	19.80 (.779)	16.30 (.642)
6	• 15-06-0065		20.00 (.787)	8.40 (.331)	24.00 (.945)	20.50 (.807)
8	• 15-06-0085		24.20 (.952)	12.60 (.496)	28.20 (1.110)	24.70 (.972)
10	• 15-06-0105	• 15-06-0106	28.40 (1.118)	16.80 (.661)	32.40 (1.276)	28.90 (1.138)
14	• 15-06-0145	• 15-06-0146	36.80 (1.449)	25.20 (.992)	40.80 (1.606)	37.30 (1.469)
18	• 15-06-0185	• 15-06-0186	45.20 (1.780)	33.60 (1.323)	49.20 (1.937)	45.70 (1.799)
20	• 15-06-0205		49.40 (1.945)	37.80 (1.488)	53.40 (2.102)	49.90 (1.965)
24	• 15-06-0245		57.80 (2.276)	46.20 (1.819)	61.80 (2.433)	58.30 (2.295)
36	• 43770-0001		79.50 (3.130)	71.40 (2.811)	87.00 (3.430)	83.49 (3.290)

• US Standard Product, available through Molex franchised distributors



# PRODUCT SPECIFICATION

## MINI-FIT BMI

### 1.0 SCOPE

This Product Specification covers performance requirements for the MINI-FIT BMI 4.20 mm (.165 inch) centerline (pitch) printed circuit board (PCB) connector series with Tin or Gold plating, and The MINI-FIT BMI 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	5556-****
Male Crimp Terminal	5558-****
Receptacle Housing	42474-****
Plug Housing	42475-****
Vertical Header Assembly	42440-****
Right Angle Header Assembly	42404-****
Receptacle Header Assembly	42385-****
Plug Housing	43588-06*1

#### 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

### 4.0 RATINGS

#### 4.1 VOLTAGE

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

#### 4.2 CURRENT AND APPLICABLE WIRES

<b>Maximum Insulation Diameter and Applicable Wire Gauges</b>	16 AWG: 3.10/. 122 MAXIMUM
	18-24 AWG: 3.10/. 122 MAXIMUM
	22-28 AWG: 1.80/. 071 MAXIMUM

<b>REVISION:</b> <b>D2</b>	<b>EGR/ECN INFORMATION:</b> EC No: <b>UCP2004-2290</b> DATE: <b>2004 / 05 / 14</b>	<b>TITLE:</b> <b>PRODUCT SPECIFICATION FOR MINI-FIT BMI CONNECTOR SYSTEM</b>	<b>SHEET No.</b> <b>1 of 5</b>
<b>DOCUMENT NUMBER:</b> <b>PS-5556-002</b>	<b>CREATED / REVISED BY:</b> <b>BANDURA</b>	<b>CHECKED BY:</b> <b>BANDURA</b>	<b>APPROVED BY:</b> <b>MARGULIS</b>

TEMPLATE FILENAME: PRODUCT\_SPEC(SIZE\_A)(V.1).DOC



# PRODUCT SPECIFICATION

## 4.2 CURRENT AND APPLICABLE WIRES (continued)

MAXIMUM CURRENT RATING (Amperes)									
Brass					Phosphor Bronze				
Wire \ Ckt. Size	2 & 3	4 - 6	7 - 10	12 - 24	Wire \ Ckt. Size	2 & 3	4 - 6	7 - 10	12 - 24
AWG #16	9	8	7	6	AWG #16	8	7	6	5
AWG #18	9	8	7	6	AWG #18	8	7	6	5
AWG #20	7	6	5	5	AWG #20	6	5	4	4
AWG #22	5	4	4	4	AWG #22	4	3	3	3
AWG #24	4	3	3	3	AWG #24	3	2	2	2
AWG #26	3	2	2	2	AWG #26	2	1	1	1
AWG #28	2	1	1	1	AWG #28	1	1	1	1

## 4.3 TEMPERATURE

Operating: \* -40° C to +105° C

Nonoperating: -40° C to +105° C

\*Including 30°C terminal temperature at rated current

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	<b>Contact Resistance (Low Level)</b>	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	<b>Contact Resistance @ Rated Current</b>	Mate connectors: apply a maximum voltage of 20 mV at rated current.	10 milliohms MAXIMUM [initial]
3	<b>Contact Resistance of Wire Termination (Low Level)</b>	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]
4	<b>Insulation Resistance</b>	Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM

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# PRODUCT SPECIFICATION

## 5.1 ELECTRICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	<b>Dielectric Withstanding Voltage</b>	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	<b>Temperature Rise (via Current Cycling)</b>	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	<b>Terminal Mate and Unmate Forces</b>	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	<b>Crimp Terminal Retention Force (in Housing)</b>	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	<b>Terminal Pin to Header Retention Force</b>	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	4.45 N (1.00 lbf) MINIMUM retention force
4	<b>Durability</b>	Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	20 milliohms MAXIMUM
5	<b>Vibration (Random)</b>	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
6	<b>Shock (Mechanical)</b>	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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# PRODUCT SPECIFICATION

## 5.2 MECHANICAL REQUIREMENTS (continued)

7	<b>Wire Pullout Force (Axial)</b>	Apply an axial pullout force on the wire at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ 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.
8	<b>Crimp Terminal Insertion Force (into Housing)</b>	Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch).	15.0 N (3.37 lbf) MAXIMUM insertion force
9	<b>Normal Force</b>	Apply a perpendicular force.	0.49 N (50 grams) MINIMUM [Gold (noble) plating] OR 1.47 N (150 grams) MINIMUM [Tin (non-noble) plating]
10	<b>PCB Engagement and Separation Forces</b>	Engage and separate a connector at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. (Applies to parts with PCB retention features only)	49.0 N (11.0 lbf) MAXIMUM insertion force & 10.0 N (2.24 lbf) MINIMUM withdrawal force
11	<b>Panel Insertion and Withdrawal Forces</b>	Insert and withdraw a connector at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. (Applies to parts with panel retention features only)	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	<b>Thermal Shock</b>	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	<b>Thermal Aging</b>	Mate connectors; expose to: 96 hours at $105 \pm 2$ °C	20 milliohms MAXIMUM & Visual: No Damage
3	<b>Humidity (Steady State)</b>	Mate connectors: expose to a temperature of $60 \pm 2$ °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

## 5.3 ENVIRONMENTAL REQUIREMENTS (continued)

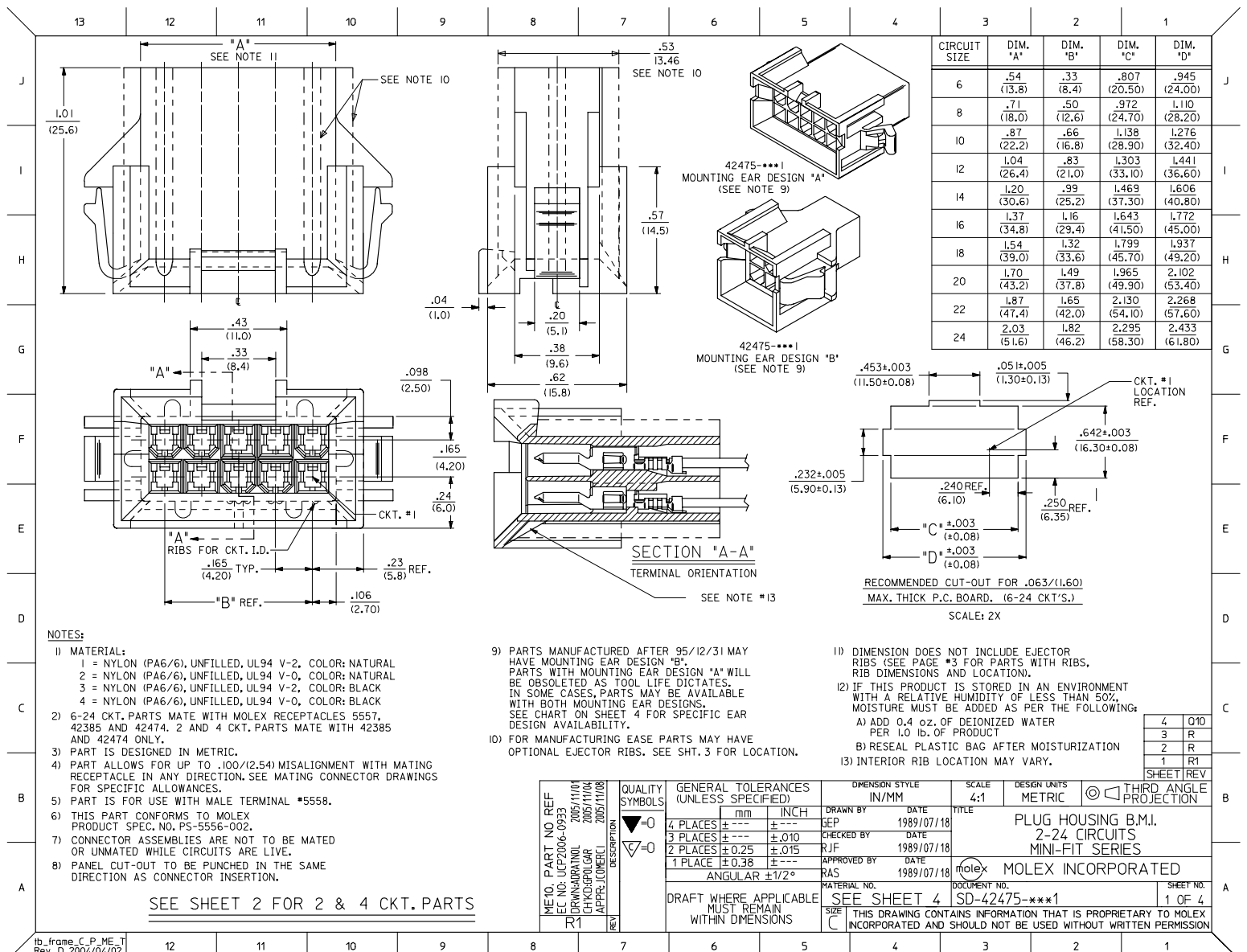
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	<b>Solderability</b>	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
5	<b>Solder Resistance</b>	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 235 ± 5°C	Visual: No Damage to insulator material
6	<b>Cold Resistance</b>	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM Visual: No Damage
7	<b>Corrosive Atmosphere: Sulfur Dioxide Gas (SO<sub>2</sub>)</b>	Mate connectors: Duration: 24 hours exposure. Atmosphere: 50 parts per million (ppm) SO <sub>2</sub> Gas. Temperature: 40 ± 3°C	20 milliohms MAXIMUM Visual: No damage

## 6.0 PACKAGING

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

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DOCUMENT NUMBER: <b>PS-5556-002</b>		CREATED / REVISED BY: <b>BANDURA</b>	CHECKED BY: <b>BANDURA</b>
		APPROVED BY: <b>MARGULIS</b>	

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CIRCUIT SIZE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"
6	.54 (13.8)	.33 (8.4)	.807 (20.50)	.945 (24.00)
8	.71 (18.0)	.50 (12.6)	.972 (24.70)	1.110 (28.20)
10	.87 (22.2)	.66 (16.8)	1.138 (28.90)	1.276 (32.40)
12	1.04 (26.4)	.83 (21.0)	1.303 (33.10)	1.441 (36.60)
14	1.20 (30.6)	.99 (25.2)	1.469 (37.30)	1.606 (40.80)
16	1.37 (34.8)	1.16 (29.4)	1.643 (41.50)	1.772 (45.00)
18	1.54 (39.0)	1.32 (33.6)	1.799 (45.70)	1.937 (49.20)
20	1.70 (43.2)	1.49 (37.8)	1.965 (49.90)	2.102 (53.40)
22	1.87 (47.4)	1.65 (42.0)	2.130 (54.10)	2.268 (57.60)
24	2.03 (51.6)	1.82 (46.2)	2.295 (58.30)	2.433 (61.80)

- NOTES:
- MATERIAL:
    - 1 = NYLON (PA6/6), UNFILLED, UL94 V-2, COLOR: NATURAL
    - 2 = NYLON (PA6/6), UNFILLED, UL94 V-0, COLOR: NATURAL
    - 3 = NYLON (PA6/6), UNFILLED, UL94 V-2, COLOR: BLACK
    - 4 = NYLON (PA6/6), UNFILLED, UL94 V-0, COLOR: BLACK
  - 6-24 CKT. PARTS MATE WITH MOLEX RECEPTACLES 5557, 42385 AND 42474. 2 AND 4 CKT. PARTS MATE WITH 42385 AND 42474 ONLY.
  - PART IS DESIGNED IN METRIC.
  - PART ALLOWS FOR UP TO .100/(2.54) MISALIGNMENT WITH MATING RECEPTACLE IN ANY DIRECTION. SEE MATING CONNECTOR DRAWINGS FOR SPECIFIC ALLOWANCES.
  - PART IS FOR USE WITH MALE TERMINAL #5558.
  - THIS PART CONFORMS TO MOLEX PRODUCT SPEC. NO. PS-5556-002.
  - CONNECTOR ASSEMBLIES ARE NOT TO BE MATED OR UNMATED WHILE CIRCUITS ARE LIVE.
  - PANEL CUT-OUT TO BE PUNCHED IN THE SAME DIRECTION AS CONNECTOR INSERTION.

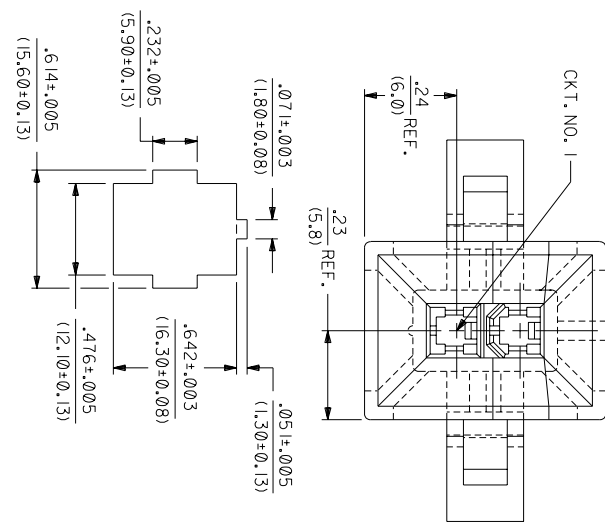
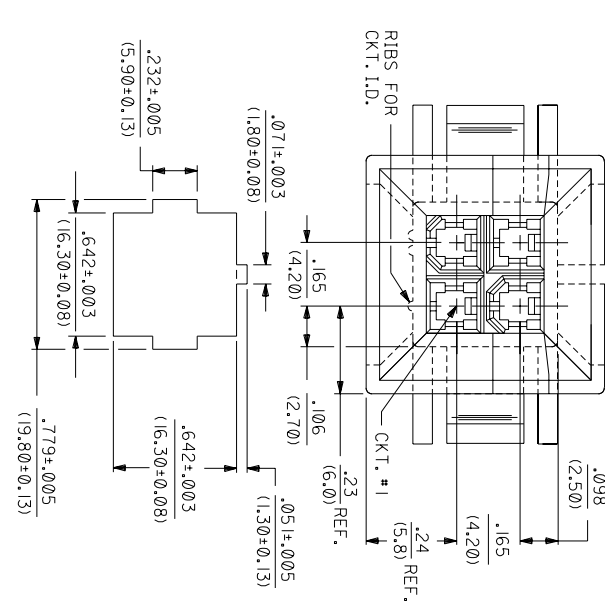
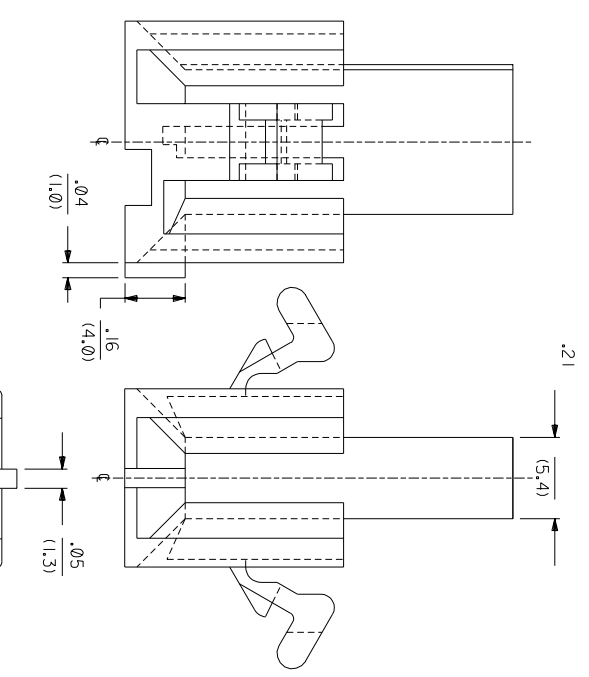
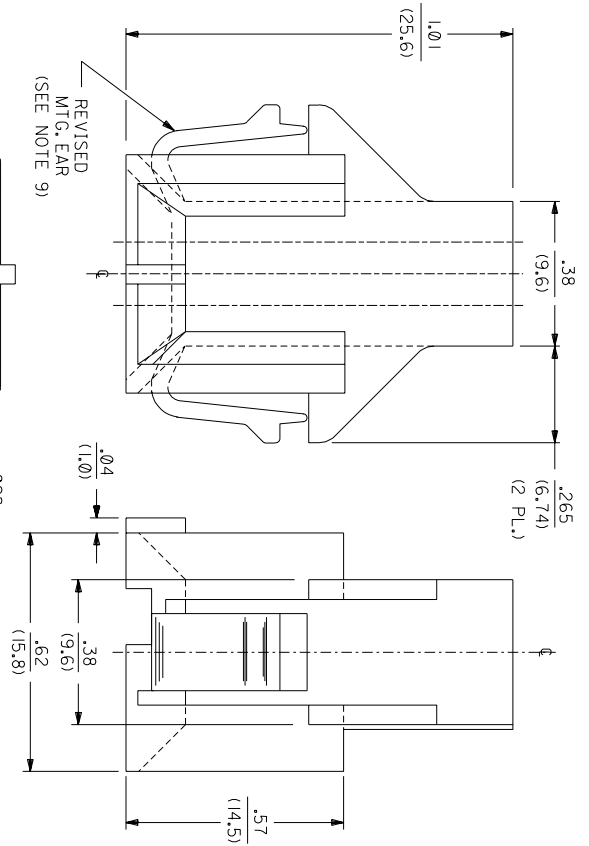
- PARTS MANUFACTURED AFTER 95/12/31 MAY HAVE MOUNTING EAR DESIGN "B". PARTS WITH MOUNTING EAR DESIGN "A" WILL BE OBSOLETE AS TOOL LIFE DICTATES. IN SOME CASES, PARTS MAY BE AVAILABLE WITH BOTH MOUNTING EAR DESIGNS. SEE CHART ON SHEET 4 FOR SPECIFIC EAR DESIGN AVAILABILITY.
- FOR MANUFACTURING EASE PARTS MAY HAVE OPTIONAL EJECTOR RIBS. SEE SHT. 3 FOR LOCATION.

- DIMENSION DOES NOT INCLUDE EJECTOR RIBS (SEE PAGE #3 FOR PARTS WITH RIBS, RIB DIMENSIONS AND LOCATION).
- IF THIS PRODUCT IS STORED IN AN ENVIRONMENT WITH A RELATIVE HUMIDITY OF LESS THAN 50%, MOISTURE MUST BE ADDED AS PER THE FOLLOWING:
  - ADD 0.4 oz. OF DEIONIZED WATER PER 1.0 lb. OF PRODUCT
  - RESEAL PLASTIC BAG AFTER MOISTURIZATION
  - INTERIOR RIB LOCATION MAY VARY.

4	Q10
3	R
2	R
1	R1

SEE SHEET 2 FOR 2 & 4 CKT. PARTS

MEQ. PART NO REF EC NO. UCP2006-0933 DRAWN BY: JMD CHECKED BY: JMD APPR: JMD REV: R1	QUALITY SYMBOLS ▽=0 ▽=0	GENERAL TOLERANCES (UNLESS SPECIFIED) 4 PLACES ± .005 ± .005 3 PLACES ± .010 ± .010 2 PLACES ± .025 ± .015 1 PLACE ± .038 ± .015 ANGULAR ±1/2°	DIMENSION STYLE IN/MM DRAWN BY: SEP DATE: 1989/07/18 CHECKED BY: DATE: 1989/07/18 APPROVED BY: RAS DATE: 1989/07/18	SCALE: 4:1 DESIGN UNITS: METRIC THIRD ANGLE PROJECTION	TITLE: PLUG HOUSING B.M.I. 2-24 CIRCUITS MINI-FIT SERIES MOLEX INCORPORATED	MATERIAL NO. DOCUMENT NO. SHEET NO. SEE SHEET 4 SD-42475-***1 1 OF 4
	DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION					



RECOMMENDED CUT-OUT FOR .063/(1.60)  
 MAX. THICK P.C. BOARD. (4 CKT'S.)  
 SCALE: 2X  
 4 CKT.

RECOMMENDED CUT-OUT FOR .063/(1.60)  
 MAX. THICK P.C. BOARD. #1 (2 CKT'S.)  
 SCALE: 2X  
 2 CKT.

QTY	DESCRIPTION	UNIT	REVISIONS
01	SEE SHEET #1		
0	SEE SHIT. I		
P1	SEE SHIT. I		
P	SEE SHIT. I		
O1	SEE SHIT. I		
NI	SEE SHIT. I		
R	SEE SHIT. I		
LTR.	REVISIONS		

DATE	BY	CHKD.	SCALE	REVISIONS
7/18/89	RAS	RUF	4:1	

UNIT	CONVERSION
INCH	METRIC
1 INCH = 25.4 MM	
1/16 INCH = 1.5875 MM	
1/32 INCH = 0.79375 MM	
1/64 INCH = 0.396875 MM	
1/128 INCH = 0.1979375 MM	
1/256 INCH = 0.09896875 MM	
1/512 INCH = 0.049484375 MM	
1/1024 INCH = 0.0247421875 MM	

FILE NAME	DATE	SIZE
SD-42475-***1	7/18/89	CP C

UNIT	CONVERSION
INCH	METRIC
1 INCH = 25.4 MM	
1/16 INCH = 1.5875 MM	
1/32 INCH = 0.79375 MM	
1/64 INCH = 0.396875 MM	
1/128 INCH = 0.1979375 MM	
1/256 INCH = 0.09896875 MM	
1/512 INCH = 0.049484375 MM	
1/1024 INCH = 0.0247421875 MM	



