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Jameco Part Number 224098



# PRODUCT SPECIFICATION

## .093 SERIES PLUG AND RECEPTACLE POWER CONNECTORS

### 1.0 SCOPE

This Product Specification covers the 5.03 mm (.198 inch) centerline connector series using pin and socket terminals terminated with 14 to 24 AWG wire using crimp technology with tin plating.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

<u>PRODUCT NAME</u>	<u>SERIES NUMBER</u>
Plug Housing, 1-circuit	1619-1P
Receptacle Housing, 1-circuit	1619-1R
Plug Housing, 2-circuit	1545-P*
Receptacle Housing, 2-circuit	1545-R*
Plug Housing, 3-circuit	1396-P*
Receptacle Housing, 3-circuit	1396-R*
Plug Housing, 4-circuit (in-line)	1490-P*
Receptacle Housing, 4-circuit (in-line)	1490-R*
Plug Housing, 4-circuit (2 x 2)	2163-P*
Receptacle Housing, 4-circuit (2 x 2)	2163-R*
Plug Housing, 5-circuit	1653-P*
Receptacle Housing, 5-circuit	1653-R*
Plug Housing, 6-circuit	1261-P*
Receptacle Housing, 6-circuit	1261-R*
Plug Housing, 9-circuit	1292-P*
Receptacle Housing, 9-circuit	1292-R*
Plug Housing, 12-circuit	1360-P*
Receptacle Housing, 12-circuit	1360-R*
Socket Terminal, 14-18 AWG	1189
Pin Terminal, 14-18 AWG	1190
Socket Terminal, 18-22 AWG	1380
Pin Terminal, 18-22 AWG	1381
Socket Terminal, 22-24 AWG	2870
Pin Terminal, 22-24 AWG	2871
Socket Terminal, 14-18 AWG, (P-B)	4550
Socket Terminal, 18-22 AWG, (P-B)	2151

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Housings are molded of UL 94V-2 rated PA66.

Terminals are tin-plated brass or phosphor-bronze.

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

<u>REVISION:</u> <b>B</b>	<u>ECR/ECN INFORMATION:</u> EC No: <b>UCR#2003-0230</b> DATE: <b>2002 / 08 / 07</b>	<u>TITLE:</u> <b>PRODUCT SPECIFICATION STANDARD .093 SERIES PLUGS &amp; RECEPTACLES</b>	<u>SHEET No.:</u> <b>1 of 3</b>
<u>DOCUMENT NUMBER:</u> <b>PS-43660-9999</b>	<u>CREATED / REVISED BY:</u> <b>BWIRKUS 10/4/01</b>	<u>CHECKED BY:</u> <b>BWIRKUS 10/4/01</b>	<u>APPROVED BY:</u> <b>SFRY 10/5/01</b>



# PRODUCT SPECIFICATION

## 2.3 SAFETY AGENCY APPROVALS

UL File #E29179  
CSA File #E29179

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See the appropriate sales drawings for necessary referenced documents and specifications.

## 4.0 RATINGS

### 4.1 VOLTAGE

250 Volts AC (RMS)

### 4.2 CURRENT AND APPLICABLE WIRES

AWG	Circuit Size	Amps
14	3	14
14	9	11
18	3	10
18	9	7
22	3	7
22	9	5

### 4.3 TEMPERATURE

Operating: -55°C to +105°C

## 5.0 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 20 mA. (Measurement locations in Section 7.0)	10 milliohms MAXIMUM [initial]
2	Dielectric Withstanding Voltage	Mate connectors: apply a voltage of 2000 VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < 500 mA
3	Temperature Rise (via Current Cycling)	Mate connectors, measuring the temperature rise at 60 minute intervals during 96 hours of steady state at rated current; followed by 240 hours of current cycling (45 minutes ON and 15 minutes OFF per hour) with measurements made during last 5 minute period of each ON cycle; followed by 96 hours of steady state at rated current with measurements taken at 60 minute intervals.	Temperature rise: +30°C MAXIMUM

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DOCUMENT NUMBER: <b>PS-43660-9999</b>	CREATED / REVISED BY: <b>BWIRKUS 10/4/01</b>	CHECKED BY: <b>BWIRKUS 10/4/01</b>	APPROVED BY: <b>SFRY 10/5/01</b>



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## 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	Connector Mate and Unmate Forces	Mate and unmate connector (male to female) at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute for a total of 25 cycles. Initial mate forces to be measured. Unmate forces to be measured after 25 cycles.	15.6 N (3.5 lbf) MAXIMUM insertion force 4.4 N (1 lbf) MINIMUM withdrawal force
5	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.	89 N (20 lbf) MINIMUM retention force
6	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch).	MINIMUM pullout forces: 14 AWG 178 N (40 lbf) 16 AWG 156 N (35 lbf) 18 AWG 133 N (30 lbf) 20 AWG 89 N (20 lbf) 22 AWG 62 N (14 lbf) 24 AWG 36 N (8 lbf)
7	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch).	22N (5 lbf) MAXIMUM insertion force

## 5.3 ENVIRONMENTAL REQUIREMENTS

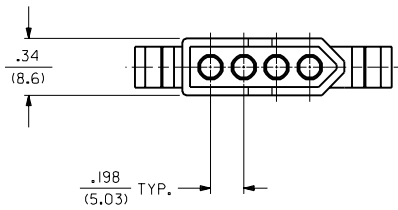
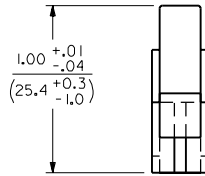
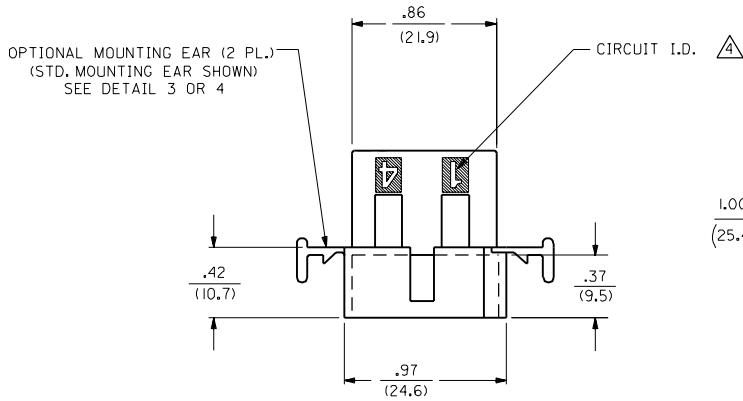
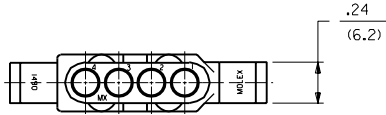
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
8	Thermal Cycling	Mate connectors; expose to temperature cycling between $-25^{\circ}\text{C}$ and $70^{\circ}\text{C}$ for 500 cycles with a dwell time of 30 minutes at each extreme. Measurements to be taken initially and after every 100 cycles.	10 milliohms MAXIMUM (change from initial) & Visual: No Damage

## 6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage. See the appropriate sales drawings for additional information on packaging requirements.

REVISION: <b>B</b>	ECR/ECN INFORMATION: EC No: UCR#2003-0230 DATE: 2002 / 08 / 07	TITLE: <b>PRODUCT SPECIFICATION STANDARD .093 SERIES PLUGS &amp; RECEPTACLES</b>	SHEET No. <b>3 of 3</b>
DOCUMENT NUMBER: <b>PS-43660-9999</b>	CREATED / REVISED BY: <b>BWIRKUS 10/4/01</b>	CHECKED BY: <b>BWIRKUS 10/4/01</b>	APPROVED BY: <b>SFRY 10/5/01</b>

PLUG



PLUG HOUSING

T	3	T
S	2	T
RI	1	T
R		
P		
MFG.	SH.	REV.
LTR.		REVISIONS

UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR  $\pm$  .004

3 PLACE	INCH	METRIC
± .010	---	---
± .014	± 0.25	---
---	± 0.35	---

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DWG. BY: CEP	CHKD. BY: RW	FILE NAME: SD I490X1 DWG	SCALE: 2 : 1
APP'D. BY: RAS			

TITLE: .093/(2.36) HOUSING, PLUG AND RECEPTACLE, 4 CKT. ± .198/(5.03) CTRS.

PART NO.: SEE CHART

MOLEX INCORPORATED

SD I490-0

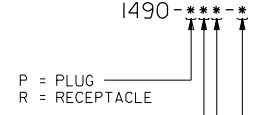
DATE: 3/9/88

SIZE: CP C

T	ADD -PIBU VERSION PER ECN #U3 1537 10-21-93 RW
S	REVISE PER ECR #U1 1686 8/9/91 RW
RI	ADD EDP'S & REVISE SUFFIXES, ECR #U0834 4/24/91 RW
R	REV. LENGTH TOL. ECN #U1 0685 3-22-91 RW
P	REV. & REDRAWN, ECR #U8 1139 GEP 3-8-88 RW

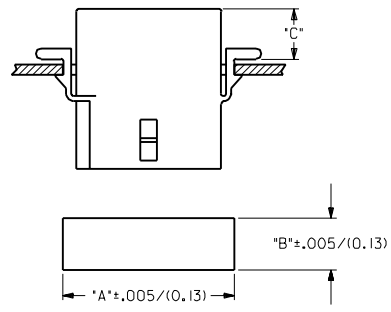
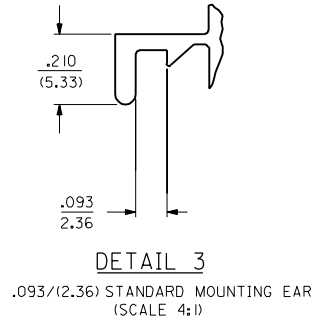
PLUG		RECEPTACLE	
PART NO.	ENG. NO.	PART NO.	ENG. NO.
03-09-2041	I490-P	03-09-1041	I490-R
03-09-2042	I490-P1	03-09-1042	I490-R1
03-09-7041	I490-PBK	03-09-6041	I490-RBK
03-09-7042	I490-P1BK	03-09-6042	I490-R1BK
PRELIMINARY	I490-P2	03-09-1043	I490-R2
03-09-3042	I490-P1BU	03-09-6043	I490-RBU
		03-09-6045	I490-RGN

**LEGEND:**

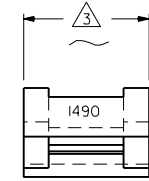


BLANK = WITH STANDARD EARS  
 1 = WITHOUT EARS  
 2 = WITH PREBENT EARS, PER DETAIL 4

COLOR: BLANK=NATURAL COLOR  
 AM=AMBER BK=BLACK BU=BLUE  
 BN=BROWN CY=GRAY GN=GREEN  
 OR=ORANGE RD=RED YW=YELLOW  
 BLANK = MATERIAL CODE A



HOUSING	DIM. "A"	DIM. "B"	DIM. "C"
PLUG	1.131/(28.73)	.375/(9.52)	.36/(9.1)
RECEPTACLE	1.038/(26.36)	.312/(7.92)	.37/(9.4)



**NOTES:**

- MATERIAL CODES:  
A = NYLON 6/6, 94V-2
- THIS PART COMPLIES WITH MOLEX PRODUCT SPEC. 02-09.
- FOR DIMENSION SEE SHEET 1 AND 2.
- CIRCUIT I.D. NUMBERS ON HOUSING APPEAR ON PARTS FROM TOOLS BUILT AFTER 8/7/91.

DIMENSIONS SHOWN (METRIC) INCH		▽ = 0 ▽ = 0		REVISE ONLY ON CAD SYSTEM	
UNLESS OTHERWISE SPECIFIED TOLERANCES ANGLES ARE ± .005					
INCH		METRIC			
3 PLACE	± .010	---	---		
2 PLACE	± .014	± 0.25	---		
1 PLACE	---	± 0.35	---		
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS					
DRWG. BY	CEP	CHK'D. BY	RW		
APP'D. BY	RAS	SCALE	2 : 1		
LTR.	REVISIONS	LTR.	REVISIONS		

TITLE .093/(2.36) HOUSINGS, PLUG AND RECEPTACLE, 4 CKT., .198/(5.03) CTRS.		SHEET NO. 3		DATE 3/10/88	
MOLEX INCORPORATED LITTLE ROCK, AR 60532 U.S.A.		PART NO. SD-1490-#		DRWG. NO.	
SEE CHART		SD-1490-#		DIN. SIZE CP 1 C	

I490

I490