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Jameco Part Number 800665



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

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



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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>DOCUMENT NUMBER:</u> PS-44476-001		<u>CREATED / REVISED BY:</u> C.STEWART	<u>CHECKED BY:</u> Y. MARGULIS
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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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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)

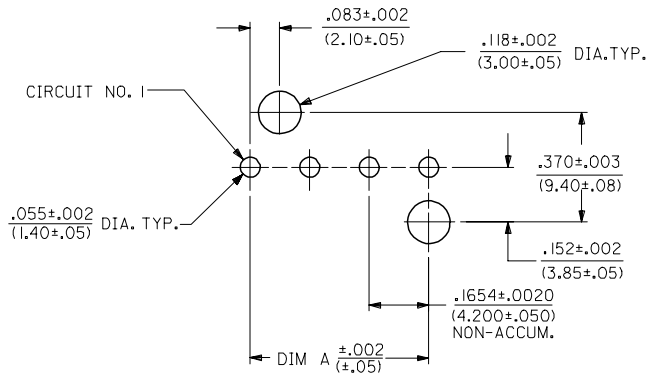
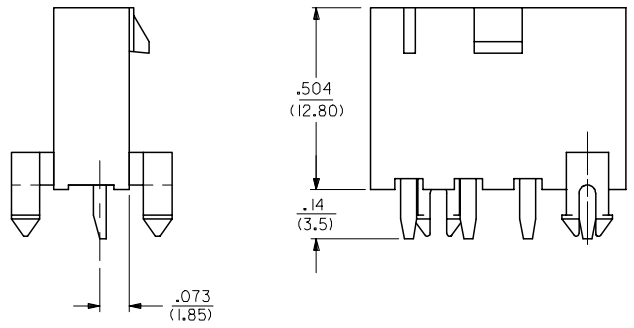
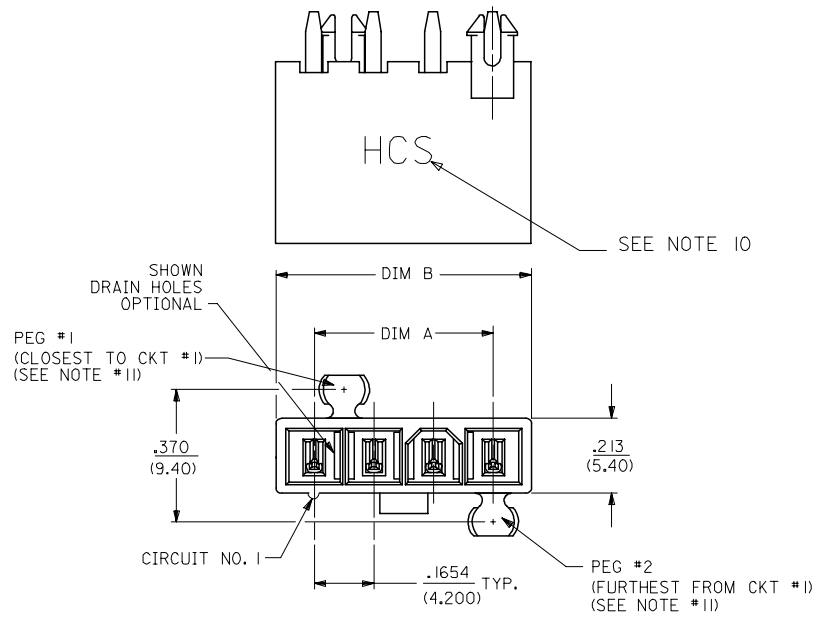
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6	Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM Visual: No Damage
7	Corrosive Atmosphere: Sulfur Dioxide Gas (SO₂)	Mate connectors: Duration: 24 hours exposure. Atmosphere: 50 parts per million (ppm) SO ₂ Gas. 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
4	.496 (12.60)	.709 (18.00)
5	.661 (16.80)	.874 (22.20)
6	.827 (21.00)	1.039 (26.40)
7	.992 (25.20)	1.205 (30.60)
8	1.157 (29.40)	1.370 (34.80)
9	1.323 (33.60)	1.535 (39.00)
10	1.488 (37.80)	1.701 (43.20)
11	1.654 (42.00)	1.866 (47.40)
12	1.819 (46.20)	2.031 (51.60)



RECOMMENDED HOLE LAYOUT FOR
.070/(1.78) MAX. THICK P. C. BOARD
VIEWED FROM COMPONENT SIDE

LEGEND:
44472 - ** **
CIRCUIT SIZE (04-12 FOR SINGLE ROW)
(02-24 FOR DUAL ROW)
ASSEMBLY VERSION (01 THRU 49 FOR SINGLE ROW)
(50 THRU 99 FOR DUAL ROW)

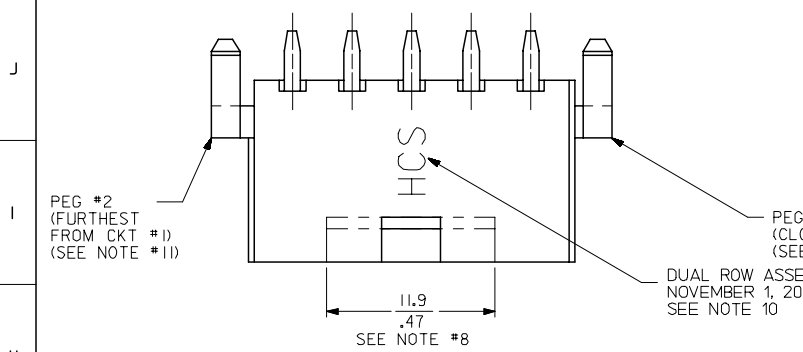
SEE SHT. 2 FOR DUAL ROW
* THE CHART FOR SINGLE ROW PRODUCT IS ON PAGE 7

- NOTES:
- HOUSING MATERIAL:
 - NYLON 6/6, U.L. 94V-2, COLOR: NATURAL.
 - NYLON 6/6, U.L. 94V-0, COLOR: NATURAL.
 - NYLON 6/6, U.L. 94V-2, COLOR: BLACK.
 - TERMINAL MATERIAL: OLIN ALLOY C197
 - PART MATES WITH MIN.I-FIT JR. RECEPTACLE NO. 5557.
 - PARTS ARE NOT DESIGNED FOR CURRENT SHARING.
 - TERMINAL PLATING:
 - BRIGHT TIN 100 M.I. MIN. OVER 50 M.I. MIN. NICKEL OVERALL.
 - SELECTIVE GOLD 30 M.I. MIN. WITH SELECT BRIGHT TIN 100 M.I. MIN. OVER 50 M.I. MIN. NICKEL OVERALL.
 - MATTE TIN 100 M.I. MIN. OVER 50 M.I. MIN. NICKEL OVERALL.
 - 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 TIN-LEAD PLATING.
 - PRODUCT SPECIFICATION AND PROCESSING PARAMETERS SEE: PS-44476-001.
 - PARTS ARE NOT TO BE MATED OR UNMATED WHILE CIRCUITS ARE LIVE.
 - 44472-2470 ONLY FOR WIDER LOCKING RAMP
 - SEE THE CHART FOR PACKAGING REQUIREMENTS.
 - PARTS PRODUCED AFTER JULY 1, 2004 WILL HAVE 'HCS' MARKING INSTEAD OF BLACK STRIPE.
 - SEE CHART FOR PARTS WITH PEGS REMOVED

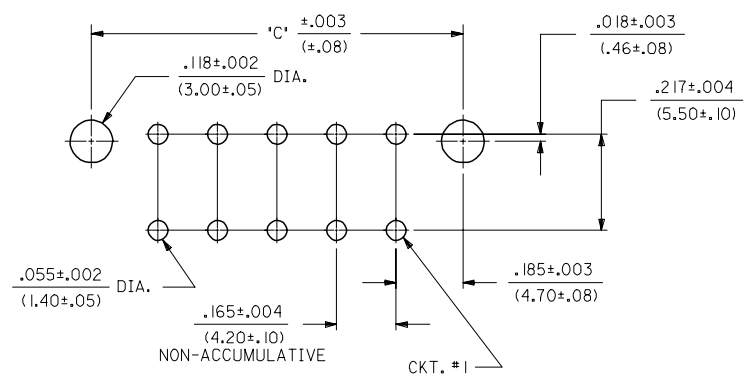
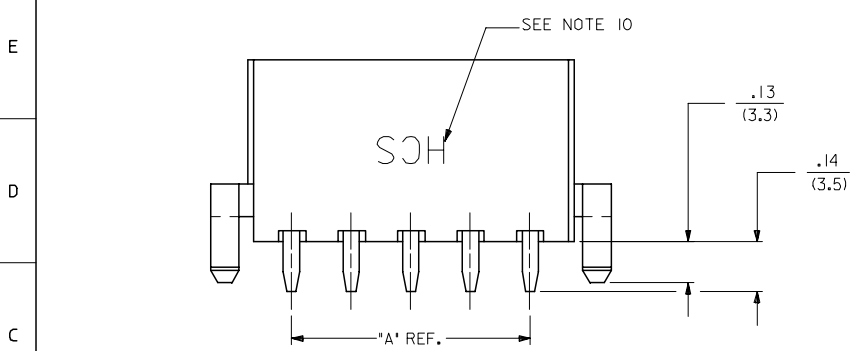
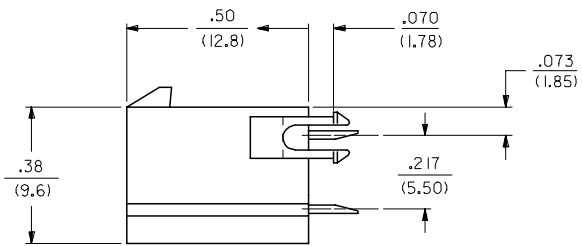
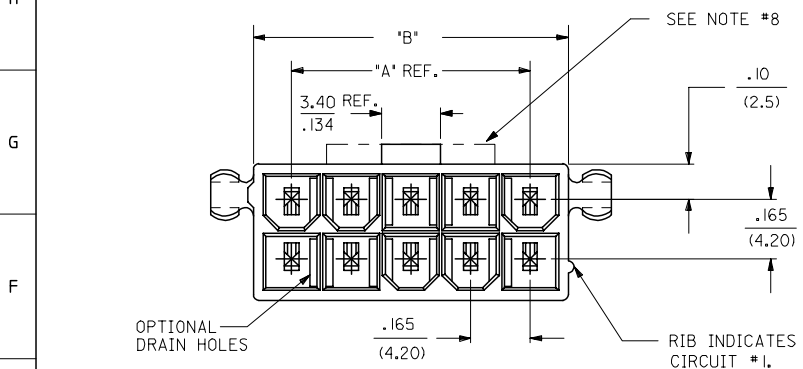
10	H5
9	K
8	H2
7	H2
6	H5
5	K1
4	H5
3	H5
2	K2
1	K2
	SHT REV

3.3 WAS 2.9 (SHT 2-E9) EC NO: UCP2006-2755 DRAWN: ADRIANOL 2006/05/24 CHKD: GPOLGAR 2006/05/24 APPR: JCOMERCI 2006/05/26 REV: K2	QUALITY SYMBOLS =0 =0	GENERAL TOLERANCES (UNLESS SPECIFIED) mm INCH		DIMENSION STYLE IN/MM		SCALE 4:1	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION
		4 PLACES ± --- ± --- 3 PLACES ± --- ± .015 2 PLACES ± 0.38 ± .020 1 PLACE ± 0.50 ± --- ANGULAR ±1/2°	DRAWN BY GEP	DATE 1994/07/25	CHECKED BY RJF	DATE 1994/07/25	APPROVED BY RJF	DATE 1994/07/25
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		MATERIAL NO. SEE CHART		DOCUMENT NO. SDA-44472-****		SHEET NO. 1 OF 10		MATERIAL NO. SDA-44472-****
THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION								

13 12 11 10 9 8 7 6 5 4 3 2 1



CIRCUIT SIZE	DIM. 'A'	DIM. 'B'	DIM. 'C'
2	—	.21 (5.4)	.370 (9.40)
4	.17 (4.2)	.38 (9.6)	.535 (13.60)
6	.33 (8.4)	.54 (13.8)	.701 (17.80)
8	.50 (12.6)	.71 (18.0)	.866 (22.00)
10	.66 (16.8)	.87 (22.2)	1.031 (26.20)
12	.83 (21.0)	1.04 (26.4)	1.197 (30.40)
14	.99 (25.2)	1.20 (30.6)	1.362 (34.60)
16	1.16 (29.4)	1.37 (34.8)	1.528 (38.80)
18	1.32 (33.6)	1.54 (39.0)	1.693 (43.00)
20	1.49 (37.8)	1.70 (43.2)	1.858 (47.20)
22	1.65 (42.0)	1.87 (47.4)	2.024 (51.40)
24	1.82 (46.2)	2.03 (51.6)	2.189 (55.60)



RECOMMENDED HOLE LAYOUT FOR .070/(1.78) MAX. THICK P. C. BOARD
VIEWED FROM COMPONENT SIDE

SEE SHT. I FOR SINGLE ROW

SEE SHEET 1 FCC NO: UCP2006-2755 DRAWN: ADRIANOL 2006/05/24 CHKD: GPOLGAR 2006/05/24 APPR: ICOMERCJ 2006/05/26 K2	QUALITY SYMBOLS ▽=0 ▽=0	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE IN/MM		SCALE 4:1	DESIGN UNITS INCH	THIRD ANGLE PROJECTION	
		mm	INCH	DRAWN BY	DATE	TITLE			
		4 PLACES ±---	±---	GEP	07/26/94	MINI-FIT VERT HDR ASSY W & W/O PEGS/DRAIN HOLES SINGLE AND DUAL ROW			
		3 PLACES ±---	±.015	CHECKED BY	DATE	MOLEX INCORPORATED			
2 PLACES ±0.38	±.020	RJF	07/26/94	APPROVED BY		DATE	DOCUMENT NO.		
1 PLACE ±0.50	±---	RJF	07/26/94	MATERIAL NO.		DATE	SHEET NO.		
ANGULAR ±1/2°		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE CHART		SDA-44472-****		2 OF 10	
THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION									

12 11 10 9 8 7 6 5 4 3 2 1

	13	12	11	10	9	8	7	6	5	4	3	2	1	
J	PLATING: I (SEE NOTE 5)			PLATING: I (SEE NOTE 5)			PLATING: I (SEE NOTE 5)			PLATING: I (SEE NOTE 5)				
	DRAINS: WITHOUT DRAIN HOLES			DRAINS: WITHOUT DRAIN HOLES			DRAINS: WITH DRAIN HOLES			DRAINS: WITH DRAIN HOLES			J	
	PEGS: WITH PEGS			PEGS: WITH PEGS			PEGS: WITH PEGS			PEGS: WITH PEGS				
	MAT'L: 94V-2 [NATURAL]			MAT'L: 94V-0 [NATURAL]			MAT'L: 94V-2 [NATURAL]			MAT'L: 94V-0 [NATURAL]				
	PACKAGING: PK-44472-001			PACKAGING: PK-44472-001			PACKAGING: PK-44472-001			PACKAGING: PK-44472-001				
I	ITEM NO.		CKTS	ITEM NO.		CKTS	ITEM NO.		CKTS	ITEM NO.		CKTS		
	44472-0250		2	44472-0251		2	44472-0252		2	44472-0253		2		
	44472-0450		4	44472-0451		4	44472-0452		4	44472-0453		4		
	44472-0650		6	44472-0651		6	44472-0652		6	44472-0653		6		
	44472-0850		8	44472-0851		8	44472-0852		8	44472-0853		8		
	44472-1050		10	44472-1051		10	44472-1052		10	44472-1053		10		
	44472-1250		12	44472-1251		12	44472-1252		12	44472-1253		12		
	44472-1450		14	44472-1451		14	44472-1452		14	44472-1453		14		
	44472-1650		16	44472-1651		16	44472-1652		16	44472-1653		16		
H	44472-1850		18	44472-1851		18	44472-1852		18	44472-1853		18		
	44472-2050		20	44472-2051		20	44472-2052		20	44472-2053		20		
	44472-2250		22	44472-2251		22	44472-2252		22	44472-2253		22		
	44472-2450		24	44472-2451		24	44472-2452		24	44472-2453		24		

G	PLATING: I (SEE NOTE 5)			PLATING: I (SEE NOTE 5)			
	DRAINS: WITHOUT DRAIN HOLES			DRAINS: WITHOUT DRAIN HOLES			
	PEGS: WITHOUT PEGS			PEGS: WITHOUT PEGS			
	MAT'L: 94V-2 [NATURAL]			MAT'L: 94V-0 [NATURAL]			
	PACKAGING: PK-44472-001			PACKAGING: PK-44472-001			
F	ITEM NO.	HOUSING NO.	CKTS	ITEM NO.		CKTS	
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	44472-0454		4	44472-0455		4	
	44472-0654		6	44472-0655		6	
	44472-0854		8	44472-0855		8	
	44472-1054		10	44472-1055		10	
	44472-1254		12	44472-1255		12	
E	44472-1454		14	44472-1455		14	
	44472-1654		16	44472-1655		16	
	44472-1854		18	44472-1855		18	
	44472-2054		20	44472-2055		20	
	44472-2254		22	44472-2255		22	
	44472-2454		24	44472-2455		24	

* ITEMS PRECEDED BY AN "X" ARE NOT AVAILABLE.

REMOVED SCALE F.C. NO. 2005/11/08 DRAWN: ADRIANOL CHKD: GPOLGAR APPR: H5	QUALITY SYMBOLS ▽=0 ▽=0	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE IN/MM		SCALE ---	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION			
		4 PLACES ± --- ± ---	3 PLACES ± --- ± ---	2 PLACES ± --- ± ---	1 PLACE ± --- ± ---	DRAWN BY LEM	DATE 02/22/99	TITLE MINI-FIT VERT HDR ASSY W & W/O PEGS/DRAIN HOLES SINGLE AND DUAL ROW			
		ANGULAR ±1/2°		MATERIAL NO.		CHECKED BY MAB		DATE 02/22/99	APPROVED BY RRE		
		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SEE CHART		DATE 02/22/99		DOCUMENT NO. SDA-44472-****		SHEET NO. 3	