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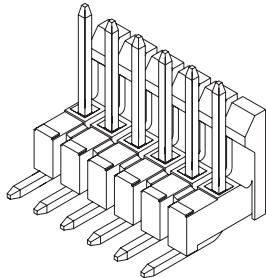
2.54mm (.100") Pitch

KK®

Breakaway Header

42228

Right Angle Friction Lock



Features and Benefits

- Sizes 2 to 36 circuits
- Available with kinked pins for better PC board retention
- Available with end backwalls removed for left to right polarization
- Various pin lengths available (contact Molex)
- Voided circuits available (contact Molex)

Reference Information

Product Specification: PS-10-07

Packaging: Bag

Tooling Information: See cutting tool section

UL File No.: E29179

CSA File No.: LR19980

Mates With: 2695, 4455, 6471, 7720 and 7880

Designed In: Inches

Electrical

Voltage: 250V

Current: 4.0A

Contact Resistance: 20 milliohms max.

Dielectric Withstanding Voltage: 1500V

Insulation Resistance: 50,000 Megohms min.

Mechanical

Durability: Tin—25 cycles max.

Gold—100 cycles max.

Physical

Housing: Glass-filled nylon, UL 94V-0

Contact: Phosphor Bronze, 0.64mm (.025") square

Plating: See Table

Operating Temperature: -40 to +105°C

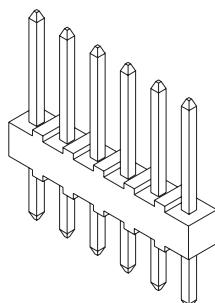
2.54mm (.100") Pitch

KK®

Solid Header

4030

Vertical



Features and Benefits

- Sizes 2 to 28 circuits
- 4030 with voids is 4380 Series
- Various pin lengths available
- Voided circuits available (contact Molex)

Reference Information

Product Specification: PS-10-07

Packaging: Bag

UL File No.: E29179

CSA File No.: LR19980

Mates With: 2695, 4455, 6471, 7720 and 7880

Designed In: Inches

Electrical

Voltage: 250V

Current: 4.0A

Contact Resistance: 20 milliohms max.

Dielectric Withstanding Voltage: 1500V

Insulation Resistance: 50K Megohms min.

Mechanical

Durability: Tin—25 cycles max.

Gold—100 cycles max.

Physical

Housing: Nylon, UL 94V-0

Contact: Brass, 0.64mm (.025") square

Plating: See Table

Operating Temperature: 0 to +75°C

Circuits	Order No.		Lead-free
	Tin	Gold	
2	22-03-2021	22-10-2021	Yes
3	22-03-2031	22-10-2031	
4	22-03-2041	22-10-2041	
5	22-03-2051	22-10-2051	
6	22-03-2061	22-10-2061	
7	22-03-2071	22-10-2071	
8	22-03-2081	22-10-2081	
9	22-03-2091	22-10-2091	
10	22-03-2101	22-10-2101	

Circuits	Order No.		Lead-free
	Tin	Gold	
11	22-03-2111	22-10-2111	Yes
12	22-03-2121	22-10-2121	
13	22-03-2131	22-10-2131	
14	22-03-2141	22-10-2141	
15	22-03-2151	22-10-2151	
16	22-03-2161	22-10-2161	
17	22-03-2171	22-10-2171	
18	22-03-2181	22-10-2181	
19	22-03-2191	22-10-2191	

Circuits	Order No.		Lead-free
	Tin	Gold	
20	22-03-2201	22-10-2201	Yes
21	22-03-2211	22-10-2211	
22	22-03-2221	22-10-2221	
23	22-03-2231	22-10-2231	
24	22-03-2241	22-10-2241	
25	22-03-2251	22-10-2251	
26	22-03-2261	22-10-2261	
27	22-03-2271	22-10-2271	
28	22-03-2281	22-10-2281	

Note: In the Far East, the polyester product has different Engineering No. and Order No.

Circuit 1 designation is used to orient the header to locate the voided circuit. Review mating connector to assure correct mating orientation.



PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers the 2.54 mm (.100 inch) centerline (pitch) 0.64 mm (.025) square pin headers when mated with either printed circuit board (PCB) connectors or connectors terminated with 22 to 28 AWG wire using crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Crimp Terminals: 2759, 41572, 6459

Crimp Housings: 2695

PCB Connectors: 4455, 42625

Headers: 4030, 4094, 6373, 7478, 42225, 42226, 42227, 42228, 42152, 42153, 42375, 42376, 42377, 42624.

Other products conforming to this specification are noted on the individual drawings.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Terminal Material: Brass or Phos. Bronze (for Max performance use phos bronze material.)

Housing: Nylon or Polyester

Pins: Brass or Phos. Bronze

For more information on dimensions, materials, and plating see the individual drawings.

2.3 SAFETY AGENCY APPROVALS

UL File Number E29179

CSALR19980

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

None

4.0 RATINGS

4.1 VOLTAGE

250 Volts

4.2 CURRENT AND APPLICABLE WIRES (Current is dependent on connector size, contact material, plating, ambient temperature, printed circuit board characteristics and related factors. Actual current rating is application dependent and should be evaluated for each application.)

AWG	Amps (Max)	Outside Insulation Diameter
22	4.00	See Drawings
24	3.75	See Drawings
26	3.50	See Drawings
28	3.00	See Drawings

4.3 TEMPERATURE (ambient + 30° temp rise)

Operating: 0°C to +75°C

Nonoperating: - 40°C to +105°C

<u>REVISION:</u> P3	<u>ECR/ECN INFORMATION:</u> <u>EC No:</u> UCP2008-0956 <u>DATE:</u> 11/6/2007	<u>TITLE:</u> PRODUCT SPECIFICATION .100 CENTER KK CONNECTORS	<u>SHEET No.</u> 1 of 5
<u>DOCUMENT NUMBER:</u> PS-10-07	<u>CREATED / REVISED BY:</u> ADERR	<u>CHECKED BY:</u> JBELL	<u>APPROVED BY:</u> FSMITH



PRODUCT SPECIFICATION

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA.	10 milliohms MAXIMUM [initial]
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.	2 milliohms MAXIMUM [initial]
Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
Dielectric Withstanding Voltage	Unmate connectors: apply a voltage of {two times the rated voltage plus 1000 volts} VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown
Capacitance	Measure between adjacent terminals at 1 MHz.	2 picofarads MAXIMUM
Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after: 1) 96 hours (steady state) 2) 240 hours (45 minutes ON and 15 minutes OFF per hour) 3) 96 hours (steady state)	Temperature rise: +30°C MAXIMUM

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<u>DOCUMENT NUMBER:</u> PS-10-07	<u>CREATED / REVISED BY:</u> ADERR	<u>CHECKED BY:</u> JBELL	<u>APPROVED BY:</u> FSMITH
<i>TEMPLATE FILENAME: PRODUCT_SPEC(SIZE_A)(V.1).DOC</i>			



PRODUCT SPECIFICATION

5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT												
Connector Mate and Unmate Forces	Per circuit when mated to an .025 Sq. pin. Mate and unmate connector (male to female) at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	1.95 N (0.438 lbf) MAXIMUM insertion force & 0.56 N (0.125 lbf) MINIMUM withdrawal force												
Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute. (Forces will change with platings and materials.)	17.8 N (4.0 lbf) MINIMUM withdrawal force												
Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute. (Forces will change with platings and materials.)	6.67 N (1.5 lbf) MAXIMUM insertion force												
Durability	Mate connectors up to 25 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	10 milliohms MAXIMUM (change from initial)												
Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond												
Shock (Mechanical)	Mate connectors and shock at 50 g's with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X, \pm Y, \pm Z$ axes (18 shocks total).	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond												
Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute. (For maximum performance use Molex application tooling with stranded tinned copper wire)	22 awg = 44 N (10 lbf) 24 awg = 35 N (8 lbf) 26 awg = 26 N (6 lbf) 28 awg = 17 N (4 lbf) 30 awg = 13 N (3 lbf)												
Normal Force	Apply a perpendicular force.	2.94 N (300 grams) average												
Kinked PC Pin Insertion Force (into PCB Hole)	Apply an axial insertion force on pins at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	<table border="1"> <thead> <tr> <th>Number of kinked pins</th> <th>Maximum Insertion force (per pin)</th> <th>Average Insertion force (per pin)</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>44.0 N (9.9 lbf)</td> <td>15.1 N (3.4 lbf)</td> </tr> <tr> <td>4</td> <td>21.4 N (4.8 lbf)</td> <td>9.8 N (2.2 lbf)</td> </tr> <tr> <td>6</td> <td>18.2 N (4.1 lbf)</td> <td>4.9 N (1.1 lbf)</td> </tr> </tbody> </table>	Number of kinked pins	Maximum Insertion force (per pin)	Average Insertion force (per pin)	2	44.0 N (9.9 lbf)	15.1 N (3.4 lbf)	4	21.4 N (4.8 lbf)	9.8 N (2.2 lbf)	6	18.2 N (4.1 lbf)	4.9 N (1.1 lbf)
Number of kinked pins	Maximum Insertion force (per pin)	Average Insertion force (per pin)												
2	44.0 N (9.9 lbf)	15.1 N (3.4 lbf)												
4	21.4 N (4.8 lbf)	9.8 N (2.2 lbf)												
6	18.2 N (4.1 lbf)	4.9 N (1.1 lbf)												

REVISION:	ECR/ECN INFORMATION:	TITLE:	PRODUCT SPECIFICATION .100 CENTER KK CONNECTORS	SHEET No.
P3	EC No: UCP2008-0956			3 of 5
DATE: 11/6/2007				
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
PS-10-07	ADERR	JBELL	FSMITH	



PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT										
Shock (Thermal)	Mate connectors; expose to 5 cycles of: <table><thead><tr><th>Temperature °C</th><th>Duration (Minutes)</th></tr></thead><tbody><tr><td>-40 +0/-3</td><td>30</td></tr><tr><td>+25 ±10</td><td>5 MAXIMUM</td></tr><tr><td>+105 +3/-0</td><td>30</td></tr><tr><td>+25 ±10</td><td>5 MAXIMUM</td></tr></tbody></table>	Temperature °C	Duration (Minutes)	-40 +0/-3	30	+25 ±10	5 MAXIMUM	+105 +3/-0	30	+25 ±10	5 MAXIMUM	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Temperature °C	Duration (Minutes)											
-40 +0/-3	30											
+25 ±10	5 MAXIMUM											
+105 +3/-0	30											
+25 ±10	5 MAXIMUM											
Thermal Aging	Mate connectors; expose to: 96 hours at 105 ± 2°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage										
Humidity (Steady State)	Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90-95% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage										
Humidity (Cyclic)	Mate connectors: cycle per EIA-364-31: 24 cycles at temperature 25 ± 3°C at 80 ± 5% relative humidity and 65 ± 3°C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours. {Note: Remove surface moisture and air dry for 1 hour prior to measurements.}	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage										
Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)										

REVISION: P3	ECR/ECN INFORMATION: <u>EC No:</u> UCP2008-0956 <u>DATE:</u> 11/6/2007	TITLE: PRODUCT SPECIFICATION .100 CENTER KK CONNECTORS	SHEET No. 4 of 5
DOCUMENT NUMBER: PS-10-07	CREATED / REVISED BY: ADERR	CHECKED BY: JBELL	APPROVED BY: FSMITH
TEMPLATE FILENAME: PRODUCT_SPEC(SIZE_A)(V.1).DOC			



PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: $230 \pm 5^\circ\text{C}$	Visual: No Damage to insulator material
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: $-40 \pm 3^\circ\text{C}$	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Corrosive Atmosphere: Flowing Mixed Gas (FMG)	Test per EIA-364-65, Class II, Exposure to gasses for 4 days, unmated.	10 milliohms MAXIMUM (change from initial) & Visual: No Damage

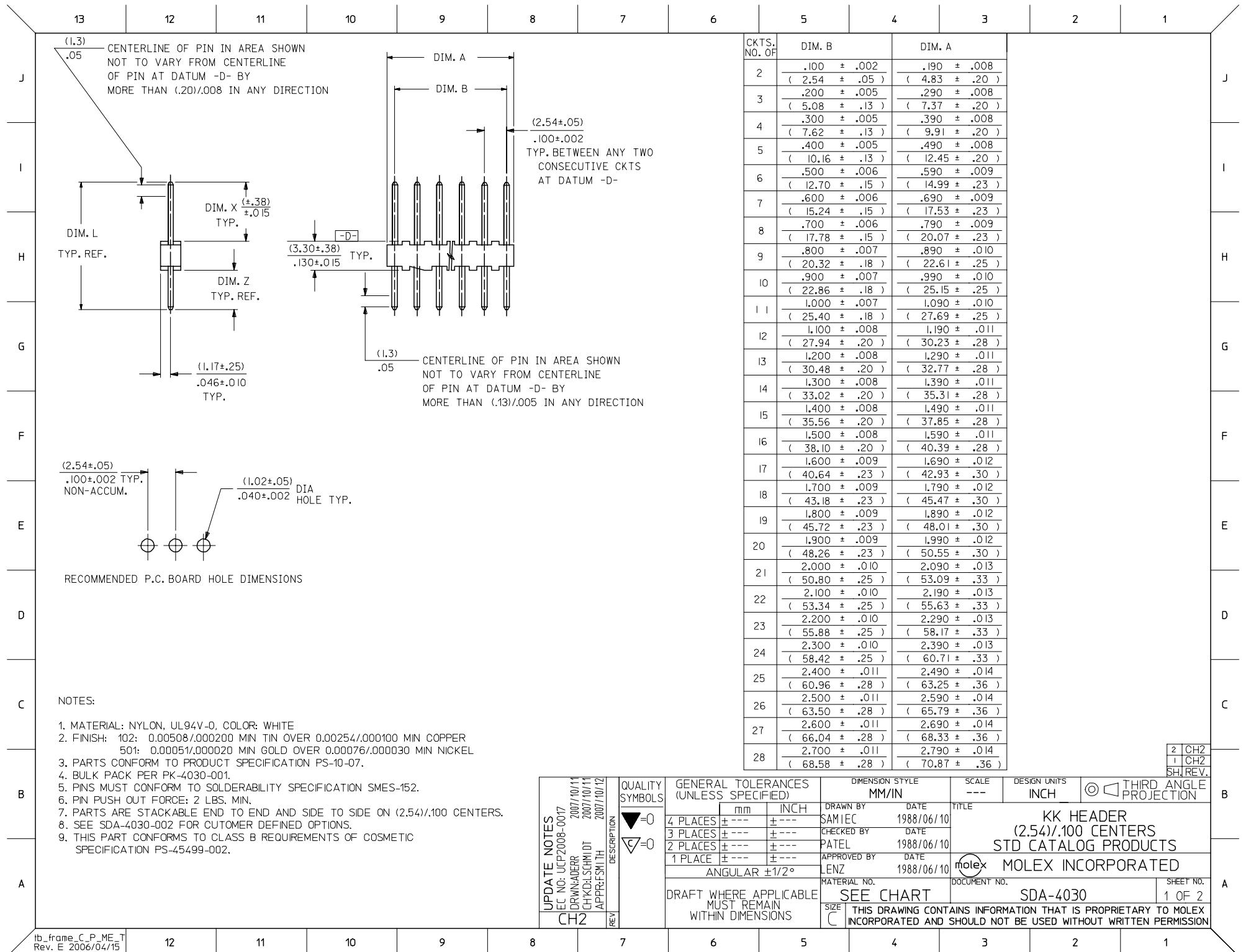
6.0 PACKAGING

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

7.0 GAGES AND FIXTURES

8.0 OTHER

<u>REVISION:</u> P3	<u>ECR/ECN INFORMATION:</u> <u>EC No:</u> UCP2008-0956 <u>DATE:</u> 11/6/2007	<u>TITLE:</u> PRODUCT SPECIFICATION .100 CENTER KK CONNECTORS	<u>SHEET No.</u> 5 of 5
<u>DOCUMENT NUMBER:</u> PS-10-07	<u>CREATED / REVISED BY:</u> ADERR	<u>CHECKED BY:</u> JBELL	<u>APPROVED BY:</u> FSMITH
<i>TEMPLATE FILENAME: PRODUCT_SPEC(SIZE_A)(V.1).DOC</i>			



13	12	11	10	9	8	7	6	5	4	3	2	1
J	ENG. NO.	PIN NO.	DIM. L	DIM. X	DIM. Z	PACKAGE PER	EDP NO. IN COL NO					J
A	A-4030 -NA(I02)	2766 -I(I02)	.560 (14.22)	.295 (7.49)	.135 (3.43)	PK-4030-001 BULK	1					I
A	A-4030 -NA(50I)	2766 -I(50I)	.560 (14.22)	.295 (7.49)	.135 (3.43)	PK-4030-001 BULK	2					I
I	A- -	-	()	()	()							H
I	A- -	-	()	()	()							G
A	A- -	-	()	()	()							F
A	A- -	-	()	()	()							E
H												G
G												F
COLUMN NO. 1	COLUMN NO. 2											
EDP NO.	ENG. NO.	NO. OF CRTS	EDP NO.	ENG. NO.	NO. OF CRTS							
22-03-2021	A-4030-02A(I02)	2	22-10-2021	A-4030-02A(50I)	2							E
22-03-2031	A-4030-03A(I02)	3	22-10-2031	A-4030-03A(50I)	3							D
F	22-03-2041	A-4030-04A(I02)	4	22-10-2041	A-4030-04A(50I)	4						C
F	22-03-2051	A-4030-05A(I02)	5	22-10-2051	A-4030-05A(50I)	5						B
F	22-03-2061	A-4030-06A(I02)	6	22-10-2061	A-4030-06A(50I)	6						A
F	22-03-2071	A-4030-07A(I02)	7	22-10-2071	A-4030-07A(50I)	7						
E	22-03-2081	A-4030-08A(I02)	8	22-10-2081	A-4030-08A(50I)	8						
E	22-03-2091	A-4030-09A(I02)	9	22-10-2091	A-4030-09A(50I)	9						
E	22-03-2101	A-4030-10A(I02)	10	22-10-2101	A-4030-10A(50I)	10						
E	22-03-2111	A-4030-11A(I02)	11	22-10-2111	A-4030-11A(50I)	11						
E	22-03-2121	A-4030-12A(I02)	12	22-10-2121	A-4030-12A(50I)	12						
E	22-03-2131	A-4030-13A(I02)	13	22-10-2131	A-4030-13A(50I)	13						
D	22-03-2141	A-4030-14A(I02)	14	22-10-2141	A-4030-14A(50I)	14						
D	22-03-2151	A-4030-15A(I02)	15	22-10-2151	A-4030-15A(50I)	15						
D	22-03-2161	A-4030-16A(I02)	16	22-10-2161	A-4030-16A(50I)	16						
D	22-03-2171	A-4030-17A(I02)	17	22-10-2171	A-4030-17A(50I)	17						
D	22-03-2181	A-4030-18A(I02)	18	22-10-2181	A-4030-18A(50I)	18						
D	22-03-2191	A-4030-19A(I02)	19	22-10-2191	A-4030-19A(50I)	19						
C	22-03-2201	A-4030-20A(I02)	20	22-10-2201	A-4030-20A(50I)	20						
C	22-03-2211	A-4030-21A(I02)	21	22-10-2211	A-4030-21A(50I)	21						
C	22-03-2221	A-4030-22A(I02)	22	22-10-2221	A-4030-22A(50I)	22						
C	22-03-2231	A-4030-23A(I02)	23	22-10-2231	A-4030-23A(50I)	23						
C	22-03-2241	A-4030-24A(I02)	24	22-10-2241	A-4030-24A(50I)	24						
C	22-03-2251	A-4030-25A(I02)	25	22-10-2251	A-4030-25A(50I)	25						
C	22-03-2261	A-4030-26A(I02)	26	22-10-2261	A-4030-26A(50I)	26						
C	22-03-2271	A-4030-27A(I02)	27	22-10-2271	A-4030-27A(50I)	27						
C	22-03-2281	A-4030-28A(I02)	28	22-10-2281	A-4030-28A(50I)	28						
B												B
A												A

UPDATE BLOCK	EC NO: UCP2008-0017	DRAWN BY	DATE	DESIGN UNITS	THIRD ANGLE PROJECTION
REV: 0	2007/10/11	SAMIEC	1993/07/15	INCH	KK HEADER
BY: D. WADDELL	2007/10/11	CHECKED BY	DATE	(2.54)/.100 CENTERS	
CHKD: S. CHI	2007/10/12	PATEL	1993/07/15	STD CATALOG PRODUCTS	
APPRF: S. CHI	2007/10/12	APPROVED BY	DATE	MOLEX MOLEX INCORPORATED	
REV: 0	ANGULAR $\pm 1/2^\circ$	LENZ	1993/07/15		
DESCRIPTION	MATERIAL NO.	DOCUMENT NO.			
GENERAL TOLERANCES (UNLESS SPECIFIED)	mm	INCH			
4 PLACES $\pm ---$	$\pm ---$	$\pm ---$			
3 PLACES $\pm ---$	$\pm ---$	$\pm ---$			
2 PLACES $\pm ---$	$\pm ---$	$\pm ---$			
1 PLACE $\pm ---$	$\pm ---$	$\pm ---$			
DRAFT WHERE APPLICABLE	SEE CHART				
MUST REMAIN					
WITHIN DIMENSIONS					
SIZE	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX				
C	INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION				