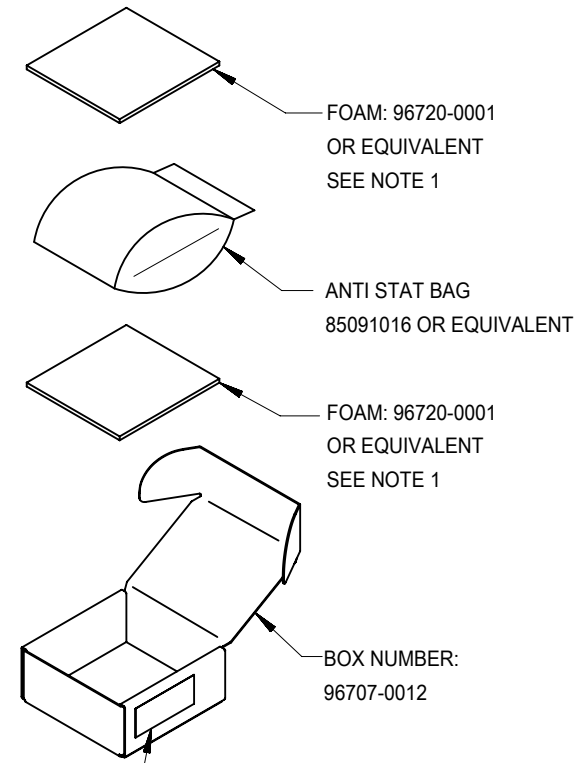


# Molex 22-29-2061 PDF

深圳创唯电子有限公司

<http://www.molex-connect.com>

	6	5	4	3	2	1
CKTS	PARTS PER 96707-0012 BOX	PARTS PER MASTER CARTON 96708-0004 DU	PARTS PER MASTER CARTON 96708-0002 DU	PARTS PER MASTER CARTON 96708-0007 DU	PARTS PER MASTER CARTON 96708-0008 DU	
D	2	3000	18000	36000	24000	48000
	3	2000	12000	24000	16000	32000
	4	1500	9000	18000	12000	24000
	5	1000	6000	12000	8000	16000
	6	1000	6000	12000	8000	16000
	7	500	3000	6000	4000	8000
	8	500	3000	6000	4000	8000
	9	500	3000	6000	4000	8000
	10	500	3000	6000	4000	8000
	11	500	3000	6000	4000	8000
	12	500	3000	6000	4000	8000
C	13	500	3000	6000	4000	8000
	14	250	1500	3000	2000	4000
	15	250	1500	3000	2000	4000
	16	250	1500	3000	2000	4000
	17	250	1500	3000	2000	4000
	18	250	1500	3000	2000	4000
	19	250	1500	3000	2000	4000
	20	250	1500	3000	2000	4000
	21	250	1500	3000	2000	4000
	22	250	1500	3000	2000	4000
	23	250	1500	3000	2000	4000
B	24	250	1500	3000	2000	4000
	25	250	1500	3000	2000	4000
	26	250	1500	3000	2000	4000
	27	250	1500	3000	2000	4000
	28	250	1500	3000	2000	4000



LABEL PER:  
ES-40000-7012

- NOTES:
- USE ENOUGH FOAM IN EACH BOX TO PREVENT THE PARTS FROM RATTLING INSIDE THE BOX.
  - 96707-0012 BOX FITS INTO THE FOLLOWING CARTONS:  
 96708-0004 HOLDS 06 96707-0012'S  
 96708-0002 HOLDS 12 96707-0012'S  
 96708-0007 HOLDS 08 96707-0012'S  
 96708-0008 HOLDS 16 96707-0012'S

SYMBOLS	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX ELECTRONIC TECHNOLOGIES, LLC AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION				
	DIMENSION UNITS		SCALE		CURRENT REV DESC: DRAWING UPDATION
▽ = 0	IN/MM	NTS			
∇ = 0	GENERAL TOLERANCES (UNLESS SPECIFIED)				
∇ = 0		MM	INCH		
∇ = 0	4 PLACES	±	±	EC NO: 612141	
∇ = 0	3 PLACES	±	±	DRWN: GB 2019/01/29	
∇ = 0	2 PLACES	±	±	CHK'D: ISHWARG 2019/02/15	
∇ = 0	1 PLACE	±	±	APPR: ISHWARG 2019/02/15	
∇ = 0	0 PLACES	±	±	INITIAL REVISION:	
∇ = 0	ANGULAR TOL		± °	DRWN: MKIPPER 2011/05/05	
∇ = 0	DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		THIRD ANGLE PROJECTION	APPR: FSMITH 2011/06/07	
∇ = 0			DRAWING	SERIES	
DOCUMENT STATUS		P1	RELEASE DATE	2019/02/15 12:21:14	
					PACKAGING SPECIFICATION 6410 SERIES
					PACKAGING DESIGN DRAWING
					DOCUMENT NUMBER: PK-6410-002 DOC TYPE: PDD DOC PART: 001 REVISION: A2
					MATERIAL NUMBER: NA CUSTOMER: GENERAL MARKET SHEET NUMBER: 1 OF 1



# PRODUCT SPECIFICATION

## 1.0 SCOPE

This Product Specification covers 2.54 mm centerline (pitch) 0.64 mm square pin headers when mated with either printed circuit board (PCB) connectors or connectors terminated with 22 to 30 AWG wire using crimp technology.

## 2.0 PRODUCT DESCRIPTION

### 2.1 PRODUCT NAME AND SERIES NUMBERS

Crimp Terminals: 4809, 2759, 41572, 6459, 8088  
Crimp Housings: 2695  
PCB Connectors: 4455  
Headers: 6410, 7395

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  
CSA .....LR19980

SERIES	Agency Voltage Rating (AC RMS or DC)		Agency Current Rating (Single Circuit) (Amps)		Agency Temperature Rating (°C)
	UL	CSA	UL	CSA	UL
2695	500 V AC 600 V DC	250	-	2.5	105°C
4455	600 V AC/DC	250	-	2.5	105°C
6410	600 V AC/DC	250	-	2.5	105°C
7395	600 V AC/DC	250	-	4	105°C

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

None

## 4.0 RATINGS

### 4.1 VOLTAGE

500 Volts AC (or 600 Volts DC)

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DOCUMENT NUMBER: <b>PS-99020-0088</b>	CREATED / REVISED BY: <b>SS06</b>	CHECKED BY: <b>SS06</b>	APPROVED BY: <b>ISHWARG</b>



# PRODUCT SPECIFICATION

**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
30	2.50	See Drawings

Note: current ratings are for a single circuit, based on not exceeding 30°C temperature rise.

**4.3 TEMPERATURE (ambient + 30°C temp rise)**

	Brass Terminals	Phos Bronze Terminals
Operating Temperature	-40°C to +80°C*	-40°C to +105°C*
Non-Operating Temperature	-40°C to +105°C**	-40°C to +105°C

\*including terminal temperature rise.

\*\*parts not mated

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# 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 Megaohms 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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# PRODUCT SPECIFICATION

## 5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Connector Mate and Unmate Forces	Per circuit when mated to a 0.635mm Sq. pin header without friction lock. Mate and unmate connector (male to female) at a rate of 25 ± 6 mm per minute.	4.9 N MAXIMUM insertion force & 0.56 N MINIMUM withdrawal force
Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm per minute. (Forces will change with platings and materials.)	17.8 N MINIMUM withdrawal force
Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm. (Forces will change with platings and materials.)	6.67 N 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 ½ sine wave (11 milliseconds) shocks in the ±X,±Y,±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. (For maximum performance use Molex application tooling with stranded tinned copper wire)	Wire pullout force depends on crimp tooling. See relevant Molex Application Tooling Specification for requirements.
Normal Force	Apply a perpendicular force.	2.94 N (300 grams) average

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# PRODUCT SPECIFICATION

## 5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT										
Shock (Thermal)	Mate connectors; expose to 5 cycles of: <table border="1"> <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 Megaohms 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 Megaohms MINIMUM & Visual: No Damage										
Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)										

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# 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 ± 5°C	Visual: No Damage to insulator material
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°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

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