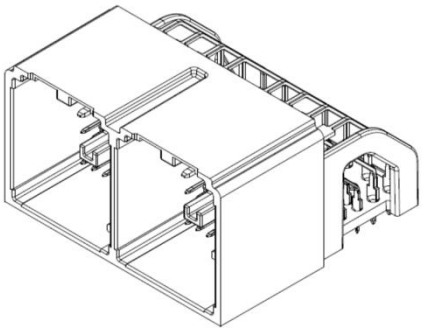
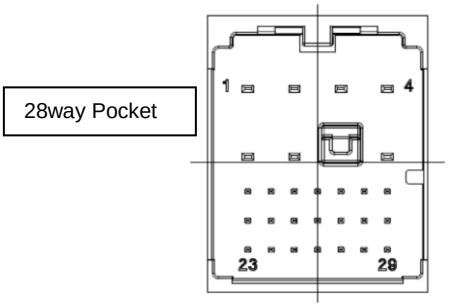
PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers the printed circuit board (PCB) connector header, which contains two bays (28 + 28) with right angle bent blades and depopulated variants. The bays consist of a hybrid configuration of three rows of 0.50 terminals with a 2.0mm centerline (pitch) with tin (Sn) plating and two rows of 1.2mm terminals with a 4.0mm centerline (pitch) with tin (Sn) plating. The following sketches show the configuration of bays.
PC Board Terminal method uses 0.40 x 0.40 and 0.60 x 0.60 solder tails.





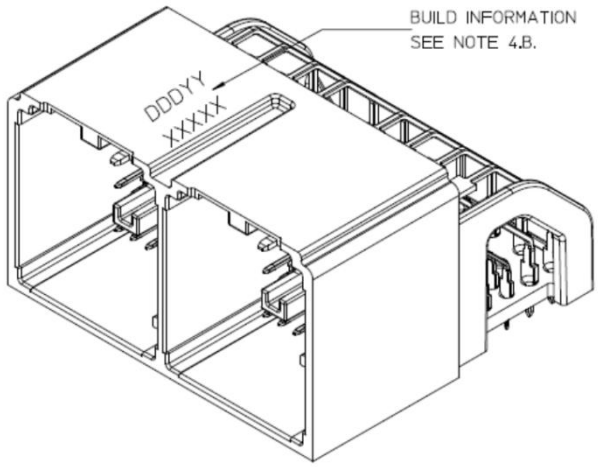
2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND PART NUMBERS

- Infotainment Header Assembly
  - 1600130041 (56way) – Bay A (Key 4) & Bay B (Key 1)
  - 1600130023 (56way) – Bay A (Key 2) & Bay B (Key 3)
  - 1600131024 (32way) – Bay A (Key 2) & Bay B (Key 4)
  - 1600132041 (56way) – Bay A (Key 4) & Bay B (Key 1)
  - 1600133041 (56way) – Bay A (Key 4) & Bay B (Key 1)
  - 1600133023 (56way) – Bay A (Key 2) & Bay B (Key 3)
- Mating Harness Connectors
  - 1600140001 (28way) – Key 1 (Dark Gray)
  - 1600140002 (28way) – Key 2 (Light Green)
  - 1600140003 (28way) – Key 3 (Light Gray)
  - 1600140004 (28way) – Key 4 (Black)

2.2 MATERIALS, PLATINGS AND MARKINGS

- Header Housing - 30% glass-filled SPS (>SPS+GF30<) – Gray
- Pin Alignment Plate: 30% glass filled SPS (>SPS+GF30<) – Gray
- 1.20mm Power/Ground Blades – C26000 Brass (base material)
  - H06 Extra Hard
  - Underplate – Electro-deposited Sulphamate Nickel (Ni) Overall
  - Overplate:
    - Connector Side: Electro-deposited Tin (Sn) Reflowed
    - PCB Side: Electro-deposited Matte Tin (Sn)
- 0.50mm Signal Blades – C26000 Brass (base material)
  - H06 Extra Hard
  - Underplate – Electro-deposited Sulphamate Nickel (Ni) Overall
  - Overplate – Electro-deposited Tin (Sn) Reflowed (Overall)
- Readable Date Code: DDDYY
  - DDD = “Day#” of the calendar year. (Example Feb 3rd = “034”)
  - YY = Calendar Year. (Example 2009 = “09”)

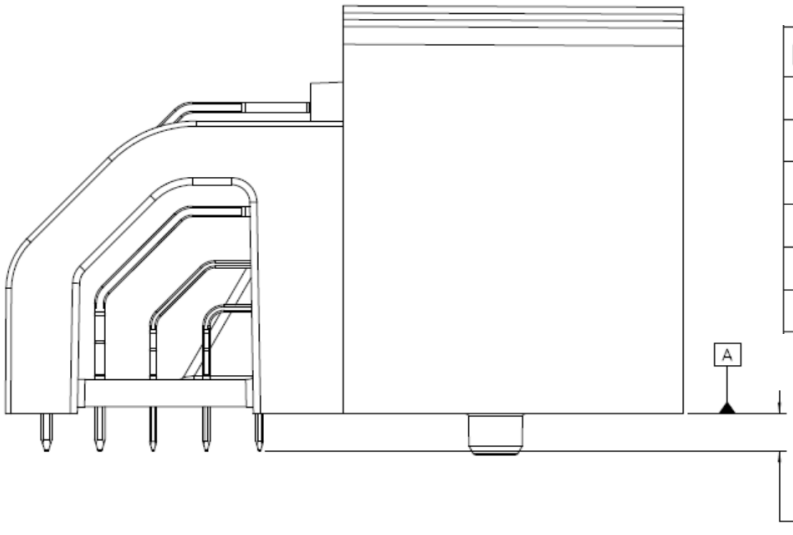


2.3 SAFETY AGENCY APPROVALS

UL File Number	UL94 – HB Flame Rating
CSA File Number	Not Applicable
TUV License number	Not Applicable
IMDS	Available Upon Request
Environmental Compliance	Available at molex.com

2.4 PCB SOLDER TAILS

- Exposed Solder Tail Length Options
  - Short Tail Option (2.1mm - Intended for Reflow Soldering i.e. Pin in Paste)
  - Long Tail Option (2.5mm - Intended for Wave Soldering)



PART NUMBER	DIM A *
1600130041	2.1
1600132041	2.1
1600130023	2.1
1600131024	2.5
1600133041	2.5
1600133023	2.5

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Description	Document Number
Header Assembly Drawing	SD-160013-0001
Mating Interface	SD-160014-002
Packaging Specification(s)	PK-31302-235 (Tube Pack) PK-160013-001 (Tray Pack)
Application Specification	AS-160013-001
Mating Connector Drawing	SD-160014-0001
GM Specification(s)	GMW3191 (Jun 2012)

4.0 RATINGS

4.1 VOLTAGE
500 VDC Minimum Dielectric Strength

4.2 CURRENT AND APPLICABLE WIRES
Current is dependent on harness connector.

Refer to Connector Product Specification: PS-160014-001 (TBD)

4.3 TEMPERATURE
GMW3191 (Jun 2012) – Temperature Class 1 (-40°C to +85°C)
Operating: - 40 Cº to + 85 Cº
Non-operating: - 40 Cº to + 85 Cº

Reflow Solder Capable per Molex ES-40000-5013 (260° C Max Temperature Profile)

4.4 VIBRATION
GMW3191 (Jun 2012) – Vibration Class 1 (On Body or Chassis)

4.5 SEALING
GMW3191 (Jun 2012) – Sealing Class 1 (Unsealed)

5.0 PERFORMANCE

- See DVPR 1998 for DV Test Results (TS-160013-1998)
- See DVPR 2291 for PV Test Results (TS-160013-2291)
- See DVPR 2028 for DV Harness Connector Test Results (TS-160014-2028)

8.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance (Low Level)**	Mate connectors: limiting the open circuit voltage of **20** mV and a maximum current of **100** mA.	0.50 terminals = **25** milliohms MAXIMUM
			1.2 terminals = **13** milliohms MAXIMUM
2	**Contact Resistance @ Rated Current (Voltage Drop)**	Mate connectors: apply a current of **3** ampere/ **0.35** mm^2 wire diameter	0.50 terminals = **25** milliohms MAXIMUM
		Mate connectors: apply a current of **13** ampere/ **1.0** mm^2 wire diameter	1.2 terminals = **13** milliohms MAXIMUM
3	**Isolation Resistance**	Apply a voltage of **500** VDC between adjacent terminals and between terminals to ground.	**100** Meg ohms MINIMUM
4	**Temperature Rise (via Current Cycling)**	Mate terminals: measure the temperature rise at the rated current after: **1008** hours of bench top testing (**45** minutes ON and **15** minutes OFF per hour).	Temperature rise over Ambient: **+55** Cº MAXIMUM

8.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	**Connector Mate/ Unmate Forces (Direct Mate)**	Mate and unmate connector (male to female) at a rate of **50 ± 10** mm (**2 ± ½** inch) per minute.	**75** Newtons MAXIMUM

6	**Polarization Feature Effectiveness**	Connector must be polarized to prevent mating with similar connectors or incorrect orientation	**185** Newtons MINIMUM
7	**Header Pin Retention**	Apply an axial insertion force on the terminal in the housing at a rate of **50 ± 10** mm (**2 ± ½** inch) per minute.	0.50 terminals = **15** Newtons MINIMUM
			1.2 terminals = **50** Newtons MINIMUM

8.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
8	**Durability**	Mate connectors up to **10** cycles prior to environmental tests.	0.50 terminals = **25** milliohms MAXIMUM & Discontinuity < **1** microsecond
			1.2 terminals = **13** milliohms MAXIMUM & Discontinuity < **1** microsecond
9	**Thermal Shock (Electrical)**	Mate connectors per durability; expose to **100** cycles of: Temperature C° Duration (Minutes) **-40 +0/-3 30** **+85 +3/-0 30**	0.50 terminals = **25** milliohms MAXIMUM & Discontinuity < **1** microsecond
			1.2 terminals = **13** milliohms MAXIMUM & Discontinuity < **1** microsecond
10	**High Temperature Exposure (Electrical)**	Mate connectors per durability and expose to **1008** hours at **85 ± 2°**C	Isolation Resistance of **100** Meg ohms @ 500 VDC MINIMUM
			0.50 terminals = **25** milliohms MAXIMUM & Discontinuity < **1** microsecond
			1.2 terminals = **13** milliohms MAXIMUM & Discontinuity < **1** microsecond
11	**Cyclic Humid Heat (Electrical)**	Mate connectors per durability and expose connector system to five **48**-hour cycles of combined heating and humidity exposure	Isolation Resistance of 100 Meg ohms @ 500 VDC MINIMUM

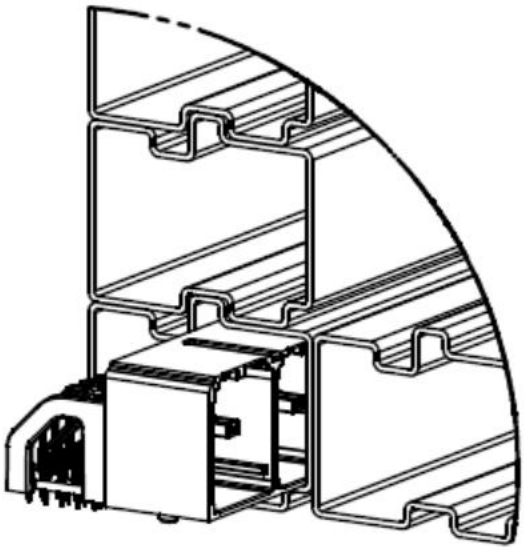
		–**10** ºC and **65** ºC at **80**% to **93**% RH	0.50 terminals = **25** milliohms MAXIMUM & Discontinuity < **1** microsecond
			1.2 terminals = **13** milliohms MAXIMUM & Discontinuity < **1** microsecond
12	**Constant Humid Heat (Electrical)**	Mate connectors per durability and expose connector system to **10** days of constant exposure at **85 ± 3°**C at **90± 5**% RH	Isolation Resistance of 100 Meg ohms @ 500 VDC MINIMUM
			0.50 terminals = **25** milliohms MAXIMUM & Discontinuity < **1** microsecond
			1.2 terminals = **13** milliohms MAXIMUM & Discontinuity < **1** microsecond
13	**Vibration/ Mechanical Shock (Electrical)**	Mate connectors per durability. Connector assembly shall be vibrated for 2X Life (**16** hours / axis, **792** shocks @ **25** Gs / axis, **18** shocks @ **100** Gs/axis) on body sprung mass not coupled to engine.	0.50 terminals = **25** milliohms MAXIMUM & Discontinuity < **1** microsecond
			1.2 terminals = **13** milliohms MAXIMUM & Discontinuity < **1** microsecond

6.0 PACKAGING

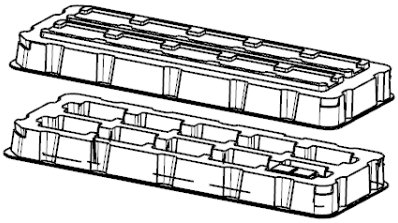
Parts shall be packaged to protect against damage during handling, transit and storage

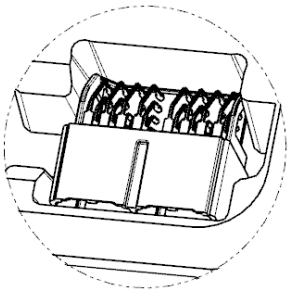
See Packaging Specifications for details:
PK-31302-235 (Tube Packaging Option)
PK-160013-001 (Tray Packaging Option)

Tube Packaging Option, shown below:



Tray Packaging Option:





7.0 GAGES AND FIXTURES

All applicable gages and fixtures are referenced in the appropriate control plans.

8.0 OTHER INFORMATION

Products conform to Connector Specifications:

GMW3191 (June 2012): Temperature Class (T1), Sealing Class (S1), Vibration Class (V1)