

IIo2MM DUAL ROW MGRID SHROUDED HEADER

1.0 SCOPE

This specification covers the performance requirements for Milli-Grid 2mm Dual Row Shrouded Headers.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

<u>Product Name</u>	<u>Series Number</u>
MGrid Headers (Vertical Through Hole)	151117 Series
MGrid Headers (Vertical SMT)	151118 Series
MGrid Headers (Right Angle Through Hole)	151119 Series
MGrid Headers (Right Angle SMT)	151120 Series

These series mate with Molex :

- MilliGrid 2mm Grid Wire to Board Connector, Crimp Receptacle Housing, 51110 series and Crimp Terminal, 50394 series.
- Receptacle : 78787, 78788, 79107, 79109 and 151192 series

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawing for information on dimensions, materials, platings and Markings.

2.3 SAFETY AGENCY APPROVAL

2.3.1 UL File Number: UL E29179

REVISION: A1	ECR/ECN INFORMATION: ECM No: 121915 DATE: 2017/09/19	TITLE: MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	SHEET No. 1 of 8
DOCUMENT NUMBER: PS-151117-0001	CREATED / REVISED BY: SCHEONG	CHECKED BY: GMENARLY	APPROVED BY: KHLIM

2.3.2 CSA File Number: 1696372 (LR19980-182)



CSA approval meets following standards/test procedures:

- a) CSA std. C22.2 No. 182.3-M1987
- b) UL-1977

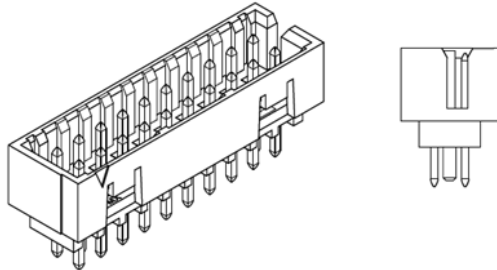
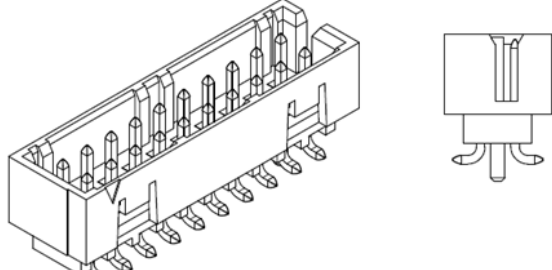
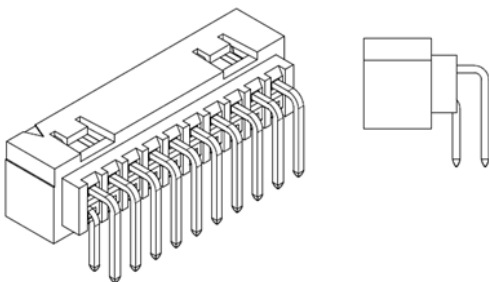
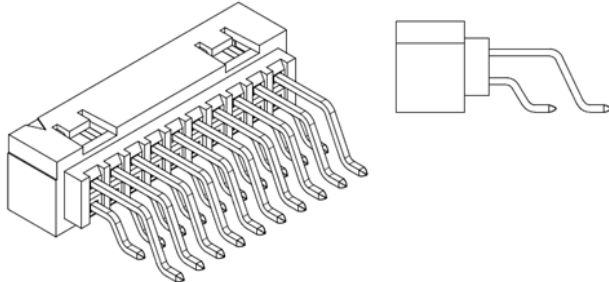
* "C" and "US" mark adjacent to CSA signifies that the product has been evaluated to the applicable CSA and ANSI/UL standards, for use in Canada and US respectively.

CSA (50ckt Fully loaded) NON-current interruption
2 Amps @ 125V

2.4 Glow Wire

The following series are glow wire capable: 151117, 151118, 151119 and 151120. Representative samples were tested and found compatible with EN 60695-2-11-2001 / IEC 60695-2-11- 2000 Glow Wire Test Methods for End-Products. These were additionally investigated for compatibility with EN 60335-1 / IEC 60335-1 750C/2 sec with no flaming. VDE Test report available upon request.

REVISION: A1	ECR/ECN INFORMATION: ECM No: 121915 DATE: 2017/09/19	TITLE: MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	SHEET No. 2 of 8
DOCUMENT NUMBER: PS-151117-0001		CREATED / REVISED BY: SCHEONG	CHECKED BY: GMENARLY
		APPROVED BY: KHLIM	

151117 Vertical Through Hole	151118 Vertical SMT
	
151119 Right Angle Through Hole	151120 Right Angle SMT
	

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

The following documents form a part of this specification to the extend specified herewith. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In addition, in event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

Reference Product Specifications

- PS-51110-001 Milli-Grid 2mm Grid Wire to Board Connector
- PS-78787-001 2mm Dual Row Vertical Through Hole Receptacle
- PS-78788-001 2mm Dual Row Vertical SMT Receptacle Milligrd
- PS-79107 2mm Dual Row Vertical Receptacle
- PS-151192-0001 2mm Milli-Grid Receptacle WTB connector

REVISION: A1	ECR/ECN INFORMATION: ECM No: 121915 DATE: 2017/09/19	TITLE: <p style="text-align: center;">MILLIGRID 2MM DUAL ROW SHROUDED HEADERS</p>	SHEET No. <p style="text-align: center;">3 of 8</p>
DOCUMENT NUMBER: <p style="text-align: center;">PS-151117-0001</p>	CREATED / REVISED BY: <p style="text-align: center;">SCHEONG</p>	CHECKED BY: <p style="text-align: center;">GMENARLY</p>	APPROVED BY: <p style="text-align: center;">KHLIM</p>

4.0 RATINGS

4.1 VOLTAGE

125 Volts Maximum

4.2 CURRENT

Refer to PS-151192-0001 for detailed Wire-to-Board Rating

Refer below for Board-to-Board Rating.

7A (single Ckt Contact powered up)

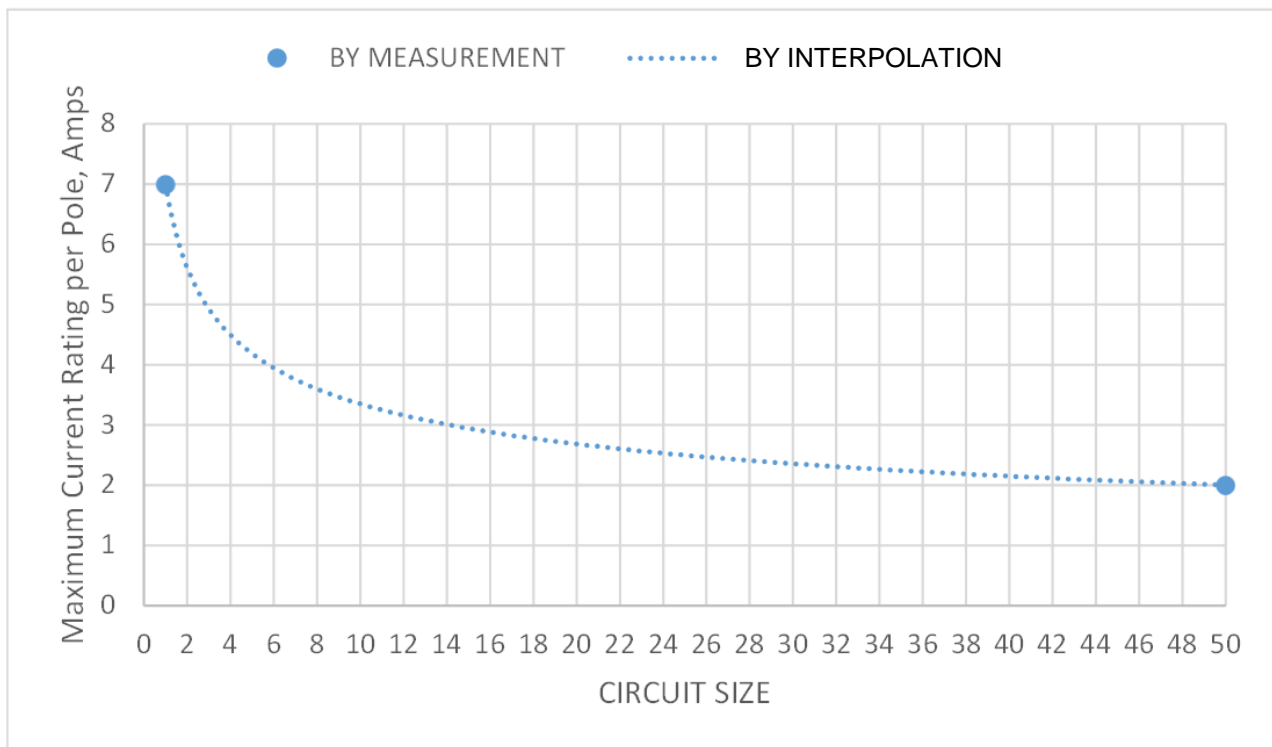
2A (maximum 50 Ckts Contact powered up)

4.3 TEMPERATURE

Operating: -55°C to + 105°C

Non-Operating: -55°C to + 105°C

Current rating is application dependent and each application should be evaluated by the end user for compliance to specific safety agency requirements. The ratings listed in the chart below are per Molex test method based on a 30° C maximum temperature rise over ambient temperature and are provided as a guideline. Appropriate de-rating is required based on circuit size, ambient temperature, copper trace size on the PCB, gross heating from adjacent modules/components and other factors that influence connector performance. Wire size & stranding, tin coated or bare copper, wire length & crimp quality are other factors that influence current rating.



REVISION: A1	ECR/ECN INFORMATION: ECM No: 121915 DATE: 2017/09/19	TITLE: MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	SHEET No. 4 of 8
DOCUMENT NUMBER: PS-151117-0001	CREATED / REVISED BY: SCHEONG	CHECKED BY: GMENARLY	APPROVED BY: KHLIM

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Insulation Resistance	Subject a voltage of 500 VDC for 1 minute, measure the insulation resistance between adjacent terminals of the unmated connector assemblies. (EIA 364-21)	1000 Megohms MINIMUM]
2	Dielectric Strength	Subject a voltage of 500 VAC for 1 minute between adjacent terminals of the unmated connector at sea level. (EIA 364-20 Method B)	No breakdown
3	Temperature Rise	In Mated Condition, measure the temperature rise of contact when the maximum DC rated current is passed. Receptacle: Test using Molex 78788 receptacle in Sn plating. (EIA-364-70 Method 1)	30°C maximum temperature rise above ambient.

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	Pin/ Terminal Retention Force (in Housing)	Apply axial pull out force on terminal in the housing at a rate of 25.4 mm per minute.	Retention Force: 8.5N Min per pin. (Before and after heat reflow)

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A1	ECM No: 121915 DATE: 2017/09/19	MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	5 of 8
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-151117-0001	SCHEONG	GMENARLY	KHLIM

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Solderability	a) Through Hole : Steam Aging : 8 hrs ± 15 mins Solder Time: 5 ± 0.5 secs. Solder Temperature: 260 ± 5°C Flux type : ROL0 flux QF2036L (Lead free) (JDS-STD-002) b) SMT: Solder paste is deposited on a ceramic plate via stencil. The connectors are placed on the solder paste print. The substrate is processed through a forced hot convection oven. Inspect the connector after removal from ceramic plate. (JDS-STD-002)	95% minimum solder coverage.
6	Thermal Shock	In unmated condition. Subject connector to 10 cycles between -55°C to +105°C. (EIA 364-32D Method A, condition VII)	No cracks No loose pin
7	Cyclic Temperature & Humidity	In unmated condition. Without conditioning, initial measurements, cold shock and vibration. Subject connector to temperature -25±3°C at 80%±3% RH and 65°C±3°C 50%±3% RH. Ramp times should be 0.5hr and dwell times should be 1.0hr. Dwell times start when temperature and humidity stabilized within specified levels. Perform 24 such cycles. (EIA 364-31 Method III)	<u>Insulation Resistance</u> 1000 Megohms MINIMUM [Initial & after test] <u>Dielectric Withstanding Voltage</u> No breakdown

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A1	ECM No: 121915 DATE: 2017/09/19	MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	6 of 8
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-151117-0001	SCHEONG	GMENARLY	KHLIM

5.3 ENVIRONMENTAL REQUIREMENTS CON'T

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
8	Resistance to IR reflow heat (SMT)	<u>Connector with cap:</u> -1X reflow with cap -2X reflow without cap <u>Connector without cap:</u> -3X reflow Pass Connector through IR machine reference to the following reflow profile: Average Ramp Rate 3°C/sec max. Preheat Temp. (Min.) 150°C Preheat Temp. (Max.) 200°C Preheat Time 60 – 180 sec Ramp to Peak 3°C/sec max. Time over liquidus (217°C) 60 – 150 sec Peak Temperature 260 +/-5°C Time within 5°C of peak 20 – 40 sec. Ramp – Cool Down 6°C/sec max. Time 25°C to Peak 8 mins max.	-No damage in appearance of the connector. -No cracks -No loose pin

6.0 PACKAGING

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

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A1	ECM No: 121915 DATE: 2017/09/19	MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	7 of 8
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-151117-0001	SCHEONG	GMENARLY	KHLIM

7.0 TEST SEQUENCES

Test Group →	A	B	C	D	E
Test or Examination ↓					
Examination of the connector(s)	1	1	1		1
Insulation Resistance	2, 6				
Dielectric Withstanding Voltage	3, 7				
Cyclic Temperature and Humidity	5				
Thermal Shock	4				
Resistance to Soldering Heat			2		
Terminal Retention Force		2	3		
Solderability				1a, 1b	
Temperature Rise Test					2

Note : a) Test as per J-STD-002D for through hole version
 b) Test as per J-STD-002D for SMT version

8.0 OTHERS

- There is no influence in the product performance though discoloration might be seen in the soldering tail after the reflow.

REVISION: A1	ECR/ECN INFORMATION: ECM No: 121915 DATE: 2017/09/19	TITLE: MILLIGRID 2MM DUAL ROW SHROUDED HEADERS	SHEET No. 8 of 8
DOCUMENT NUMBER: PS-151117-0001	CREATED / REVISED BY: SCHEONG	CHECKED BY: GMENARLY	APPROVED BY: KHLIM