

2.54mm Pitch 3 Row Dual Wafer Through Hole Header

1. SCOPE

This specification covers the performance requirements of the Molex C-Grid III product series for those products listed in Appendix 4.

2. PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

See appropriate Sales drawings for information.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawings for information on dimensions, materials, plating and markings, recommended module outlines and footprint Specifications.

2.3 CONNECTOR SIZE

Refer to the appropriate sales drawing for dimensional information and detail.

2.4 PCB / MODULE DIMENSIONS

Refer to the appropriate sales drawing for PCB layout and dimensional.

2.5 SAFETY AGENCY APPROVALS

UL File : E29179

3. APPLICABLE DOCUMENTS AND SPECIFICATIONS

See sales drawings and any other sections of this specification for the relevant reference documents and specifications. In cases where this product specification differs from the product drawings, the product drawings take precedence.

Crimp Specification 90119: See Application Specification AS-90119
 90146: See Application Specification AS-90146

Product Class Definitions

CLASS	PLATING	
	FEMALE	MALE
1	Pre-Plated Hot Dip Tin	Tin
1A	Post Plated 2.54µm Min Tin Overall	Tin
2	0.38um to 0.64um Gold	0.15um to 0.30um Gold
3	0.76um to 1.02um Gold	0.38um to 0.64um Gold
4	0.76um to 1.02um Gold	0.76um to 1.02um Gold

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CHANGE NO.	792506						
REVISED BY	SUAIFR	DATE	2024/07/11	DOC TYPE	DOC TYPE DESCRIPTION	DOC PART	SERIES
REV APPR BY	MRAMAKRISHNA	DATE	2024/07/17	PS	ENGINEERING SPECIFICATION WORD	001	99020
INITIAL RELEASE				CUSTOMER	DOCUMENT NUMBER	REVISION	SHEET
INITIAL DRWN	DKALNA	DATE	2000/08/31	GENERAL MARKET	PS-99020-0001	R	1 OF 9
INITIAL APPR	JHORGAN	DATE	2000/09/01				

4. RATINGS

4.1 VOLTAGE

Operating Voltage according to IEC 130-1: ≤ 350 V DC/AC

4.2 CURRENT

Current Carrying Capacity: ≤3A

4.3 TEMPERATURE

Operating Temperature:

- unshrouded and shrouded headers and PCB connectors: -55°C to +125°C

- crimp modules and housings: -55°C to +105°C

Non-operating Temperature:

- unshrouded and shrouded headers and PCB connectors: -55°C to +125°C

- crimp modules and housings: -55°C to +105°C

5. PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.1.1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20mV and a current of 100mA Mated per EIA-364-23	20 mΩ initial, 10 mΩ maximum change from initial
5.1.2	Insulation Resistance	Measure between adjacent contact at 500VDC for 1 minute, per (MIL-STD-1344 MTD 3001.1) - shrouded and unshrouded headers: - PCB connectors, crimp housings and modules:	≥ 5000MΩ ≥ 1000MΩ
5.1.3	Dielectric Withstanding Voltage	Test between adjacent contact at 500VAC rms and 1 minute hold time.	≥ 1000V

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5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.2.1	Contact Retention in housing	As per IEC 512-8 test 15b: - shrouded and unshrouded headers: -straight (two directions): -right angle (one direction): - PCB connectors: -90147, 90148, 90151: -90152: -90119 loaded in crimp housings and modules:	≥ 20N ≥ 20N ≥ 15 N ≥ 8.8 ≥ 15 N
5.2.2	Insertion Force (per contact)	As per IEC 512-7 test 13b using gauge P11 in Appendix 1: - PCB connectors (90147, 90148, 90151 & 90152) and 90119 loaded in crimp modules and housings - Gold plated: - Tin plated (Pre-Plated Hot Dip Tin): - Tin plated (Post Plated 2.54µm Min Tin Overall):	≤ 1 N ≤ 3 N ≤ 5 N
5.2.3	Withdrawal Force (per contact)	As per IEC 512-7 test 13b using gauge P12 in Appendix 1: - PCB connectors (90147, 90148, 90151 & 90152) and 90119 loaded in crimp modules and housings - Gold plated: - Tin plated (Pre-Plated Hot Dip Tin): - Tin plated (Post Plated 2.54 µm Min Tin Overall):	≥ 0.2 N ≥ 0.2 N ≥ 0.2 N
5.2.4	Durability	As per IEC 512-9 test 9a: Class 1 & 1A: Class 2: Class 3: Class 4:	30 cycles 100 cycles 200cycles 500 cycles
5.2.5	Solderability	As per IEC 512-6 test 12a method 1 @235°C/2s	95% of immersed area must not show voids, pinholes, etc.

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5.2.6	Resistance to Soldering Heat	<p>For Series 90130, 90136, 90708, 90120, 90121, 90122, 90131, 90547: As per IEC 512-6, test 12d @230±5°C/3s</p> <p>For 91814 Series only: Connectors subjected to reflow profile shown in Appendix 3.</p>	There shall be no damage that will impair normal operation.
5.2.7	Shock	As per IEC 512-4 test 6c:	50g/11ms
5.2.8	Vibration	<p>As per IEC 512-4 test 6d with mountings per Appendix 2:</p> <p style="text-align: center;">Class 1:</p> <p style="text-align: center;">Class 2,3,4:</p>	<p>10 - 500 Hz, 0.35mm or 5g Duration: 2 hours each, 3 Directions</p> <p>10 - 2000 Hz, 1.50mm or 20g Duration: 2 hours each, 3 directions</p>
5.2.9	Tensile Strength of crimp termination	As per IEC 512-8 test 16d:	75% of wire tensile strength
5.2.10	Glow Wire Test	<p>As per IEC 60695-2-11 @750°C with a max 2 second flame allowed. Applicable to Crimp housing 90142-10** and 90156-10** only Test carried out with crimp terminals loaded</p>	No damage that will impair normal operation.

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5.3 ENVIRONMENTAL REQUIREMENTS

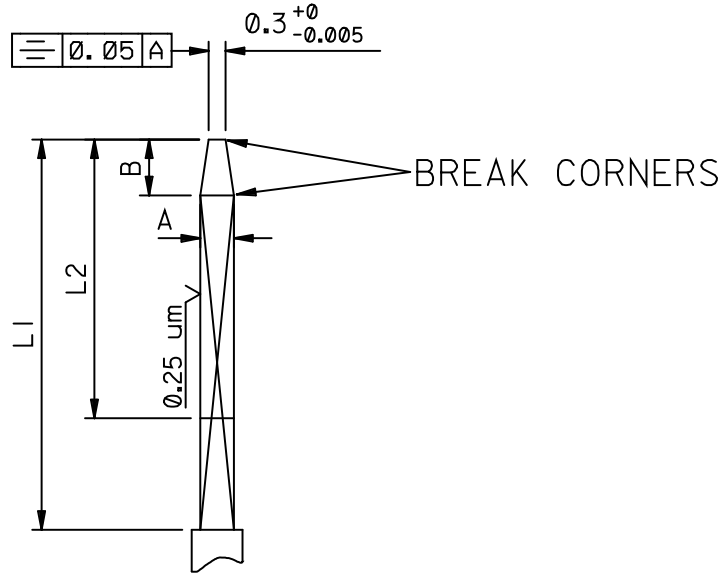
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.3.1	Damp Heat	As per IEC 512-6 test 11c: Class 1,2: 55°C	90- 95% R.H. Duration: 21 days
		Class 3,4: 55°C	90 - 95% R.H. Duration: 56 days
5.3.2	Dry Heat	As per IEC 512-6 test 11i: - unshrouded and shrouded headers and PCB connectors: - crimp modules and housings:	125°C Duration: 16 hours 105°C Duration: 16 hours
5.3.3	Industrial Atmosphere	As per IEC 68-2-43 test Kd:	<u>SO₂</u> (at 10ppm)
		<u>Class</u>	
		1	Not Applicable
		2, 3	4 days
4	10 days		
5.3.4	Industrial Atmosphere	As per IEC 68-2-42 test Kc:	<u>H_{2s}</u> (at 1ppm)
		<u>Class</u>	
		1	Not Applicable
		2, 3	4 days
4	10 days		
5.3.5	Thermal Shock	As per IEC 512-6 test 11d: - unshrouded and shrouded headers and PCB connectors: - crimp modules and housings:	55°C to +125°C, 10 cycles -55°C to +105°C, 10 cycles

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APPENDIX 1
INSERTION AND WITHDRAWAL GAUGES

GAUGE	A	B	L1	L2(MIN)	WEIGHT
P11	$0.65^{+0.005}_0$	$1^{+0}_{-0.10}$	$7^{+0}_{-0.10}$	5	20 g
P12	$0.60^{+0}_{-0.005}$	$1^{+0}_{-0.10}$	$6.5^{+0}_{-0.10}$	5	-

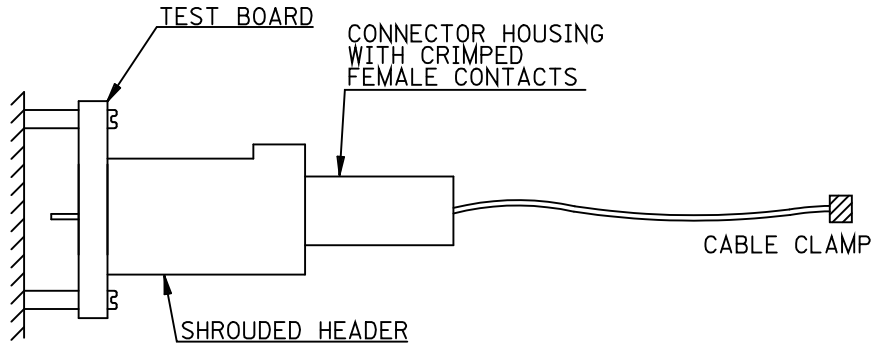


MATERIAL: HARDENED STEEL

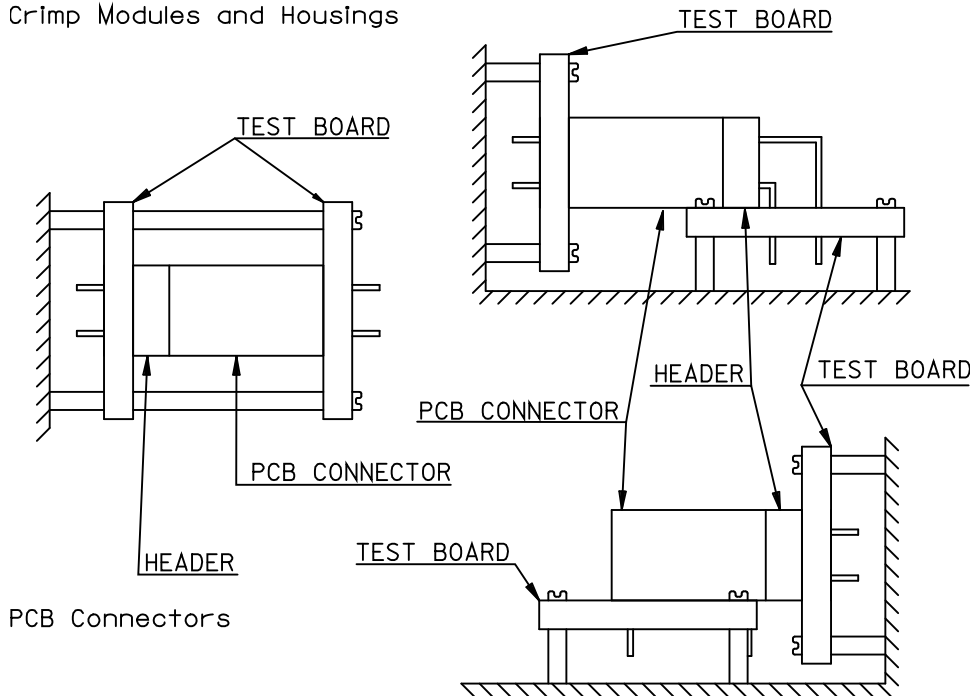
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APPENDIX 2
VIBRATION MOUNTINGS



Crimp Modules and Housings



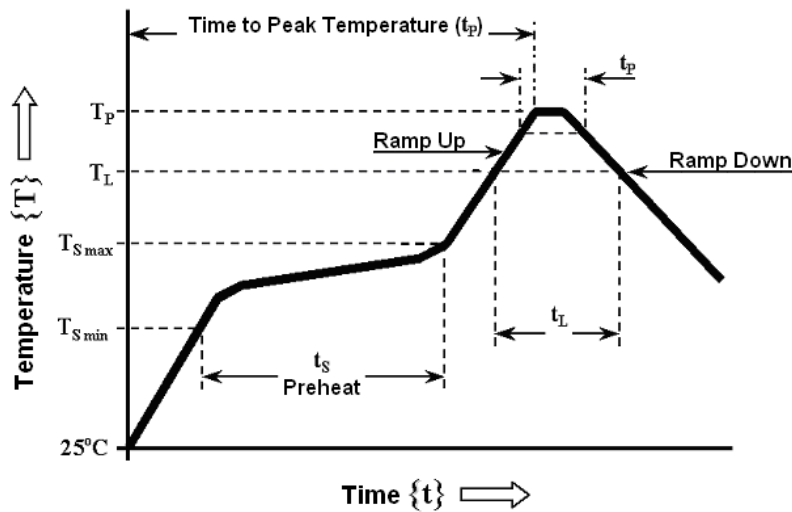
PCB Connectors

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APPENDIX 3
REFLOW PROFILE

PROFILE FEATURE	Pb-FREE PROCESS (RoHS) COMPATIBLE
Product Series	91814.
Average Ramp Up Rate	3°C/second max.
Preheat - Temperature Min ($T_{S\ min}$) - Temperature Max ($T_{S\ max}$) - Time (t_s)	150°C 200°C 60 – 180 seconds
Time over Liquidus - Temperature (T_L) - Time (t_L)	217°C 60 – 150 seconds
Time from 25°C to Peak Temperature (T_P)	8 minutes max.
Peak Temperature (T_P)	260°C max.
Time within 5°C of Peak Temperature (t_p)	40 seconds max.
Ramp Down Rate	6°C/second max.



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APPENDIX 4
C-GRID III PRODUCT RANGE

PRODUCT TYPE

SERIES

QF50	5320	FEMALE
	5576	HEADER VERTICAL
	5578	HEADER RIGHT ANGLE
SHROUDED HEADERS	90130-1	DUAL ROW VERTICAL FULLY LOADED
	90130-2	DUAL ROW VERTICAL VOIDED PINS
	90130-3	DUAL ROW RIGHT ANGLE FULLY LOADED
	90130-4	DUAL ROW RIGHT ANGLE VOIDED PINS
	91814-3	DUAL ROW RIGHT ANGLE FULLY LOADED HIGH TEMP
	90136-1	SINGLE ROW VERTICAL
	90136-2	SINGLE ROW RIGHT ANGLE
90708	DUAL ROW LOW PROFILE VERTICAL	
UNSHROUDED HEADERS	90120	SINGLE ROW VERTICAL
	90121	SINGLE ROW RIGHT ANGLE
	90122	DUAL ROW RIGHT ANGLE
	90131	DUAL ROW VERTICAL
	90547	SINGLE ROW VERTICAL DOUBLE BODY
CRIMP TERMINALS	90119	FEMALE CRIMP
PCB CONNECTORS	90147	SINGLE ROW VERTICAL
	90148	SINGLE ROW HORIZONTAL
	90151	DUAL ROW VERTICAL
	90152	DUAL ROW HORIZONTAL
MODULAR HOUSINGS	90123	SINGLE ROW CRIMP
	90143	DUAL ROW
CRIMP HOUSINGS	90142	DUAL ROW
	90156	SINGLE ROW
	90160	DUAL ROW

6. PACKAGING

Parts shall be packed in trays and protected against damage during handling, transportation and storage.

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