CJTconn 長江連接器有限公司 CHANGJIANG CONNECTORS CO.,LTD.

PRODUCT SPECIFICATION

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			APPROVED	CHECKED	WRITTEN
			BY	BY	BY
A2	REVISE	2020.05.13	***Jack Yin***	***Lailin***	***Diankui Wan***
A1	REVISE	2019.12.16			
A0	NEW RELEASE	2019.07.29			
REV.	DESCRIPTION	DATE	DOCUMENT NO: PS-A2509-002		

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1.SCOPE:

This specification covers the requirements for product performance of 2.50 mm pitch wire to wire or wire to board connector series.

2.PART NAME & PART NUMBERS

Part name	Part number
Housing	A2509HA A2509HMA
Terminal	A2509-T-A A2501M-T
Wafer	A2509WV A2509WV-F A2509WR

3. CONSTRUCTION. DIMENSIONS . MATERIAL & SURFACE FINISH

Construction and dimensions shall be in accordance with the referenced drawings.
Material and surface finish shall be as specified below.

Part name		Material	Surface finish
Housing		Nylon 66	UL94V-0
Terminal		Phosphor bronze	Tin over Nickel/Gold over Nickel
Wafer	Post	Brass	Tin over Nickel/Gold over Nickel
	Body	Nylon 66	UL94V-0

4. RATINGS & APPLICABLE WIRES

Item	Standard		
Rated Voltage (Max.)	250V AC DC		Insulation O.D. 1.15mm~1.90mm
Rated Current (Max.) and Applicable Wires	AWG #22	3.0A AC DC	
	AWG #24	2.5A AC DC	
	AWG #26	2.0A AC DC	
	AWG #28	1.5A AC DC	
Ambient Temperature Range	-40℃~105℃*		

*: Including terminal temperature rise

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5. CONDITIONS：

The conditions shall be in accordance with the referenced drawing of next page.

Number	Item	Requirement
(1)	Bend up	4°Max.
	Bend down	4°Max.
	Twisting	3°Max.
	Rolling	8°Max.
(2)	Bell mouth (flare)	0.2-0.5 mm
(3)	Cut-off tab length	0.3 mm Max.
(4)	Extruded wire length	0-1.0 mm
(5)	Seam	Seam shall not be opened and no wire allowed out of crimping area
(6)	Wire strip length	2.6-3.2 mm ref.
(7)	Lance height	0.6±0.1 mm ref.

After crimping，the crimped areas [(5)、(6)] should be as follows.

Wire Size (AWG)	Terminal Part Number	Conductor(mm)		Insulation(mm)		Crimp Strength (kgf)
		Crimp Width	Crimp Height	Crimp Width	Crimp Height	
#22	A2509-T-A	1.40±0.10	0.82~0.87	1.90(Max.)	1.70(max)	4.00(min)
#24			0.75~0.80		1.60(max)	3.00(min)
#26			0.70~0.75		1.50(max)	2.00(min)
#28			0.66~0.71		1.40(max)	1.00(min)

6. PERFORMANCE

6.1 ELECTRICAL PERFORMANCE

Test Description		Procedure	Requirement
6-1-1	Contact Resistance	Mate connectors, measure by dry circuit, 20mV Max. 10mA. (Based upon JIS C5402 5.4)	20mΩ Max.
6-1-2	Insulation Resistance	Mate connectors, apply 500V DC between adjacent terminal or ground. (Based upon JIS C5402 5.2/MIL-STD-202 Method 302 Cond. B)	1000MΩ Min.
6-1-3	Dielectric Withstanding Voltage	Mate connectors, apply 1000V AC (rms) for 1 minute between adjacent terminal or ground. (Based upon JIS C5402 5.1/MIL-STD-202 Method 301)	No Breakdown

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6.2 MECHANICAL PERFORMANCE

Test Description		Procedure		Requirement	
6-2-1	Insertion & Withdrawal Force	Insert and withdraw connectors at the speed rate of 25 ± 3mm/minute.		Refer to section 7	
6-2-2	Crimping Pull Out Force	Fix the crimped terminal, apply axial pull out force on the wire at the speed rate of 25 ± 3mm/minute. (Based upon JIS C5402 6.8)	AWG #22	39.2N/4.0kgf Min.	
			AWG #24	29.4N/3.0kgf Min.	
			AWG #26	19.6N/2.0kgf Min.	
			AWG #28	9.8N/1.0kgf Min.	
6-2-3	Crimp Terminal Insertion Force	Insert the crimped terminal into the housing.		0.5kgf Max.	
6-2-4	Terminal/Housing Retention Force	Apply axial pull out force at the speed rate of 25 ± 3mm/minute on the terminal assembled in the housing		1.5kgf Min.	
6-2-5	Header Terminal Retention Force	Apply axial push force at the speed rate of 25 ± 3mm/minute.		1.0kgf Min.	
6-2-6	Housing Lock Strength (Positive Lock)	Mate connectors and apply axial pull out force at the speed rate of 25 ± 3mm/minute.		2~3P	2.0kgf Min.
				4~15P	4.0kgf Min.
6-2-7	Durability	When mated up to 30 cycles repeatedly by the rate of 10 cycles per minute	Contact Resistance	40mΩ Max.	
6-2-8	Vibration	Amplitude: 1.52mm P-P Sweep time: 10-55-10 Hz in 1 minute Duration: 2 hours in each X.Y.Z. axes (Based upon JIS C 60068-2-6/MIL-STD-202 Method 201)	Appearance	No Damage	
			Contact Resistance	40mΩ Max.	
			Discontinuity	1μsec. Max.	
6-2-9	Physical Shock	490m/s² {50G}, 3 strokes in each X.Y.Z. axes. (Based upon JIS C60068-2-27/MIL-STD-202 Method 213 B Cond. A)	Appearance	No Damage	
			Contact Resistance	40mΩ Max.	
			Discontinuity	1μsec. Max.	

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6.3 ENVIRONMENTAL PERFORMANCE AND OTHERS

Test Description		Procedure		Requirement
6-3-1	Temperature Rise	Carrying rated current load. (Based upon UL 498)	Temperature Rise	30°C Max.
6-3-2	Heat Resistance	105 ± 2°C, 96 hours (Based upon JIS C0021/MIL-STD-202 Method 108A Cond. A)	Appearance	No Damage
			Contact Resistance	40mΩ Max.
6-3-3	Cold Resistance	-40 ± 3°C, 96 hours (Based upon JIS C0020)	Appearance	No Damage
			Contact Resistance	40mΩ Max.
6-3-4	Humidity	Temperature: 40 ± 2°C Relative Humidity: 90 ~ 95% Duration: 96 hours (Based upon JIS C0022/MIL-STD-202 Method 103B Cond. B)	Appearance	No Damage
			Contact Resistance	40mΩ Max.
			Insulation Resistance	100MΩ Min.
			Dielectric Withstandin	Must meet 6-1-3
6-3-5	Temperature Cycling	25 cycles of: a) - 55°C 30 minutes b) +105°C 30 minutes (Based upon JIS C60068-2-14)	Appearance	No Damage
			Contact Resistance	40mΩ Max.
6-3-6	Salt Spray	24 hours exposure to a salt spray from the 5 % solution at 35 ± 2°C. (Based upon JIS C0023/MIL-STD-202 Method 101D Cond. B)	Appearance	No Damage
			Contact Resistance	40mΩ Max.
6-3-7	SO_2 Gas	24 hours exposure to 50 ± 5ppm. SO2 gas at 40 ± 2°C.	Appearance	No Damage
			Contact Resistance	40mΩ Max.
6-3-8	NH_3 Gas	40 minutes exposure to NH3 gas evaporating from 28% Ammonia solution.	Appearance	No Damage
			Contact Resistance	40mΩ Max.
6-3-9	Solderability	Soldering Time: 3~5 sec. Solder Temperature: 240 ± 5°C	Solder Wetting	95% of immersed area must show no voids, pin holes
6-3-10	Resistance to Soldering Heat	Normal materials Soldering Time:3~5 sec. Solder Temperature: 250 ± 5°C High temperature resistant materials Soldering Time:3~5 sec. Solder Temperature: 260 ± 5°C	Appearance	No Damage

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7. INSERTION AND WITHDRAWAL FORCE

unit: kgf

Number of Circuits (W-W)	Insertion (Max.)			Withdrawal (Min.)		
	1 th	6 th	30 th	1 th	6 th	30 th
2P	3.60	3.40	3.40	0.15	0.10	0.10
3P	4.40	4.10	4.10	0.15	0.10	0.10
4P	5.20	4.80	4.80	0.20	0.15	0.15
5P	6.00	5.50	5.50	0.30	0.20	0.20
6P	6.60	6.00	6.00	0.40	0.30	0.30
7P	7.20	6.50	6.50	0.50	0.40	0.40
8P	7.80	7.00	7.00	0.60	0.50	0.50
9P	8.40	7.50	7.50	0.60	0.50	0.50
10P	9.00	8.00	8.00	0.70	0.55	0.55
11P	9.60	8.50	8.50	0.70	0.60	0.60
12P	10.20	9.00	9.00	0.80	0.70	0.70
13P	10.80	9.50	9.50	0.80	0.70	0.70
14P	11.40	10.00	10.00	0.90	0.80	0.80
15P	12.00	10.50	10.50	1.00	0.90	0.90

Number of Circuits (W-B)	Insertion (Max.)			Withdrawal (Min.)		
	1 th	6 th	30 th	1 th	6 th	30 th
2P	3.60	3.40	3.40	0.65	0.55	0.55
3P	4.40	4.10	4.10	0.70	0.60	0.60
4P	5.20	4.80	4.80	0.75	0.65	0.65
5P	6.00	5.50	5.50	0.80	0.70	0.70
6P	6.60	6.00	6.00	0.90	0.80	0.80
7P	7.20	6.50	6.50	1.00	0.90	0.90
8P	7.80	7.00	7.00	1.15	1.00	1.00
9P	8.40	7.50	7.50	1.30	1.15	1.15
10P	9.00	8.00	8.00	1.45	1.30	1.30
11P	9.60	8.50	8.50	1.60	1.45	1.45
12P	10.20	9.00	9.00	1.85	1.60	1.60
13P	10.80	9.50	9.50	2.00	1.75	1.75
14P	11.40	10.00	10.00	2.15	1.90	1.90
15P	12.00	10.50	10.50	2.20	2.05	2.05