



PRODUCT SPECIFICATION

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			APPROVED	CHECKED	WRITTEN
			BY	BY	BY
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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	A2509HFA
Terminal	A2509-T-B A2509-T-B-L
TPA	A2509SA
Wafer	A2509WVA A2509WRA A2509WRB

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 4T	UL94V-0
Terminal		Phosphor Bronze	Tin over Nickel/Gold over Nickel
Wafer	Base	LCP	UL94V-0
	Post	Brass	Tin over Nickel/Gold over Nickel

4. RATINGS & APPLICABLE WIRES

Current rating: 8.0A AC,DC (MAX)

Voltage rating: 250V AC,DC

Temperature range: -40°C ~ 105°C

Wire to Board Current Rating (Amp Max.)

(As tested with tinned copper wire and gold 15u" plated terminals)

Connector fully loaded with all circuits powered

AWG Wire Size	Single row						
	2	3	4	5	6	7	8
#20	8.00	7.75	7.50	7.25	7.00	6.75	6.50
#22	6.50	6.17	5.83	5.50	5.17	4.83	4.50
#24	6.00	5.75	5.50	5.25	5.00	4.75	4.50
#26	5.00	4.75	4.50	4.25	4.00	3.75	3.50
AWG Wire Size	Dual row						
	2x2	2x3	2x4	2x5	2x6	2x7	2x8
#20	7.50	7.17	6.83	6.50	6.17	5.83	5.50
#22	5.50	5.25	5.00	4.75	4.50	4.25	4.00
#24	5.50	5.17	4.83	4.50	4.17	3.83	3.50
#26	4.00	3.83	3.67	3.50	3.33	3.17	3.00

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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	
#20	A2509-T-B A2509-T-B-L	1.55±0.15	1.20~1.30	1.85 (max)	1.85(max)	5.90(min)
#22			1.10~1.20		1.75(max)	3.70(min)
#24			1.00~1.10		1.65(max)	2.30(min)
#26			0.90~1.00		1.55(max)	1.40(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)	10mΩ 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 1500V 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 (Per Circuit)	Insert and withdraw connectors at the speed rate of 25 ± 3 mm/minute.		Insertion Force: 0.36kgf Max.(Tin) 0.18kgf Max.(Gold) Withdrawal Force: 0.1kgf Min.(Tin) 0.05kgf Min.(Gold)
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 ± 3 mm/minute. (Based upon JIS C5402 6.8)	AWG #20	58N/5.90kgf Min.
			AWG #22	36N/3.7kgf Min.
			AWG #24	22.3N/2.3kgf Min.
			AWG #26	13.4N/1.4kgf Min.
6-2-3	Crimp Terminal Insertion Force	Insert the crimped terminal into the housing.		1.5kgf Max.
6-2-4	Terminal/Housing Retention Force	Apply axial pull out force at the speed rate of 25 ± 3 mm/minute on the terminal assembled in the housing.		2.0kgf Min. (Without TPA) 4.0kgf Min. (With TPA #20~#24) 3.0kgf Min. (With TPA #26)
6-2-5	Header Terminal Retention Force	Apply axial push force at the speed rate of 25 ± 3 mm/minute.		2.5kgf Min.
6-2-6	Housing Lock Strength (Without Terminal)	Mate connectors and apply axial pull out force at the speed rate of 25 ± 3 mm/minute.		3.5kgf Min.
6-2-7	Durability	When mated up to 30 cycles repeatedly by the rate of 10 cycles per minute.	Contact Resistance	20mΩ 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	20mΩ 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	20mΩ Max.
6-3-3	Cold Resistance	-40 ± 3°C, 96 hours (Based upon JIS C0020)	Appearance	No Damage
			Contact Resistance	20mΩ 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	20mΩ Max.
			Insulation Resistance	500MΩ Min.
			Dielectric Withstanding Voltage	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	20mΩ 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	20mΩ Max.
6-3-7	Solderability	Soldering Time: 3~5 sec. Solder Temperature: 240 ± 5°C	Solder Wetting	95% of immersed area must show no voids, pin holes
6-3-8	Resistance to Soldering Heat	<u>Normal materials</u> Soldering Time:3~5 sec. Solder Temperature: 250 ± 5°C <u>High temperature resistant materials</u> Soldering Time:3~5 sec. Solder Temperature: 260 ± 5°C	Appearance	No Damage