

1. Scope

Wafer Connector pitch 2mm series

This specification covers the Wafer Connector FWF20003/FWF20004 Series

2. Ordering information

Refer to the drawing.

3. Connector dimensions

Refer to the drawing.

4. Material

Housing: PA9T (UL 94V-0)

Color: Natural

Terminal: Brass

Plating: Tin plated

Solder tab: Phosphor bronze

Plating: Tin plated

5. Accommodated P.C.B layout

Refer to the drawing.

6. Rating

Operating voltage(Max.) 100V AC/DC

Current rating(Max.) 2.0A AC/DC

Temperature range-operating -25°C -- +85°C(Including terminal temperature rese)

7. Performance

Test item	Requirement	Test Condition
Electrical Performance		
Contact Resistance	10mΩ Max.	Mate connectors, measure by dry circuit, 20mV Max., 10mA. Mated Length : 50mm (AWG. #24) (Based upon JIS C5402 5.4)
Insulation Resistance	1000 MΩ Min.	Mate connectors, apply 500V DC between adjacent terminals or ground. (Based upon JIS C5402 5.2/MIL-STD-202 method 302 Cond.B)
Dielectric Strength	No breakdown and flashove	Mate connectors, apply 500V AC for 1 minute between adjacent terminal or ground. (Based upon JIS C5402 5.1/MIL-STD-202 Method 301)

Test item	Requirement	Test Condition
Contact resistance on crimped portion	10mΩ Max.	Crimp the maximum applicable wire on to the terminal, measure by dry circuit, 20mV Max., 10mA. Wire Length : 50mm (AWG.#24)

Mechanical Performance

Insertion force and withdrawal force	Refer to paragraph 8	Insertion and withdrawal connectors at the speed rate of 25±3mm/minute
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Terminal/Housing Retention Force	1.5kgf Min.	Apply axial pull out force at the speed rate of 25±3mm/minute on the terminal assembled In the housing.
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Crimping pull out Force	Wire size	#24	#26	#28	#30	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)	
	1	width	1.3±0.1				
		height	0.68~ 0.77	0.61~ 0.70	0.52~ 0.61		0.47~ 0.56
	2	width	1.50				
		height	1.56	1.50	1.45		1.40
	Crimp strength	3.0kg min.	1.8kg min.	1.1kg min.	0.6kg min.		
1. Conductor (mm) 2: Insulation (mm)							

Terminal Insertion Force	1.2kgf Max.	Insert the crimped terminal into the housing at the speed rate of 25±3mm/min.
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Pin Retention Force	1.0kgf Min.	Apply axial push force at the speed rate of 25±3mm/minute on the contact pin assembled in the base wafer.
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Environmental Performance and others

Heat resistance	Appearance	No Damage	Mated connector shall be placed in an oven for 96±4 hours at +85±2°C. (Based upon JIS C5402 7.8)
	Contact Resistance	20mΩ Max.	

Cold resistance	Appearance	No Damage	Mated connector shall be placed in a temperature chamber for 96±4 hours at -25±3°C (Based upon JIS C5402 7.9)
	Contact Resistance	20mΩ Max.	

Humidity	Appearance	No Damage	Mated connector shall be placed in a humidity chamber on the following conditions. Temperature: 40±2°C Relative humidity: 90~95% Duration : 240 Hours (Based upon MIL-STD-202 Method 103 cond.A)
	Contact Resistance	20mΩ Max.	
	Dielectric Strength	500V,AC/min	
	Insulation Resistance	500MΩ Min.	

Test item	Requirement		Test Condition
Vibration	Appearance	No Damage	Amplitude: 1.52mm P.P Sweep time: 10-55-10Hz/minute Duration: 2 hours in each X、Y、Z axlals. (Based upon MIL-STD-202 method 201A)
	Contact Resistance	20mΩ Max.	
	Discontinuity	1μ sec Max.	
Shock	Appearance	No Damage	50G, 3 strokes in each X、Y、Z. axlals. (Based upon JIS C0041/MIL-STD-202 method 213B Cond.A)
	Contact Resistance	20mΩ Max.	
	Discontinuity	1μ sec Max.	
Temperature cycling	Appearance	No Damage	Mated connector shall be set to temperature cycling for 5 cycles of which 1 cycle consists of: 1>.+25°C ~ 3 minutes 2>.-25°C ~ 30 minutes 3>.+25°C ~ 3 minutes 4>.+85°C ~ 30 minutes (Based upon JIS C5402 7.2)
	Contact Resistance	20mΩ Max.	
	Dielectric Strength	500V,AC/min	
	Insulation Resistance	500MΩ Min.	
Temperature Rise	30°C Max.		Apply rated current load on mated connector in series-connection. Measure change of temperature on contact using thermocouples for 4 hours. (Based upon UL 1977)
Repeated Insertion/ withdrawal	Contact Resistance	20mΩ Max.	Mate connector up to 30 cycles repeatedly at a rate of 10 cycles/minute. After which test the contact resistance
Salt Spray	Appearance	No Damage	Mated connector shall be placed in a salt spray chamber on the following conditions. Salt Solution Density : 5±1% Temperature : 35±2°C Duration : First punch,second plate:24±4Hours First plate,second punch:8±2Hours Remarks : we make sure the important area
	Contact Resistance	20mΩ Max.	
Solderability	95% of immersed area must show no voids nor pin holes.		Immerse fluxed soldered section of contact pin into a solder bath for 3±0.5sec Temperature: 230±5°C
Resistance to soldering heat	No Damage in appearance		Mated connector shall be dipped on solder bath for 5±0.5sec Temperature: 260±5°C

8. Insertion force and withdrawal force

(Unit:kgf)

Circuits	Insertion (Max.)	Withdrawal (Min.)		
	Initial	Initial	10th	30th
2	2.4	0.60	0.50	0.50
3	2.8	0.75	0.60	0.60
4	3.2	0.90	0.70	0.70
5	3.6	1.05	0.80	0.80
6	4.0	1.20	0.90	0.90
7	4.4	1.35	1.00	1.00
8	4.8	1.50	1.10	1.10
9	5.2	1.65	1.20	1.20
10	5.6	1.80	1.30	1.30
11	6.0	1.95	1.40	1.40
12	6.4	2.10	1.50	1.50
13	6.8	2.25	1.60	1.60
14	7.2	2.40	1.70	1.70
15	7.6	2.55	1.80	1.80
16	8.0	2.70	1.90	1.90