1.25mm Wire To Board Series, Contact and Housing

1. INTRODUCTION

1.1. Purpose

Testing was performed on the TE Connectivity (TE) to determine its conformance to the requirements of product specification 108-161197 for PN-2476785,2476787 and with reference PN-2473229.These crimp snap-in receptacle contacts with insulation support will accept a wire size range of 32-28 AWG.

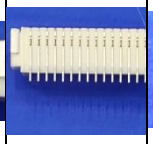
1.2. Scope

This report covers the electrical, mechanical, and environmental performance of 1.25 mm Wafer connector. Testing was performed between September 1/2023 to October 16/2023.The test file number for this testing is 501-161268.This documentation is on file at and available from TE. .

1.3. Conclusion

All part numbers listed in paragraph 1.5 conformed to the electrical, mechanical, and environmental performance requirements of 108-161197.

1.4. Product Description

Product Part No.	Description	Wafer (2P)	Wafer (15P)	Housing (2P)	Housing (15P)	Terminal
2473229	1.25 WTB HDR SMT,2 POS					
2476785	1.25MM W T B RECPT,2POS HOUSING					
2473229	1.25 WTB HDR SMT, 15 POS					
2476785	1.25MM W T B RECPT,15POS HOUSING					
2476787	1.25 Pitch Housing Terminal					

1.5. Test Specimens

The test specimens were representative of normal production lots, and the following part numbers were used for testing (see Figure 1).

Test Group	Quantity	Part Number	Description
A	5	2473229-2 2476785-2 1-2473229-5 1-2476785-5 2476787	1.25 WTB HDR SMT,2 POS 1.25MM WTB RECPT,2POS HOUSING 1.25 WTB HDR SMT, 15 POS 1.25MM WTB RECPT,2POS HOUSING 1.25 Pitch Housing Terminal
B	5		
C	5		
D	5		
E	5	2476785-2 1-2476785-5 2476787	1.25MM WTB RECPT,2POS HOUSING 1.25MM WTB RECPT,15POS HOUSING 1.25 Pitch Housing Terminal
F	5		

Figure 1

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1.6. Qualification Test Sequence

Test of Examination	Test Group					
	A	B	C	D	E	F
	Test Sequence(a)					
Examination of Product	1, 10	1, 6	1, 5	1, 5	1, 4	1, 5
Termination Resistance	2, 8		2, 4	2, 4		
Insulation Resistance		2, 5				
Dielectric Withstanding Voltage		3				
Mating/Unmating Force	3, 4, 6, 7					
Durability	5					
Terminal/Housing Retention Force	9					
Tensile Strength of Wire Termination						2
Single PIN Insertion and withdrawal force						3
PIN Retention Force						4
Temperature Life				3		
Humidity Steady State		4				
Salt spray			3			
Solderability					2	
Resistance to Soldering Heat					3	

Figure 2

NOTE
(a) See Paragraph 1.5.
(b) Numbers indicate sequence in which tests are performed.

1.7. Test Conditions

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions shown in Figure 3.

Temperature	15°C – 35°C
Relative Humidity	45% – 75%
Atmospheric Pressure	86.6 – 106.6 kPa

Figure 3

2. SUMMARY OF TESTING

2.1.

<table>
<tr><th colspan="6">2PIN</th></tr>
<tr><th rowspan="2">Test Group</th><th rowspan="2">Number of Data Points</th><th rowspan="2">Requirements</th><th colspan="3">Results</th></tr>
<tr><th>Max</th><th>Min</th><th>Mean</th></tr>
<tr><td rowspan="7">A</td><td>5</td><td>Examination of product: Visual inspection
No physical damage</td><td colspan="3">No abnormalities</td></tr>
<tr><td>5</td><td>Termination Resistance:Initial:20mΩ Max. Circuit current of 50mA max,circuit voltage of 50mV max</td><td>4.287</td><td>3.768</td><td>4.025</td></tr>
<tr><td>5</td><td>Connector Mating Force:2.5kgf Max. 25mm/min.
<table>
<tr><th>Circuit Pos</th><th>Mating N(kgf max)</th><th>Unmating N(kgf min)</th></tr>
<tr><td>2</td><td>24.5N (2.5kgf)</td><td>1.77N (0.18kgf)</td></tr>
<tr><td>8</td><td>53.9N (5.5kgf)</td><td>4.22N (0.43kgf)</td></tr>
<tr><td>15</td><td>88.2N (9.0kgf)</td><td>6.28N (0.64kgf)</td></tr>
</table></td><td>0.524</td><td>0.457</td><td>0.482</td></tr>
<tr><td>5</td><td>Connector Unmating Force:0.18kgf MIN 25mm/min</td><td>0.546</td><td>0.258</td><td>0.387</td></tr>
<tr><td>5</td><td>Durability: Subject connector assembly to 50 cycles of repeated mating / Unmating at a rate of 10 cycles a minute.
Termination resistance:△R=10mΩ shall be met.
See Note.</td><td colspan="3">No abnormalities</td></tr>
<tr><td>5</td><td>Termination Resistance after Mating/Unmating Force: △R10mΩ Max. circuit current of 50mA max,circuit voltage of 50mV max</td><td>0.192</td><td>0.136</td><td>0.157</td></tr>
<tr><td>5</td><td>Terminal/Housing Retention Force:800gf min per contact. Operation Speed: 25mm/min.</td><td>1153</td><td>1048</td><td>1129</td></tr>
<tr><th colspan="6">15PIN</th></tr>
<tr><th rowspan="2">Test Group</th><th rowspan="2">Number of Data Points</th><th rowspan="2">Requirements</th><th colspan="3">Results</th></tr>
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<tr><td rowspan="5">A</td><td>5</td><td>Examination of product: Visual inspection
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<tr><td>5</td><td>Termination Resistance:Initial:20mΩ Max. circuit current of 50mA max,circuit voltage of 50mV max</td><td>4.287</td><td>3.768</td><td>4.025</td></tr>
<tr><td>5</td><td>Connector Mating Force:9kgf MAX 25mm/min
<table>
<tr><th>Circuit Pos</th><th>Mating N(kgf max)</th><th>Unmating N(kgf min)</th></tr>
<tr><td>2</td><td>24.5N (2.5kgf)</td><td>1.77N (0.18kgf)</td></tr>
<tr><td>8</td><td>53.9N (5.5kgf)</td><td>4.22N (0.43kgf)</td></tr>
<tr><td>15</td><td>88.2N (9.0kgf)</td><td>6.28N (0.64kgf)</td></tr>
</table></td><td>4.156</td><td>3.482</td><td>3.745</td></tr>
<tr><td>5</td><td>Connector Unmating Force:0.64kgf MIN 25mm/min</td><td>2.162</td><td>1.847</td><td>2.031</td></tr>
<tr><td>5</td><td>Durability: Subject connector assembly to 50 cycles of repeated mating / Unmating at a rate of 10 cycles a minute.
Termination resistance:△R=10mΩ shall be met.
See Note</td><td colspan="3">No abnormalities</td></tr>
</table>

	5	Termination Resistance after Mating/Unmating Force: △R10mΩ Max. circuit current of 50mA max,circuit voltage of 50mV max	0.257	0.124	0.168
	5	Terminal/Housing Retention Force:800gf min per contact Operation Speed: 25mm/min.	1153	1048	1129

2PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
B	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Insulation Resistance:100MΩ Min. (Initial)/500MΩ Min. (Final) Measure by applying test potential between adjacent contacts, and between the contacts and ground in the mated connector assembly. MIL-STD-202,Method 302 ,Condition B	No abnormalities		
	5	Dielectric Withstanding Voltage: Connector must withstand test potential of 250VAC for 1 min. Measure by applying test potential between adjacent contacts, and between the contacts and ground in the mated connector assembly. MIL-STD-202, Method 301	No abnormalities		
	5	Humidity Steady State :Subject mated Connectors to steady state humidity at 60±2C° and 90-95% R.H.for 96hours. Insulation Resistance(Final) 500Mohms min.	No abnormalities		
15PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
B	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Insulation Resistance:100MΩ Min. (Initial)/500MΩ Min. (Final) Measure by applying test potential between adjacent contacts, and between the contacts and ground in the mated connector assembly. MIL-STD-202,Method 302 ,Condition B	No abnormalities		
	5	Dielectric Withstanding Voltage: Connector must withstand test potential of 250VAC for 1 min. Measure by applying test potential between adjacent contacts, and between the contacts and ground in the mated connector assembly. MIL-STD-202,Method 301	No abnormalities		
	5	Humidity Steady State :Subject mated Connectors to steady state humidity at 60±2C° and 90-95% R.H.for 96hours. Insulation Resistance(Final) 500Mohms min.	No abnormalities		

2PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
C	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Termination Resistance:Initial:20mΩ Max. circuit current of 50mA max,circuit voltage of 50mV max	4.482	3.924	4.263
	5	Salt Spray: Exposing in a heat chamber at a temperature of 35℃±2℃ for 48 hours. 30mΩ Max(Final) No Physical damage. EIA-364-26A,condition A.	No abnormalities		
	5	Termination Resistance after Salt Spray:30mΩ Max.	4.861	4.217	4.528
	5	Examination of product:Visual inspection No physical damage.	No abnormalities		
15PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
C	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Termination Resistance:Initial:20mΩ Max. circuit current of 50mA max,circuit voltage of 50mV max	4.482	3.924	4.263
	5	Salt Spray: Exposing in a heat chamber at a temperature of 35℃±2℃ for 48 hours. 30mΩ Max(Final) No Physical damage. EIA-364-26A,condition A.	No abnormalities		
	5	Termination Resistance after Salt Spray:30mΩ Max.	4.861	4.217	4.528
	5	Examination of product:Visual inspection No physical damage.	No abnormalities		

2PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
D	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Termination Resistance:Initial:20mΩ Max circuit current of 50mA max,circuit voltage of 50mV max	4.514	4.268	4.382
	5	Temperature Life: Subject mated connector assemblies to temperature life at 85℃±2℃ for 96hours.	No abnormalities		
	5	Termination Resistance after Temperature Life:40mΩ Max.	4.925	4.416	4.682
	5	Examination of product:Visual inspection No physical damage.	No abnormalities		

15PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
D	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Termination Resistance:Initial:20mΩ Max circuit current of 50mA max,circuit voltage of 50mV max	4.616	4.351	4.442
	5	Temperature Life: Subject mated connector assemblies to temperature life at 85℃±2℃ for 96hours.	No abnormalities		
	5	Termination Resistance after Temperature Life:40mΩ Max.	4.875	4.294	4.531
	5	Examination of product:Visual inspection No physical damage.	No abnormalities		

2PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
E	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Solderability: Wet solder coverage: 95% Min. Subject contacts to solderability testing, as specified and solder transfer at 230±5 ℃ for 3-5sec. MIL-STD-202,Method 208	More than 95% of tested area was covered with Tin		
	5	Resistance to Reflow Soldering Heat: Subject connector mounted on printed circuit boards to solder bath at 260℃±5℃ for 10±2 seconds(Flow soldering). At 350℃±5℃ for 3±1 seconds(Manual soldering). MIL-STD-202,Method 210,Condition C	No physical damage		
	5	Examination of product after test: Visual inspection No physical damage	No abnormalities		
15PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
E	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Solderability: Wet solder coverage: 95% Min. Subject contacts to solderability testing, as specified and solder transfer at 230±5 ℃ for 3-5sec. MIL-STD-202,Method 208	More than 95% of tested area was covered with Tin		
	5	Resistance to Reflow Soldering Heat: Subject connector mounted on printed circuit boards to solder bath at 260℃±5℃ for 10±2 seconds(Flow soldering). At 350℃±5℃ for 3±1 seconds(Manual soldering). MIL-STD-202,Method 210,Condition C	No physical damage		
	5	Examination of product after test: Visual inspection No physical damage	No abnormalities		

2PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
F	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Tensile Strength of Wire Termination: AWG#28-14.7N(1.5kgf)min. AWG#30-9.8N(1.0kgf)min. AWG#32-4.9N(0.5kgf)min. Operation Speed: 100mm/min	AWG#28		
			2.475	2.126	2.290
			AWG#30		
			2.682	2.263	2.431
			AWG#32		
			2.574	2.139	2.385
	5	Single PIN Insertion Force standard 4.9N(0.5kgf). Operation Speed: 25mm/min	0.345	0.256	0.318
	5	Single PIN Withdrawal force standard 0.49N(0.05kgf) Apply axial load to terminated contact at a rate of 25mm/min.	0.318	0.248	0.286
	5	PIN Retention Force: Retention force standard 4.9N(0.5kgf)min. Apply axial load to terminated contact at a rate of 25mm/min.	1.735	1.669	1.696
	5	Examination of product after test: Visual inspection No physical damage.	No abnormalities		
15PIN					
Test Group	Number of Data Points	Requirements	Results		
			Max	Min	Mean
F	5	Examination of product:Visual inspection No physical damage	No abnormalities		
	5	Tensile Strength of Wire Termination: AWG#28-14.7N(1.5kgf)min. AWG#30-9.8N(1.0kgf)min. AWG#32-4.9N(0.5kgf)min. Operation Speed: 100mm/min	AWG#28		
			2.472	2.264	2.318
			AWG#30		
			2.549	2.361	2.427
			AWG#32		
			2.562	2.274	2.385
	5	Single PIN Insertion Force standard 4.9N(0.5kgf). Operation Speed: 25mm/min	0.324	0.267	0.297
	5	Single PIN Withdrawal force standard 0.49N(0.05kgf) Apply axial load to terminated contact at a rate of 25mm/min.	0.318	0.266	0.283
	5	PIN Retention Force: Retention force standard 4.9N(0.5kgf)min. Apply axial load to terminated contact at a rate of 25mm/min.	1.728	1.675	1.703
	5	Examination of product after test: Visual inspection No physical damage.	No abnormalities		

Figure 4

3. TEST METHODS

Test methods according to product SPEC - 108-161197.