TEST SUMMARY

USB TYPE C 24 Pin Connector

(MOLEX P/N: 2024100002)

REVISION:	ECR/ECN INFORMATION:		TITLE:	SHEET No.
A	EC No.: DATE:	2017/02/06	USB Type C 24 Pin	1 of 13

DOCUMENT NUMBER:	CREATED/REVISED	APPROVED BY
TS-202410-002	David Chen	Kim Yang

TEST SUMMARY

1.0 SCOPE:

This test summary covers the USB type C 24 pin receptacle. These results are applicable to the following product: 2024100002.

2.0 PRODUCT DESCRIPTION:

2.1 PRODUCT NAME AND PART NUMBER (S):

Name: USB TYPE C 24 PIN RECEPTACLE.

Part No.: 2024100002 Rev: A.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to sales drawing No: PSD2024100002. Rev: A.

2.3 PRODUCT SPECIFICATION TITLE AND DOCUMENT NUMBER

Title: USB TYPE C 24 PIN RECEPTACLE.

Document Number: 2024100002 Rev: A.

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS:

3.1 TESTING PROCEDURE AND SEQUENCE

Testing is performed sequentially and is divided into 15 groups.

3.2 OTHER DOCUMENTS AND SPECIFICATIONS

RTS-202410-001 and EIA-364 series standard.

4.0 QUALIFICATION:

Laboratory conditions and sample selection are in accordance with EIA-364 Standard.

TEST SUMMARY

5.0 TEST SEQUENCE:

Description	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Sample Size	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Visual inspection	1,3	1,10	1,15	1, 10	1,8	1,7	1,7	1,3	1,6	1,6	1,3	1,3	1,3	
LLCR		2,6 ,9	3,12	2,4 ,9	2,4 ,7	2,6	2,6		2,5	2,5				
Insulation resistance			14											
Dielectric withstanding voltage			2,13											
Contact Capacitance								2						
Temperature rise	2													
Mating force			4,7 ,10											
Un-mating force			5,8 ,11											
Reseating(3X)		5,8		8	6	5	5		4	4				
Durability(50X)		3		3	3	3	3							
Durability(1000X)			6											
Durability(9000X)			9											
Mechanical shock				7										
Radom Vibration				5										
Sine Vibration				6										
Salt Spray						4								
Humidity- Temperature Cycling		7												
High-temperature and humidity										3				
Thermal shock		4												
Temperature life							4							
Low Temperature									3					
Thermal disturbance														
Thermal Cycling					5									
Solderability Test												2		
Solder peel off Strength													2	
IPx8 water proof														1

TEST SUMMARY

6.0 PERFORMANCE:

Test Group A						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat		No physical damage	No physical damage			Pass
Temperature Rise	°C	30°C Max	17.64	14.68	16.81	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

Test Group B						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	28.14	12.52	17.09	Pass
Durability(50x)	--	No physical damage	No physical damage			Pass
Thermal Shock	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	4.16	-15.83	-1.99	Pass
Humidity- Temperature Cycling	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	7.15	-12.30	-1.92	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group C						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat		Appearance: No Damage	No Damage			Pass
Dielectric withstanding voltage	--	No breakdown	No breakdown			Pass
LLCR		40 mΩ Max.	21.95	12.98	16.46	Pass
Mating force	N	5~20 N	10.49	8.05	9.63	Pass
Un-mating force	N	8~20 N Min	17.13	15.52	16.32	Pass
Durability 1000 cycles	--	No physical damage	No physical damage			Pass
Mating force	N	5~20 N	13.57	11.26	12.62	Pass
Un-mating force	N	8~20 N	18.45	11.05	13.86	Pass
Durability 9000 cycles	--	No physical damage	No physical damage			Pass
Mating force	N	5~20 N	14.84	9.03	11.81	Pass
Un-mating force	N	6~20 N	15.37	8.22	12.11	Pass
LLCR	mΩ	ΔR:10 mΩ Max.	7.07	-2.40	1.09	Pass
Dielectric withstanding voltage	--	No breakdown	No breakdown			Pass
Insulation resistance	MΩ	100 MΩ Min	2.90×10^3 MΩ			Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group D						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	19.63	11.63	14.99	Pass
Durability(50x)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	7.04	-4.19	1.32	Pass
Random Vibration	us	Discontinuity < 1 us	No Discontinuity			Pass
	--	No physical damage	No physical damage			Pass
Sine Vibration	us	Discontinuity < 1 us	No Discontinuity			Pass
	--	No physical damage	No physical damage			Pass
Mechanical shock	us	Discontinuity < 1 us	No Discontinuity			Pass
	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	4.63	-3.70	1.29	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group E						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	18.03	11.46	14.99	Pass
Durability(50x)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	2.30	-2.06	0.35	Pass
Thermal Cycling	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	1.79	-1.93	0.28	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group F						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	22.36	12.16	16.07	Pass
Durability(50x)	--	No physical damage	No physical damage			Pass
Salt Spray	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	8.97	-5.74	-0.36	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

Test Group G						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	23.86	11.96	16.94	Pass
Durability(50x)	--	No physical damage	No physical damage			Pass
Temperature Life	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	3.29	-8.16	-0.72	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group H						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Contact Capacitance	mΩ	2pF Max.	1.16	0.54	0.80	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

Test Group I						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	23.96	12.45	17.02	Pass
Low Temperature	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	0.95	-7.89	-1.44	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group J						
Test Item	Unit	Specification	Max.	Min.	Avg.	Status
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	32.55	11.69	15.81	Pass
High Temp& Humidity	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	3.37	-13.80	0.38	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

Test Group K						
Test Item	Unit	Specification	Max.	Min.	Avg.	Status
Visual inspection	--	No physical damage	No physical damage			Pass
Resistance to Soldering Reflow Heat	--	No physical damage	No physical damage			Pass
LLCR	mΩ	40 mΩ Max.	18.12	12.05	15.35	Pass
Durability(50x)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	0.47	-2.31	-0.34	Pass
Thermal Disturbance	--	No physical damage	No physical damage			Pass
Reseating (3X)	--	No physical damage	No physical damage			Pass
LLCR	mΩ	ΔR:10 mΩ Max.	5.32	-1.31	0.87	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

TEST SUMMARY

6.0 PERFORMANCE:(Continued)

Test Group L						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Solderability	--	>95% coverage	>95% coverage			Pass
Visual inspection	--	No physical damage	No physical damage			Pass

Test Group M						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Visual inspection	--	No physical damage	No physical damage			Pass
Solder peel off strength	N	Push 50 N in 10 seconds	No physical damage			Pass
		70 N min	144.3	102.4	123.3	Pass
Visual inspection	--	No physical damage	No physical damage			Pass

Test Group N						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
IPX8 water proof	--	No water leakage	No water leakage			Pass

TEST SUMMARY

7.0 TEST EQUIPMENT:

S/N	DESCRIPTION	MANUFACTURING	MODEL
1	Milliohm meter	HP	4338B
2	Max Intelligent Load Tester	JAPAN INSTRUMENT	Max-1KN-H
3	High Resistance Meter	HP	4339A
4	Withstanding Voltage /Insulation Analyzer	EXTECH	CWI-703
5	Precision LCR Meter	HP	4284A
6	Resistance to Soldering Heat	BTU	PYRAMAX 150N*5
7	Vibration Test System	KING DESIGN	EM-600F2K-50N120
8	Mechanical Shock Tester	Xunke	BIS50
9	Discontinuous Time Detector	NACMAN	NM-10A
10	Thermal Shock Chamber	VOTSCH	VT7012 S2
11	Temperature & Humidity Chamber	VOTSCH	VC 7015
12	Hot Air Rapid Drying Oven	HERAEUS	UT6060
13	DC Power Supply	AGILENT	E 3633A
14	DC Power Supply	HP	E3614A
15	Source Meter	Agilent 2400	2400
16	Data Acquisition System	KEITHLEY	2700
17	Solder Pot	RHESCA	SAT-5000
18	Durability Machine	LIGE	N/A

TEST SUMMARY

8.0 REVISION HISTORY:

REV.	DESCRIPTIONS	DATE	EC No.	BY
A	*Release*	*2017/02/06*		*David Chen*