TEST SUMMARY

TITLE

1.0 SCOPE

This test summary covers vertical USB A type 105057 series

These results are applicable to the following product families: 105057 series

2.0 PRODUCT DESCRIPTION

2.1 **PRODUCT NAME AND PART NUMBER(S)**

2.2 PRODUCT NAME	PART NUMBER(S)
VERTACAL USB A TYPE	1050570001

PRODUCT SPECIFICATION TITLE AND DOCUMENT NUMBER

PRODUCT SPECIFICATION TITLE: USB SERIES CONNECTOR

DOCUMENT NUMBER: PS-105057-001

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

3.1 TESTING PROCEDURES AND SEQUENCES

Reference Product Specification No. PS-105057-001

3.2 OTHER DOCUMENTS AND SPECIFICATIONS

TR08A10 and TR08C67

4.0 QUALIFICATION

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

TEST SUMMARY

5.0 TEST SEQUENCE

	Group A Mating/Un-mating Force	Group B Vibration/ Mechanical Shock	Group C Humidity	Group D Salt Spray	Group E Temperature Cycling	Group F Solder-ability	Group G Resistance to Soldering Heat	Group H Temperature Rise	Group I Terminal Retention Force
Sample size	2	2	2	2	2	2	2	2	2
1	Visual Inspection	Visual Inspection	Visual Inspection	Visual Inspection	Visual Inspection	Visual Inspection	Visual Inspection	Temperature Rise	Terminal Retention Force
2	Contact Resistance	Contact Resistance	Contact Resistance	Contact Resistance	Contact Resistance	Solder-ability	Resistance to Soldering Heat		
3	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance	Visual Inspection	Visual Inspection		
4	Dielectric Withstanding Voltage	Dielectric Withstanding Voltage	Dielectric Withstanding Voltage	Dielectric Withstanding Voltage	Dielectric Withstanding Voltage				
5	Mating/Un-mating Force	Vibration	Humidity	Salt Spray	Temperature Cycling				
6	Repeated Mate/Un-mate	Mechanical Shock	Visual Inspection	Visual Inspection	Visual Inspection				
7	Visual Inspection	Heat Resistance	Contact Resistance	Contact Resistance	Contact Resistance				
8	Contact Resistance	Cold Resistance	Insulation Resistance	Insulation Resistance	Insulation Resistance				
9	Insulation Resistance	Visual Inspection	Dielectric Withstanding Voltage	Dielectric Withstanding Voltage	Dielectric Withstanding Voltage				
10	Dielectric Withstanding Voltage	Contact Resistance							
11	Mating/Un-mating Force	Insulation Resistance							
12		Dielectric Withstanding Voltage							

TEST SUMMARY

6.0 PERFORMANCE

Group A						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	30 mΩ Max.	19.20	10.18	14.12	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>4.3\times10^5$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass
Mating Force	N	35 N Max.	10.89	10.68	10.79	Pass
Un-mating Force	N	10 N Min.	15.49	12.63	14.06	Pass
Repeated mate/un-mate	--	No physical damage	No physical damage			Pass
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	100 mΩ Max.	19.71	12.21	16.33	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>8.9\times10^5$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass
Mating Force	N	29 N Max.	10.35	10.06	10.21	Pass
Un-mating Force	N	3 N Min.	14.37	11.53	12.95	Pass

6.0 PERFORMANCE

Group B						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	30 mΩ Max.	18.57	10.30	13.99	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>8.1\times10^5$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass
Vibration	μS	Discontinuity<1μS	No discontinuity			Pass
	--	No physical damage	No physical damage			Pass
Mechanical Shock	μS	Discontinuity<1μS	No discontinuity			Pass
	--	No physical damage	No physical damage			Pass
Heat Resistance		No physical damage	No physical damage			Pass
Cold Resistance	--	No physical damage	No physical damage			Pass
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	100 mΩ Max.	18.93	10.18	13.57	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>1.7\times10^6$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass

6.0 PERFORMANCE

Group C						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	30 mΩ Max.	17.83	9.10	13.79	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>4.9\times10^5$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass
Humidity	--	No physical damage	No physical damage			Pass
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	100 mΩ Max.	17.46	10.47	13.72	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>9.1\times10^5$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass

TEST SUMMARY

6.0 PERFORMANCE

Group D						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	30 mΩ Max.	17.26	9.47	13.27	**Pass**
Insulation Resistance	MΩ	1000 MΩ Min.	$>2.1\times10^6$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass
Salt Spray	--	No physical damage	No physical damage			Pass
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	100 mΩ Max.	16.82	9.87	13.81	**Pass**
Insulation Resistance	MΩ	1000 MΩ Min.	$>1.0\times10^6$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass

6.0 PERFORMANCE

Group E						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	30 mΩ Max.	17.02	10.69	13.90	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>1.5\times10^6$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass
Temperature cycling	--	No physical damage	No Physical Damage			Pass
Appearance	--	No physical damage	No physical damage			Pass
Low Level Contact Resistance	mΩ	100 mΩ Max.	18.69	10.68	14.26	Pass
Insulation Resistance	MΩ	1000 MΩ Min.	$>1.9\times10^6$			Pass
Dielectric Withstanding Voltage	--	No breakdown	No breakdown			Pass

Group F						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No Physical Damage			Pass
Solder-ability	N	Solder Coverage: 95%Minimum	>95%			Pass
Appearance	--	No physical damage	No Physical Damage			Pass

6.0 PERFORMANCE

Group G						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Appearance	--	No physical damage	No Physical Damage			Pass
Resistance to soldering heat	N	Without deformation	No Physical Damage			Pass
Appearance	--	No physical damage	No Physical Damage			Pass

Group H						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Temperature Rise	℃	30℃ Max.	5.00	3.00	4.00	Pass

Group I						
Test Item	**Unit**	**Specification**	**Max.**	**Min.**	**Avg.**	**Status**
Terminal Retention Force	N	5 N Min.	7.25	5.65	6.45	Pass

TEST SUMMARY

7.0 FIXTURES AND TEST EQUIPMENT

S/N	DESCRIPTION	MANUFACTURING	MODEL
1	Contact Resistance	HP	4338B
2	Vertical Type Tensile Strength Test Equipment	JAPAN INSTRUMENT	Max-1KN-H
3	Solder-ability	SOLDER CHECKER	SAT-5000
4	Shock Test Machine	KING DESIGN	DP-1200-60
5	Vibration Test System	KING DESIGN	EM-600F2K-50N120
6	Thermal Shock Chamber	VOTSCH	VT7012 S2
7	Temperature & Humidity Chamber	ENVRON	LTHC-715-216-P
8	Hot Air Rapid Drying Oven	HERAEUS	UT6060
9	Temperature Rise	HP	E3614A
10	High Resistance Meter	HP	4339A
11	Withstanding Voltage/Insulation Analyzer	EXTECH	CWI-703
12	Resistance to Soldering Heat	CONCEPTRONIC	HVN-102
13	Connector Durability Tester	ALGOL	PA-600
14	Salt Spray	SUGA	ST-ISO-3