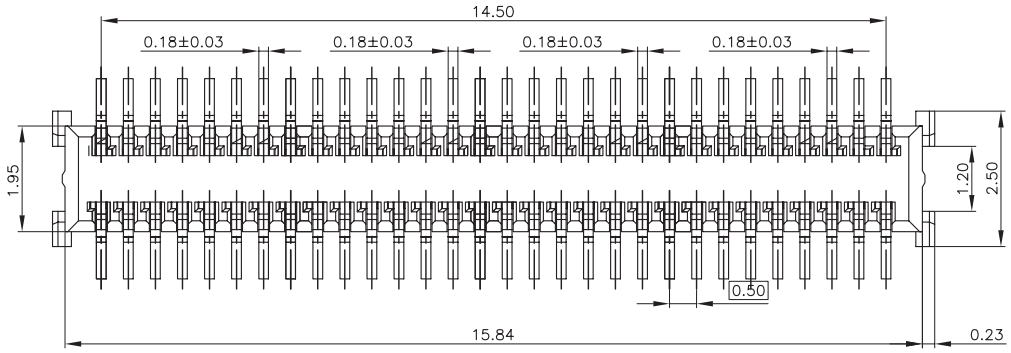
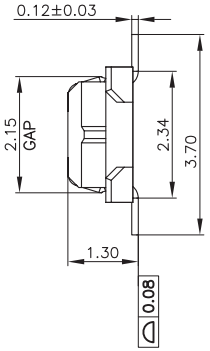
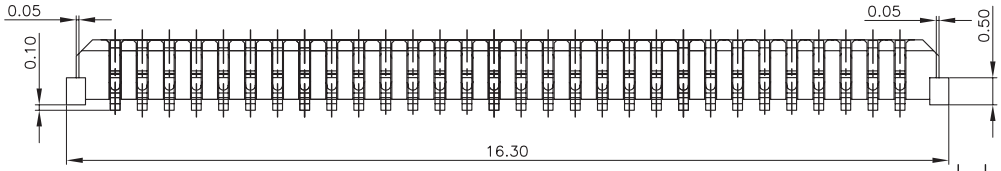
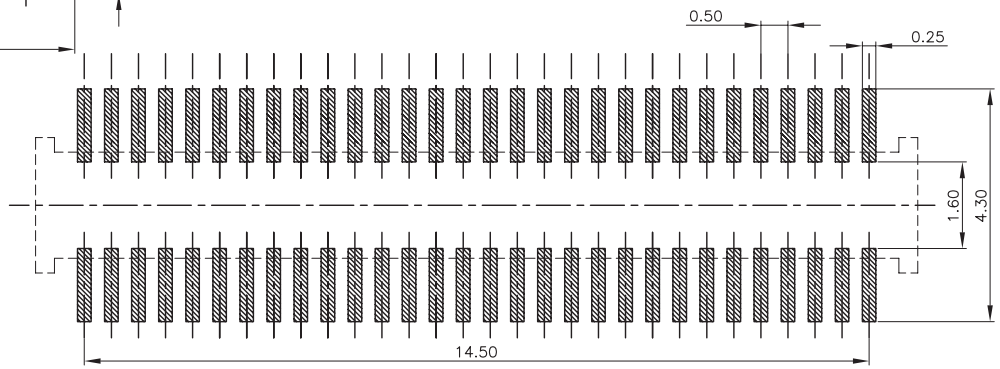
REV.	ECO NO.	DATE	SIGN	DESCRIPTION
A		20071129		NEW RELASE



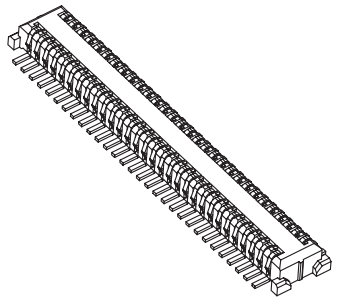


NOTE:
1.MATERIAL:
HOUSING:LCP,GLASS FILLED,UL94V–0.
CONTACT:PHOSPHOR BRONZE,T=0.12mm.
2.FINISH:
CONTACT:50u" NI UNDER PLATING ALL OVER
GOLD PLATING ON CONTACT AREA





RECOMMENDED P.C.B LAYOUT
TOLERANCE:±0.05



TOLERANCE UNLESS SPECIFIED				
LINEAR	ANGLE	SHEET 1/1	DR. BY	MATERIAL
.X	X°	SCALE 1/1	CHK. BY	FINISH
.XX	.X°	UNIT mm	APP. BY	PART NO.
.XXX	.XX°			

TITLE
DWG NO. 0.50 Pitch BTB M/H=2.0

本部品不含有環境管理物質規定之有害物質 [MANAGEMENT REGULATIONS FOR THE RESTRICTIVELY–USED SUBSTANCES INCLUDED IN PARTS AND DEVICES]

PRODUCT SPECIFICATION

1. SCOPE:

This specification covers the performance, test methods and quality requirements for the **0.5 mm Pitch Board To Board SMT Type Connector.**

2. APPLICABLE DOCUMENTS:

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence. Material Related to Environment Control Specification.

3. REQUIREMENT:

3.1. DESIGN AND CONSTRUCTIONS

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2. MATERIALS

NO	DIMENSIONS	MATERIAL	PLATING&COLOR
1	Body	Thermoplastic	Black,UL94V-0
2	Contact	Copper alloy	Au PLATING

3.3. RATINGS

A. Voltage: 60V DC(Max.)
B. Current: 0.5A Max. per contact(Max.10A at total contacts).
C. Operating Temperature: -40℃～+85℃.

3.4. PERFORMANCE REQUIREMENTS AND DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in figure .

4. PERFORMANCE:

TEST ITEM	REQUIREMENT	PROCEDURES
Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection.

4.1. ELECTRICAL:

ITEM	TEST METHOD	SPECIFICATION
Contact Resistance	Test Current: 100 mA Max. Test Voltage: 20mV Max Test Method: MIL-STD-202F, Method 303	60mΩ Max.
Insulation Resistance	Test Voltage: 500V AC. Test Duration: 1 minutes.	1000 MΩ Min
Dielectric Strength	Test Voltage: 150V AC. Test Time: 60 sec.	No Breakdown.

4.2. MECHANICAL:

ITEM	TEST METHOD	SPECIFICATION
Terminal / Housing Retention Force	Test Speed: 25mm/min.	0.5kgf (Min)
Durability	Repeated Insertion and Removal speed of max.200 times/hours	50 times
Vibration	Current:100mA Max. Frequency:10Hz-55Hz-10Hz/minute. Direction: each X.Y.Z axes Sweep time:2hours along each direction. Total: 6hours. Amplitude:1.5mm. EIA-364-28D	Appearance :No damage No electrical discontinuity greater than 1 μ sec. Resistance:60m Ω Max.
Shock	Peak acceleration:50G(490m/s^2) 3 strokes in each X.Y.Z axes EIA-364-27B	Appearance :No damage No electrical discontinuity greater than 1 μ sec. Resistance:60m Ω Max.
Insertion And Removal Force	Test Speed: 25±3 mm/min. Test Method: MIL-STD-1344A, Method 2016.	Insertion Force: Max.:80gf×no.of contacts
		Removal Force: Min.: 6gf×no.of contacts
POST Holding Force	Measure the maximum load in the post axial direction until removal	Min.:100gf/contacts

4.3. ENVIRONMENTAL:

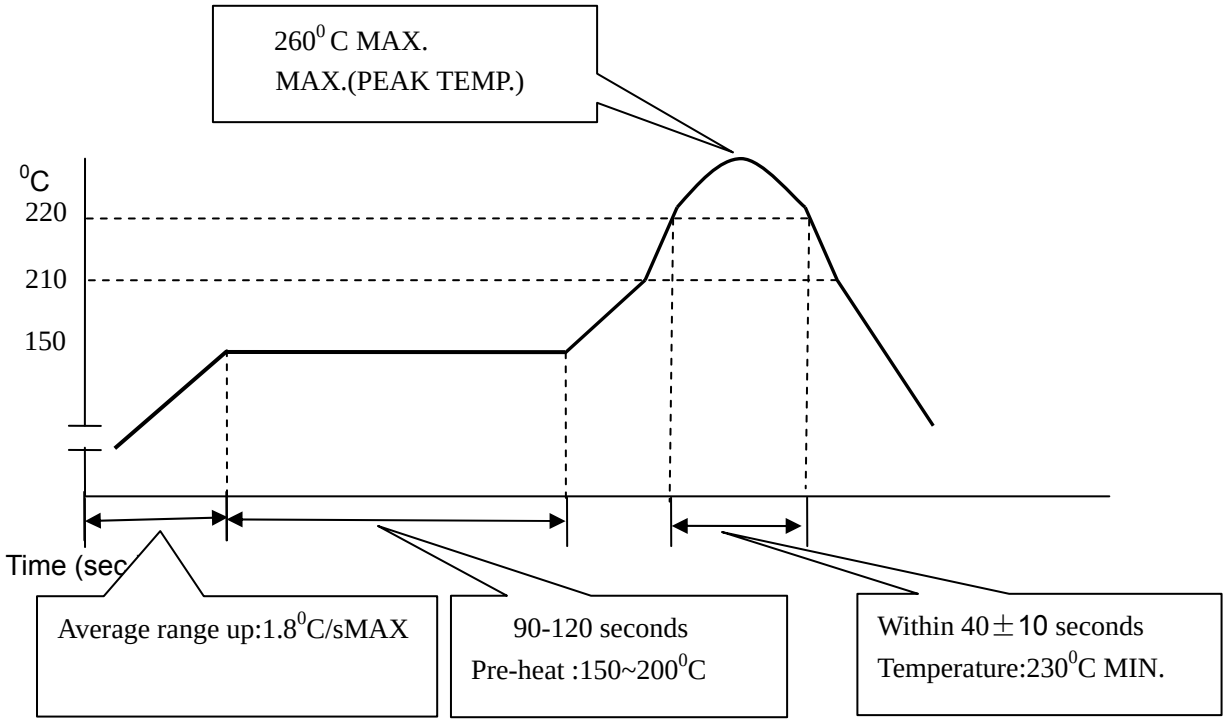
ITEM	TEST METHOD	SPECIFICATION
Temperature Rise	Carrying rated current load. UL 498	30℃ Max.
Humidity Resistance (Header and Socket mated)	+40℃ at 90~95% Humidity for 120 hours.	Appearance: No damage Contact Resistance:60m Ω Max. Insulation Resistance:100M Ω Min
Cold Resistance	96 hours at -40℃. Recovery:2 hours.	Appearance: No damage Contact Resistance:60m Ω Max.
Heat Resistance	96 hours at +85℃. Recovery:2 hours.	Appearance: No damage Contact Resistance:60m Ω Max.
Temperature shock resistance (Header and Socket mated)	-55℃ for 30minutes,+25℃ for 5minutes, +85℃ for 30minutes,+25℃ for 5minutes. Recovery:1 hours Repeat 5 cycles. EIA-364-32C	Appearance: No damage Contact Resistance:60m Ω Max. Insulation Resistance:100M Ω Min
Salt Spray (Header and Socket mated)	Subject mated connector to 5% solution at 35±2℃ salt spray for 48 hours. EIA-364-26B	Appearance: No damage Contact Resistance:60m Ω Max. Insulation Resistance:100M Ω Min

Solderability	Immerse the solder pin of the connector in the solder bath at temperature of 245±5℃ for 3±0.5 seconds.	More than 95% of the dipped surface shall be wet with solder.
Resistance to Soldering Heat	Soldering Time : 10±0.5 sec Solder Temperature : 260±5℃	Appearance: No damage.
	When reflowing 2 times through IR reflow	

5. TEST SEQUENCES IDENTIFICATION:

Test of Examination	Test Group										
	A	B	C	D	E	F	G	H	I	J	K
	Test Sequence										
Examination of Product	1,10	1,6	1,6	1,5	1,5	1,3	1,5	1,3	1,3	1,5	
Contact Resistance	2,7	2,5	2,5	2,4	2,4		2,4			2,4	
Insulation Resistance	3,8										
Dielectric Strength	4,9										
Temperature Rise	5										
Insertion and Removal Force		3									
Retention Force											1
Durability		4									
Vibration			3								
Shock			4								
Heat Resistance				3							
Cold Resistance					3						
Humidity Resistance	6										
Solder Ability						2		2			
Resistance to Soldering Heat									2		
Salt Spray							3				
Temperature shock										3	

6. IR flow condition [Reference]:

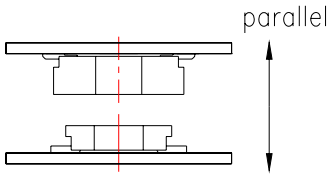


Note :Please check the reflow soldering condition by your own devices beforehand.

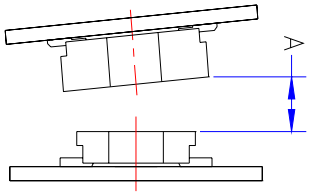
Because the condition changes by the soldering devices, P.C board, and so on.

7. Precaution in the connector handing.

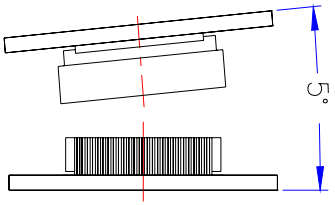
7.1. Please try that the connector parallel is mated Into or unmated form the counterpart connector in parallel.



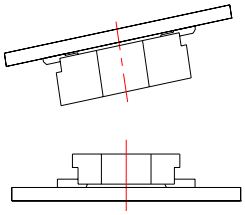
7.2. Mating (into the counterpart connector)
At the time of mating please do not continue to mate the connector if there is the gap.



A to the one side, please mate the connectors when the both guides are guided.
When mating plug with receptacle obliquely ,please make mating within an angle of 5°.

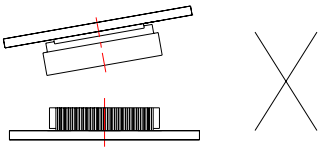


7.3. Unmating (from the counterpart connector)
Please do not extract the one side of the printed circuit board.



Please extract the printed curcuit board in parallel with the connector.

7.4. Please do not bend the printed circuit board in the arrow direction.



7.5. After mating connectors , fix the PCB/PWB in order not for them to disengage.

Quality Test Report

1. SCOPE

1.1 CONTENTS

This specification covers the performance, tests and quality requirements for the 0.5mm Pitch BTB connector.

2. APPLICABLE DOCUMENT

The following Suncagey documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between

the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

3. REQUIREMENTS

3.1 TEST CONDITIONS

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2 MATERIALS

NO	DIMENSIONS	MATERIAL	PLATING&COLOR
1	Body	Thermoplastic	Black,UL94V-0
2	Contact	Copper alloy	Au PLATING

3.3 RATINGS

ITEM	STANDARD
Operating Voltage(Max.)	AC60V / DC60 V
Current Rating(Max.)	AC0.5A / DC0.5A
Operating Temperature	-40°C ~ +85°C （Including terminal temperature rise）

4. TEST METHOD OF INSPECTION

4.1.0 Examination of Product

Visual inspection and dimensional examination in compliance with applicable specifications and documents were performed .The test samples shall be free from defects such as damage , creep, deformation, blister and burrs that are detrimental to the functions and appearances of test samples.

4.1.1 Contact Resistance

The test is subjected to the following precondition: open circuit voltage is 20mV maximum and test current is 100mA maximum. (EIA-364-23)Maximum low level contact resistance requirement is 30 milliohms (resistance of termination wires shall be deducted from the reading) for initial samples ,i.e., samples have not been subjected to any environmental test ,and is 30 milliohms for environmentally stressed samples.

4.1.2 Insulation Resistance

The test was performed in accordance with MIL-STD-202, Method 302,Condilion B. it should be measured between adjacent contacts after applying 500 V AC for 1 minute. Minimum insulation resistance requirement is 50megohms for initial samples, i.e., samples have not been subjected to any environmental test , and is 50megohms min. for environmentally stressed samples for the final sample.

4.1.3 Dielectric withstanding Resistance

The test was performed in accordance with MIL-STD-202, Method 301,method 20.A 150V AC was applied between two adjacent contacts of the test samples for 1 minute .While applying the voltage ,the leakage current was monitored.

4.2.1 Durability

The mated connectors was tested in accordance with the following precondition : Mate and unmated

4.2.2 Terminal / Housing Retention Force

The test was performed under the following condition :Insert the actuator ,pull the Terminal at the speed rate of 25+/-3mm/minute.Withdrawal Force :0.5kgt Min.

4.2.3Vibration

The test was performed in accordance with MIL-STD-202, Method 201, condition :Subject Mated connectors to 10~55~-10Hz traversed in 1 minute at 1.5 mm amplitude 2 hours each of 3 mutually perpendicular planes. No electrical discontinuity greater than 1μ sec. Contact Resistance: 50 milliohms Max. (Final)

4.2.4 Physical Shock

The test was performed in accordance with MIL-STD-202, Method 213 condition A . Test wave： Half-Sine shock pulses Test peak. 50G .No discontinuities of 1μsec. Or longer duration. Contact Resistance: 50 milliohms Max. (Final)

4.2.5 Insertion And Removal Force

The test was performed in accordance with MIL-STD-1344A, Method 2016.1 .Contact Retention test required to mate connectors. (In this test, the force required to turn PCB before it engages on lacking , ix excluded.) at a constant speed of 25 ± 3 mm/minute . Insertion Force:Max.:80gf×no.of contacts，Removal Force:Min.: 6gf×no.of contacts

4.3.1 Humidity-Cycling Test

The test was performed in accordance with MIL-STD-202, Method 106: The unmated connector shall betested in accordance. Temperature : +40℃ ;Humidity : 90 ~ 95% ; Period10 cycles. Insulation Resistance 100 MΩ Min. (after test) Dielectric withstanding Resistance. Current Voltage: 500V AC rms., for 1 minute.

4.3.2Thermal Shock

The test was performed in accordance with MIL-STD-202, Method 107, condition A -1,the Mated connector were subjected to the following condition: temperature cycle from –55+0 / - 3 °C (30 minutes), to+85+3 / -0 °C (30 minutes), and repeat 25 cycles to perform this cycle. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. Insulation Resistance 100 MΩ Min. (after test). Dielectric withstanding Resistance. Current Voltage: 250V AC rms., for 1 minute

4.3.3 Salt Spray

The test was performed in accordance with Method 11 of MIL-STD-202 Subject mated connectors to 35+/-2℃ and 5+/-1% salt concentration for 48+/-4 hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. contact resistance should be 50 milliohms Max.

4.3.4. Solder ability

The test was performed under the following condition: Solder pot temperature：245±5℃ , Immersion Duration :3 ±0.5 seconds .Flux : SMIC M705-GRN360-K2-V. The wet area of each lead must have 95%

solder coverage minimum. (MIL-STD-202 METHOD 208)

4.3.5. Resistance to Soldering Heat

The mated connectors was tested in accordance with the following precondition: the Pre Heat : 150~200℃ , 90~120 sec. Heat : 230℃ Min. ,40+/-10 sec. Peak Temp. : 250+0/-5℃,3sec.or less. Soldering iron method 0.2mm from terminal tip and fitting nail tip. Soldering time : 3 ±0.5seconds Max. Solder temperature : 260±5°C Throughout the test no physical damage shall occur.

5. THE SUMMARY OF TEST RESULTS.

GROUP "A"

	TEST DESCRIPTION	REQUIREMENTS	RESULTS	RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.	PASS
2	Insulation Resistance	50 meg ohms Min. (Initial)	Exceeded the specified requirement	PASS
3	Dielectric withstanding Resistance	No creeping discharge nor flashover shall occur. Current Voltage: 250V AC rms., for 1 minute	No physical damage to the samples.	PASS
4	Humidity-Cycling Test	Period:10 cycles Temperature: 25 ~65°C, Humidity: 95% R.H	No physical damage to the samples.	PASS
5	Thermal Shock	1 cycle a) -55±3°C 30minutes b) +85±3°C 30minutes the following conditions for 25 cycles	Appearance : No Damage	PASS
6	Insulation Resistance	50 meg ohms Min. (Final)	Exceeded the specified requirement.	PASS
7	Dielectric withstanding Resistance	No creeping discharge nor flashover shall occur. Current Voltage: 250V AC rms., for 1 minute	No physical damage to the samples.	PASS

GROUP "B"

	TEST DESCRIPTION	REQUIREMENTS	RESULTS	RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.	PASS
2	Contact Resistance	60milliohmsMax.(Initial)	Min. 23.15 / Max. 30.16 / AVG. 26.65 Unit: milliohms	PASS
3	Durability	Period: 50 cycles	No physical damage to the samples.	PASS
4	Removal Retention Force	Apply axial load to FPC. Operation speed： 25 ± 3 mm/min. Pos. × 6gf MIN 20 pin=0.12 kgf MIN 60 pin=0.36 kgf MIN 80 pin=0.48 kgf MIN	Pin / Min. / Max. / AVG. 20 / 0.17 / 0.19 / 0.18 60 / 0.42 / 0.46 / 0.44 40 / 0.58 / 0.62 / 0.60 Unit: kgf	PASS
5	Contact Resistance	60milliohmsMax.(Final)	Min. 38.26 / Max. 43.54 / AVG. 40.9 Unit: milliohms	PASS
6	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.	PASS

GROUP "C"

	TEST DESCRIPTION	REQUIREMENTS	RESULTS			RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.			PASS
2	Contact Resistance	60milliohmsMax.(Initial)	Min.	Max.	AVG.	PASS
			21.15	28.16	24.57	
			Unit: milliohms			
3	Vibration	Amplitude : 1.5mm Sweep time : 10~55~10 Hz in 1 minute. Duration : 2 hours in each of X,Y,Z axes.	Passed the specified requirement.			PASS
4	Contact Resistance	60milliohmsMax.(Final)	Min.	Max.	AVG.	PASS
			42.13	43.22	42.67	
			Unit: milliohms			
5	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.			PASS

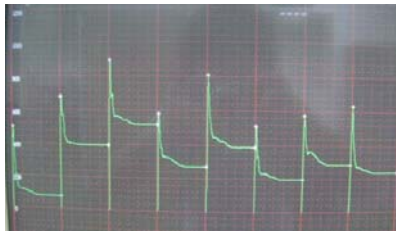
GROUP "D"

	TEST DESCRIPTION	REQUIREMENTS	RESULTS			RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.			PASS
2	Contact Resistance	60milliohms Max.(Initial)	Min.	Max.	AVG.	PASS
			22.38	25.67	24.02	
			Unit: milliohms			
3	Physical Shock	Test wave ： Half-Sine shock pulses Test peak：50G	No physical damage to the samples			PASS
4	Contact Resistance	60 milliohms Max.(Final)	Min.	Max.	AVG.	PASS
			45.78	42.13	43.95	
			Unit: milliohms			
5	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.			PASS

GROUP "E"

	TEST DESCRIPTION	REQUIREMENTS	RESULTS	RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	NO PHYSICAL DAMAGE TO THE SAMPLES.	PASS
2	Contact Resistance Force	0.5Kgf Min.	UNIT: KGF	PASS

ITEM / SAMPLE		Contact Retention Force									Min	Max	AVG
1	PIN	1	6	12	17	22	27	32	38		0.573	0.893	0.69
	value	0.693	0.677	0.893	0.579	0.805	0.682	0.573	0.631				
2	PIN	2	7	12	16	21	26	32	37		0.597	0.869	0.75
	value	0.777	0.677	0.859	0.707	0.597	0.863	0.683	0.869				
3	PIN	4	9	14	19	24	29	34	40		0.575	0.961	0.69
	value	0.961	0.661	0.575	0.713	0.667	0.639	0.703	0.655				
4	PIN	1	5	17	22	28	33	38			0.599	0.847	0.71
	value	0.753	0.847	0.613	0.599	0.803	0.659	0.695					
5	PIN	1	7	12	17	22	27	31	35	39	0.557	0.701	0.73
	value	0.753	0.557	0.683	0.643	0.611	0.563	0.665	0.675	0.701			



GROUP "F"

TEST DESCRIPTION		REQUIREMENTS	RESULTS			RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.			PASS
2	Contact Resistance	60milliohms Max. (Initial)	Min.	Max.	AVG.	PASS
			23.13	20.19	21.66	
			Unit: milliohms			
3	Salt Spray	Salt concentration : 5± 1% Period:48hours Temperature :35±2℃	Appearance : No Damage			PASS
4	Contact Resistance	60milliohms Max. (Final)	Min.	Max.	AVG.	PASS
			48.13	50.19	49.16	
			Unit: milliohms			
5	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.			PASS

GROUP "G"

TEST DESCRIPTION		REQUIREMENTS	RESULTS	RATE
1	Examinationof Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.	PASS
2	Solder ability	Solder Temperature: 245 ±5°C Immersion Period: 3±0.5sec	The test area shall be covered more than 95% of immersed area with fresh solder.	PASS

GROUP "H"

TEST DESCRIPTION		REQUIREMENTS	RESULTS	RATE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.	PASS
2	Resistanceto Soldering Heat	Pre Heat : 150~200℃ ,90~120sec. Heat : 230℃ Min. ,40+/-10 sec. Peak Temp. : 250+0/-5℃,3sec	Passed the specified requirement.	PASS
		Hand soldering Soldering Temperature 260±5℃ Dipping time : 3 ± 0.5sec.		
3	Examination of Product	Meets requirements of product drawing. No physical damage.	No physical damage to the samples.	PASS