1.0 Objective

This specification defines the performance, test, quality and reliability requirements of the 1.2mm pitch Wire to board Connector product.

2.0 Scope

This specification is applicable to the termination characteristics of the 1.2mm pitch Wire to board Connector family of products which provides PCB header to cable receptacle.

3.0 Ratings

3.1 Operating Voltage Rating = 50 Volts AC/DC (MAXIMUM)

3.2 Operating Current Rating = 0.5 Amps per contact (MAXIMUM) @ AWG28

3.3 Operating Temperature Range = -25 °C to +85 °C

4.0 Applicable Documents

4.1 FCI Specifications

4.1.1 Engineering drawings

10125839(RECEPTACLE) / 10125838(PLUG)

4.1.2 Application specification

GS-20-0393(Crimp SPECIFICATION)

4.2 National or International Standards

4.3.1 Flammability: UL94V-0 or VW-1

4.3.2 EIA 364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.

4.3 FCI Laboratory Reports - Supporting Data

5.0 Requirements

5.1 Qualification

Connectors furnished under this specification shall be capable of meeting the qualification test requirements specified herein.

5.2 Material

The material for each component shall be as specified herein or equivalent.

Parts name	Material	Note
Receptacle housing	High Temp Thermoplastic	Color; Black, UL94V-0, Halogen Free
Receptacle contact	Copper Alloy	
Receptacle fixing-tab	Copper Alloy	
Plug housing	High Temp Thermoplastic	Color; Black, UL94V-0, Halogen Free
Plug Terminal	Copper Alloy	

5.3 Finish

The finish for applicable components shall be as specified herein or equivalent.

Parts name	Finish	Note
Receptacle contact	Under plating; Ni Contact area; Gold plating Soldering area; Gold plating	
Receptacle fixing-tab	Tin plating Under plating; Ni	
Plug terminal	Under plating; Ni Gold plating	

5.4 Design and Construction

Connectors shall be of the design, construction, and physical dimensions specified on the applicable product drawing. There shall be no cracks, burrs, or other physical defects that may impair performance.

Compatible wire size; 28 AWG, Stranded, UL10368 Halogen -free, O.D 0.88mm

30AWG, Stranded, UL10368 Halogen- free, O.D 0.80mm or O.D 0.75mm

6.0 Electrical Characteristics

6.1 Contact Resistance, Low Level (LLCR)

The low level contact resistance shall not exceed 20 milliohms initially. The low level contact resistance shall also not exceed 20 milliohms increase from the initial measurement after any treatment and/or environmental exposure. Measurements shall be in accordance with EIA 364-23.

The following details shall apply:

a. Method of Connection - Attach current and voltage leads as shown in Figure 1.

b. Test Voltage - 20 milli-volts DC max open circuit.

c. Test Current - Not to exceed 100 milli-amperes.

d. Cable length – 100mm

*Conductor resistance of a 100mm cable is excluded.

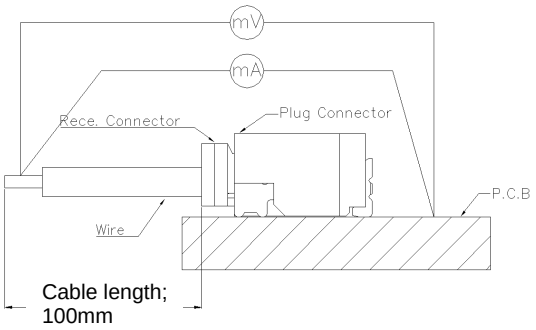


Fig1. Test method of contact resistance

6.2 Insulation Resistance

The insulation resistance of mated connectors shall not be less than 100M ohms initially and after environmental exposure.

Measurements shall be in accordance with EIA 364-21.

The following details shall apply:

a. Test Voltage - 500 volts DC.

b. Electrification Time - 2 minutes, unless otherwise specified.

c. Points of Measurement - Between adjacent contacts

6.3 Dielectric Withstanding Voltage

There shall be no evidence of arc-over, insulation breakdown, when mated connectors are tested in accordance with EIA 364-20.

The following details shall apply:

a. Test Voltage - 500 volts AC.

b. Test Duration - 60 seconds.

c. Test Condition - 1 (760 Torr - sea level).

d. Points of Measurement - Between adjacent contacts

6.4 Current Rating

The temperature rise above ambient shall not exceed 30 deg C at any point in the system when all contacts are powered at 0.5Amperes

The following details shall apply:

a. Ambient Conditions – Room temperature (Reference; 25deg C)

b. Test configuration– Mated condition

c. Reference - EIA 364-70

	3 ckt	4 ckt	6 ckt
AWG# 28	1.5A (0.5A x 3ckt)	2.0A (0.5A x 4ckt)	3.0A (0.5A x 6ckt)
AWG# 30	1.0A	1.0A	1.0A

7.0 Mechanical Characteristics

7.1 Mating/Unmating Force

Mate and unmating receptacle and plug vertically at a rate of 25mm/minute

Measurements shall be in accordance with EIA 364-13

Unit; N

No. of ckt	Mate (Max)	Unmate (Min)	
		1x	20x
3	24.5	3	2
4	29.4	3.3	2.3
6	39.2	4.3	2.8

7.2 Durability – EIA 364-09

a. Number Cycles – 20 cycles

b. Cycling Rate – 20 cycles/minute

c. Use free floating fixtures

The low level contact resistance shall not exceed 20 milliohms increase from the initial measurement

7.3 Vibration Sinusoidal – EIA 364-28

a. Test Condition – I

b. Vibration Amplitude – 1.52mm

c. Frequency Range - 10 to 55 to 10hertz

d. Duration - 2 hours along each of three orthogonal axes (6 hours total)

e. Mounting - Rigidly mount assemblies; Wire are to be fixed firmly onto the testing jig.

f. No discontinuities greater than 1 microseconds

No evidence of physical or mechanical damage, or disassociation of parts

The low level contact resistance shall not exceed 20 milliohms increase from the initial measurement

7.4 Wire Crimping Strength

Pull wire axially from terminal at a rate of 12.7mm/minute

Refer to Crimp Specification; GS-20-0376

7.5 Terminal Pull Strength.

Pull crimp terminal axially from housing at a rate of 12.7mm/minute

a. Terminal pull strength is 2N Min/contact

8.0 Environmental Conditions

8.1 Thermal Shock – EIA 364-32.

a. Number of Cycles - 10

b. Temperature Range - Between -25 and +85 deg C

c. Time at Each Temperature - 30 minutes

8.2 Humidity – EIA 364-31 method II (steady state)

a. Relative Humidity – 90 to 95%

b. Temperature – 40+/-2 deg C

c. Duration – 96 hours

8.3High Temperature Life – EIA 364-17.

a. Test Temperature – 85+/-2 deg C

b. Test Duration - 96 hours

8.4 Solderability

Plug connector is soldered by following condition.

Test condition

a. Soldering bath temperature ; 245+/-5 degC.

b. Dipping time; 3+/-0.5 sec

Actual soldered area must be more than 95% of the dipped area intended to be soldered.

8.5 Resistance to Solder Heat (IR Reflow)

Solder by setting reflow bath on the following condition. Reflow soldering is carried out twice.

Test condition

a. Pre-heat temperature ; 150 to 180 degC

b. Pre-heat duration ; 60 to 120 sec

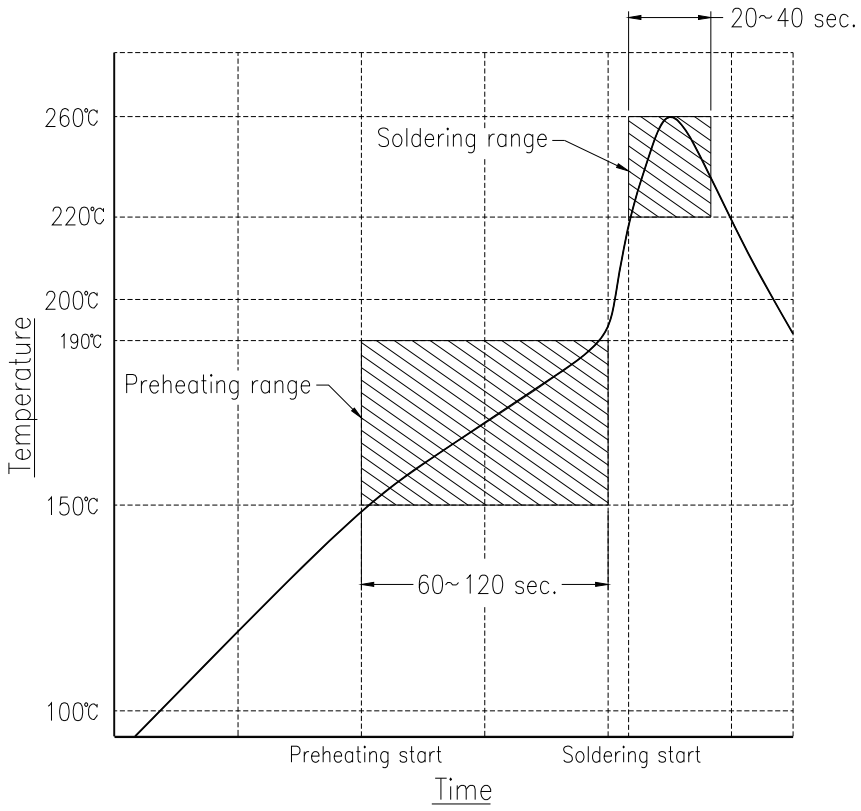
c. Soldering temperature ; 240degC Min.

d. Soldering duration ; 20 to 40 sec

e. Peak temperature ; 260 degC Max.

f. Solder paste ; Senju metal industry M705-221 (Lead free)

There shall be no defect witch spoils a function



Recommendation reflow temperature profile

9.0 QUALITY ASSURANCE PROVISIONS

9.1 Equipment Calibration

All test equipment and inspection facilities used in the performance of any test shall be maintained in a calibration system in accordance with ANSI Z-540 and ISO 9000.

9.2 Inspection Conditions

Unless otherwise specified herein, all inspections shall be performed under the following ambient conditions:

a. Temperature: 25 +/- 5 deg C
b. Relative Humidity: 30% to 60%
c. Barometric Pressure: Local ambient

9.3 Qualification Test Table

Table1. Test sequence

No.	Description	Test group											Method
		1	2	3	4	5	6	7	8	9	10	11	
		Test Sequence											
1	Examination of Product	1,7	1,3	1,9	1,5	1,3	1,3	1,5	1,5	1,5	1,3	1,3	–
2	L.L.C.R			3,7	2,4			2,4	2,4	2,4			6.1.
3	Insulation resistance	2,5											6.2.
4	Dielectric withstanding voltage	3,6											6.3.
5	Current rating		2										6.4.
6	Mating force			2,6									7.1
7	Unmating force			4,8									
8	Durability			5									7.2
9	Viblation				3								7.3
10	Wire crimp strength					2							7.4
11	Terminal pull strength						2						7.5
12	Thermal shock							3					8.1
13	Humidity	4							3				8.2
14	High temperature life									3			8.3
15	Solderbility										2		8.4
16	Solder Heat Resistance											2	8.5

REVISION RECORD

Rev	Page	Description	EC#	Date
A	ALL	RELEASED		2013-10-25