PRODUCT SPECIFICATION

Part Number	BG 2.54mm Series		**Rev**	C		**Date**	22/03/10
Product Description	2.54mm Board to Board Socket Connectors					**Page**	1
Doc Number	BG Series	**Prepared By:**	**SA**	**Checked By:**	**AE**	**Approved By:**	**DR**

1.0 SCOPE

This specifies 2.54mm pitch Socket Connectors. The connector shall meet the performances, specified here under the condition with the plug connector and the receptacle connector mated. This specification covers the product standards, requirements and qualification provisions.

2.0 APPLICABLE DOCUMENTS

At the time of this specifications release, the latest revisions of the following documents were used. These documents shall form a part of this specification as described within this document.

2.1 Industry Specifications / Standards

UL-94 Flammability

ASTM B-103 Phosphor Bronze Plate, Rod, Sheet, Strip and Rolled Bar.

2.2 EIA Specifications

EIA-364-D Electrical Connector / Socket Test Procedures Including Environmental Classifications.

3.0 REQUIREMENTS

3.1 Dimensional

Connectors shall meet the physical dimensions specified on the applicable product drawing.

3.2 Material

Each component shall be constructed of the materials specified within this document. Substitute materials must meet the performance requirements of this specification.

3.2.1 Contacts

Phosphor Bronze, or other equivalent copper alloys.

3.2.2 Housings

PBT, Nylon 6T or LCP, flame retardant 94V-0 per UL-94; or other high performance resin.

3.3 Plating

3.3.1 Contact Under Plate and Finish.

Under Plate: Nickel 50-100μ”

Finish:

- Gold Flash All Over (A)
- Selective gold flash contact area/tin on tail (B)
- Tin All Over (C) – 80μ” minimum
- Gold 10μ” (G) or 30μ” (I) on contact area. Tin 80μ” min. on Tail

3.4 Design

3.4.1 Mating:

The connector shall be capable of mating and unmating manually with the test board.

3.5 Mechanical Requirements

3.5.1 Workmanship

The product shall be uniform in quality and free from defects (burrs, scratches, cracks, voids, etc.) that will adversely affect the product performance.

3.5.2 Insertion Force

When measured in accordance with EIA-364-13B, 3N / Pin Max. (Receptacle / Plug)

3.5.3 Unmating force

When measured in accordance with EIA-364-13B, the following details shall apply:

0.3N / Pin Min. initial (Receptacle / Plug),

3.5.4 Contact Retention Force

The end of a post shall be pushed in a perpendicular to base housing at a constant speed of 25 mm / minute. Min. Retention Force for 5N / Pin.

3.5.5 Durability

When measured in accordance with EIA-364-09C, the following details shall apply:

100 mating cycles at a rate of 25.4 mm / minute, contact resistance 30 mΩ Max.

3.6 Electrical Requirements

3.6.1 Current Rating 3.0A

When measured in accordance with EIA-364-70, 3.0 A Max., based on a 30°C rise over ambient.

3.6.2 Voltage Rating 250V AC / DC.

When measured in accordance with EIA-364-20B.

3.6.3 Low Level Circuit Resistance ≤20mΩ

When measured in accordance with EIA-364-23B, Initial: ≤20 mΩ, after environmental test: ≤30mΩ.

The following details shall apply:

(a). Current: 100 mA Max.

(b). Max. Open Circuit Voltage: 20 mV DC.

3.6.4 Dielectric Withstanding Voltage

There shall be of no evidence of flashover when the mated plug and receptacle are tested in accordance with EIA-364-20B, The following details shall apply:

(a). Voltage: 600V AC at 50 Hz.

(b). Duration: 60 sec.

(c). Measurement Points: Measure across a Min. of 10 adjacent and 10 opposing contacts.

3.6.5 Insulation Resistance

Shall be a Min. of 1000 MΩ before conditioning and a Min. of 500 MΩ after conditioning. When measured in accordance with EIA-364-21C, the following details shall apply:

(a). Voltage: 500 V DC / 1 min.

(b). Measurement Points: Measure between 10 adjacent and 10 opposing contacts per plug and receptacle.

3.6.6 Capacitance

Measure the capacitance between adjacent unmated contacts. The capacitance shall not exceed a Max. of 2 pF at 1 KHz.

3.7 Environmental Requirements

3.7.1 Operating Temperature Range -40°C~105°C.

3.7.2 Temperature Life

After exposure of the unmated connector to a high temperature operating environment, the contact resistance shall not exceed the value specified in paragraph 3.6.3. Test shall be in accordance with EIA-364-17B. The following details shall apply:

(a). Test Condition: 105°C, 96hours.

3.7.3 Thermal shock test

There shall be no evidence of physical damage when the mated module and socket are subjected to transient acceleration. During and after each shock, the test shall show no evidence of discontinuity greater than 1 microsecond.

The test shall be in accordance with EIA-364-32C, Test Condition a, b:

(a). Temperature: -40°C / 30minute, +105°C / 30minute, 5 cycles.

(b). Initial, After Test THERMAL: Max. Circuit Resistance: 30 mΩ or below.

3.7.4 Humidity Test

After exposure of the plug and receptacle to a high humidity environment, the insulation resistance shall not be less than 500 MΩ. The dielectric withstanding voltage shall be greater than 600V AC for 1 minute.

The test shall be in accordance with EIA-364-31B.

(a). Test Condition: (40°C, 90-95% RH, 96 hrs).

3.7.5 Salt Spray

After exposure, the contact resistance shall not exceed that specified (see paragraph 3.6.3). The insulation resistance shall not be less than 500 MΩ (see paragraph 3.6.5). The dielectric withstanding voltage shall be greater than 600V AC for 1 minute (see paragraph 3.6.4).

The test shall be in accordance with EIA-364-26B, The following details shall apply:

(a). Test Condition: 35±2°C, 16 hrs, 5% NaCL.

(b). Special Handling: The mated sockets shall be mildly rinsed in water to remove salt residue and allowed to dry for 24 hours at room temperature before measurements are to be taken.

3.7.6 Resistance to Soldering Heat (Excluding the following materials: PBT)

There shall be no evidence of physical damage to the insulator or finished product when the unmated socket is subjected to the reflow soldering process. After exposure, the contact resistance shall not exceed that specified in paragraph 3.6.3.

The following details shall apply:

(a). Test Condition: Test connector shall be placed on the PCB.

(b). Pre-Heat Temperature: 100~150°C for 60 seconds Max.

(c). Temperature: Min. 210°C for 30 seconds Max.

(d). Peak Temperature: 260±5°C, 10±5sec.

3.7.7 Solderability Test

After exposure, the contact solder tails shall have a minimum of 95% solder coverage. The covered area must not show any evidence of voids or pinholes.

The test shall be in accordance with EIA-364-71B, the following details shall apply:

(a). Solder Dwell Time: Contacts shall be held above the solder for 3 to 5 seconds before being immersed in the solder.

(b). Test Condition: 245±3°C, 3~5sec.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 Inspection Conditions

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

(a). Temperature: 25±2°C.

(b). Relative Humidity: 30% to 70%.

(c). Barometric Pressure: Local Ambient.

4.2 Qualification Inspection

Qualification inspections shall be performed on sample units produced with production equipment.

4.2.1 Sample Selection

Connectors shall be prepared according to applicable instruction sheets. Samples shall be selected at random from current production. A total of 26 samples are required for the specified test sequence.

4.2.2 Test Sequence

The sample connectors shall be subjected to the inspections specified in the order shown.

Test Item	A	B	C	D	E	F	G	H
Sample Size	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Examination of Product	1,5	1,5	1,9	1,7	1,9	1,3	1,3	1,3
Terminal Resistance	2,4	2,4	2,8		2,8			
Insulation Resistance			3,7	2,5				
Dielectric Withstanding Voltage			4,6	3,6				
Temperature Life		3						
Humidity Test				4				
Thermal Shock	3							
Solderability								2
Resistance to Soldering Heat							2	
Insertion Force					3,6			
Unmating Force					4,7			
Contact Retention Force						2		
Durability					5			
Salt Spray			5					

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Revision details :-

Revision	Information	Page	Release Date
A	Specification released.	-	22/03/10
B	Clarified Underplating Information.	2	16/08/13
C	Amended tin plating thickness.	2	07/10/13