



PRODUCT SPECIFICATION

94103 SERIES SMT SIP SOCKET

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DOCUMENT NUMBER: PS-94103-005	CREATED / REVISED BY: S. BARBIERI	CHECKED BY: L. SANTESSO	APPROVED BY: F. BISELLO



PRODUCT SPECIFICATION

1.0 SCOPE

This specification outlines the technical and quality features of the SIP (Single-In-Line) sockets 94103 series suitable for reflow soldering (SMT) on Printed Circuit Board. The socket design allows top/bottom mating with devices having flat pin exit on a line at 2.0 mm centers.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND PART NUMBER

SMT SIP sockets belonging to the 94103 series.

2.2 COMPOSITION AND FUNCTION

The socket consists of stamped "double beam" contact terminals on 2.0 mm centers assembled into a plastic housing.

It provides the following features:

- ◆ SMT soldering tabs integral with the terminal structure
- ◆ contact terminals suitable for pins (with rounded edges) of the following dimensions:
 - 0.3 ± 0.05 mm thick,
 - 0.5 + 0 / - 0.1 mm width
- ◆ can be used both in top or bottom entry configuration
- ◆ large target area
- ◆ available versions: see drawing No. SD-94103-004
- ◆ packaging: tape and reel according to EIA 481
- ◆ suitable for PCB automatic assembly.

2.3 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

(See the appropriate Sales Drawings for information on dimensions, materials, platings, PCB layout, markings and packaging).

- { CONTACT MATERIAL: Phosphor Bronze CuSn 8 (C521) 0.15 mm thick.
- { PLASTIC BASE MATERIAL: PA 46, 30% G.F., black color, UL 94 V-0
- { PLATING: 4 µm tin direct on base material.

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3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

(See the Sales Drawings and the other sections of this Specification for the necessary referenced documents and specifications).

4.0 RATINGS

4.1 RATED VOLTAGE

125 Vac

4.2 RATED CURRENT

1 A max/circuit at 20 °C

4.3 TEMPERATURE

operating -40 °C to + 105 °C.

non operating -40 °C to + 120 °C.

4.4 HUMIDITY RANGE

10 to 80% RH.

5.0 PERFORMANCES

5.1 ELECTRICAL PERFORMANCES

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	20 mV open circuit, 10 mAdc. Measure points as close as possible to the contact area.	15 mohm MAX [initial]
2	Insulation Resistance	Measurement shall be performed after 60 seconds from voltage application - 500 Vdc - between adjacent contacts and between one contact and the remaining connected in parallel.	5000 Mohm MIN [initial]
3	Dielectric Withstanding Voltage	1000Vac (RMS) for 60 seconds, 50 Hz. Voltage application as indicated in item 2.	No breakdown.

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5.2 MECHANICAL PERFORMANCES

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	Functionality of the parts	<p>Visual control: inspection at 10X:</p> <p>Dimensional control:</p> <p>In addition the following checks shall be performed:</p> <ul style="list-style-type: none"> - Profile projector (20x) for contact shape - XRay fluorescence for plating thickness - Solder tabs coplanarity 	<p>The <u>HOUSING</u> shall not show cracks, short shots, flash exceeding 0.05 mm. The <u>CONTACTS</u> shall not be missing; deformations, plating and/or base material delaminations, surface corrossions, unplated areas, metallic bridges or protuberances between contacts, foreign particles in the contact cavities, burr (more than 0.03 mm) are not allowed.</p> <p><u>Parts</u> shall conform to the relevant manufacturing dwgs (first pcs control) or relevant inspection instructions sheets (in process control).</p> <ul style="list-style-type: none"> - per profile mask - per point 2.3 . 0.15 mm max
5	Contact insertion force	<p>Use a polished stainless steel gauge: the measurement is performed by the same steel gauge (see point 7.1). Before every measurement the steel gauge shall be cleaned to remove any residual of plating. Measurement speed: 2.5 mm/sec.</p>	0.9 N max/contact
6	Contact withdrawal force	<p>The measurement is performed by a tin plated gauge (plating thickness: 4 μm +/- 2 μm) (see point 7.1). The gauge shall be replaced after every measurement. Measurement speed: 2.5 mm/sec.</p>	0.25 N min/contact

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ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
7	Mating cycles	Parts shall be subjected to 20 mating cycles using the above mentioned gauges. Measurements of insertion/withdrawal forces shall be recorded initially, after 2 - 5 - 10 and 20 cycles.	No damages and/or total plating removal shall occur Insertion and w/d forces shall be within the limits. Contact resistance change: + 10 mohms max from initial.
8	Contact retention force in the housing	Measurements are performed pushing the contacts from the top and recording the force when the contact moves, without warping or deformation.	2N min.
9	Vibration (sine)	Parts shall be soldered to a rigid PCB and mated with the specific device in use (or equivalent). Test shall be run according to FORD Specification 00.00EA-D11, No. 4.6.1, Class I (mild), Method B, requirement No. 4.6.1.1 (endurance). Vibration severity as follows: - frequency range: from 5 Hz to 200 Hz to 5 Hz - vibration levels: - from 5 Hz to 17.3 Hz, constant displacement 10 mm pk-pk - from 17.3 Hz to 100 Hz, acceleration 6 g's - from 100 Hz to 200 Hz, acceleration 1.5 g's - sweep type: logarithmic - time per sweep: 20 minutes total - vibration planes: 3 mutually perpendicular - number of sweeps per axis: 18 - durations: 18 hours total - total No. of sweeps: 54	Maximum of 1 μ sec of electrical discontinuity. After the test: - no mechanical damages - contact resistance 1.5 times initial max - other electrical characteristics within the limits

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5.3 ENVIRONMENTAL PERFORMANCES

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
10	Thermal cycling	Parts, both in mated and unmated condition, shall be subjected, according to IEC 68-2-14 Test Na, to the following temperature cycles (5 cycles): - 30 minutes at - 40 °C - 5 minutes at + 25 °C - 30 minutes at +105 °C - 5 minutes at + 25 °C	- Contact Resistance change: + 10 mohm max from the initial
11	Damp heat test	Parts, both in mated and unmated condition, shall be subjected for 21 days to this test, according to IEC 68-2-3 Test Ca.	- No corrosion of the plating and deformations of the housing. - Contact Resistance change: + 10 mohms max from initial
12	Solderability test	Test shall be run according to MIL STD 202E, method 208C with the following details: - Solder pot molten alloy: 63/37 SnPb - Flux: RMA type. - Solder bath temperature: 230 ± 10 °C. - Dwell time, in solder bath: 5÷6 sec - Immersion/removal rate: 25 ± 5 mm per sec	After the test: - solder coating shall be uniform and bright - 95% (at least) of the surface shall be wetted - no damages to the contact and the housing
13	Resistance to solder heat (I.R. Process Soldering)	Parts shall withstand the following I.R. reflow soldering conditions twice: - total cycle time 12 min - peak temperature 230 °C for 30 s - max temperature gradient (heating and cooling) 0.6 °C/s - air and/or nitrogen atmosphere See temperature profile in attachment A	No degradation in performance. No blistering of the body surface.

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6.0 PACKAGING

Sockets shall be Tape & Reel packed, according to EIA 481 (see the relevant SD dwgs for dimensional details).

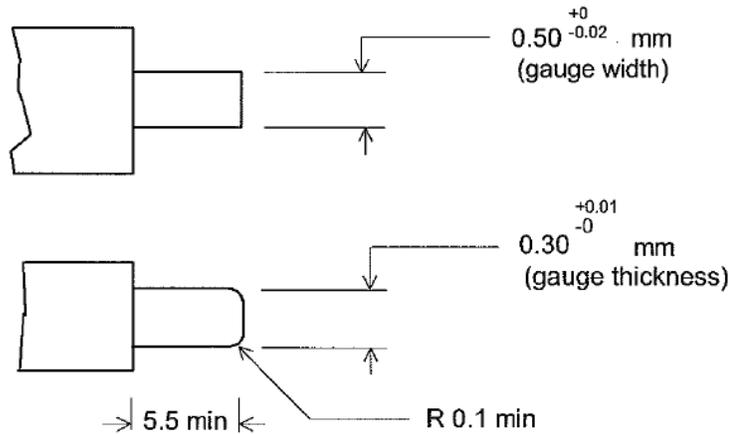
Each pkg unit shall be marked with:

- manufacturer name
- part number
- quantity
- lot and manufacturing date

7.0 GAUGES AND FIXTURES

7.1 INSERTION-WITHDRAWAL MEASURE GAUGE

Measurements shall be performed using polished stainless steel gauges of the following dimensions:



(Roughness Ra = 0.10 μ m max)

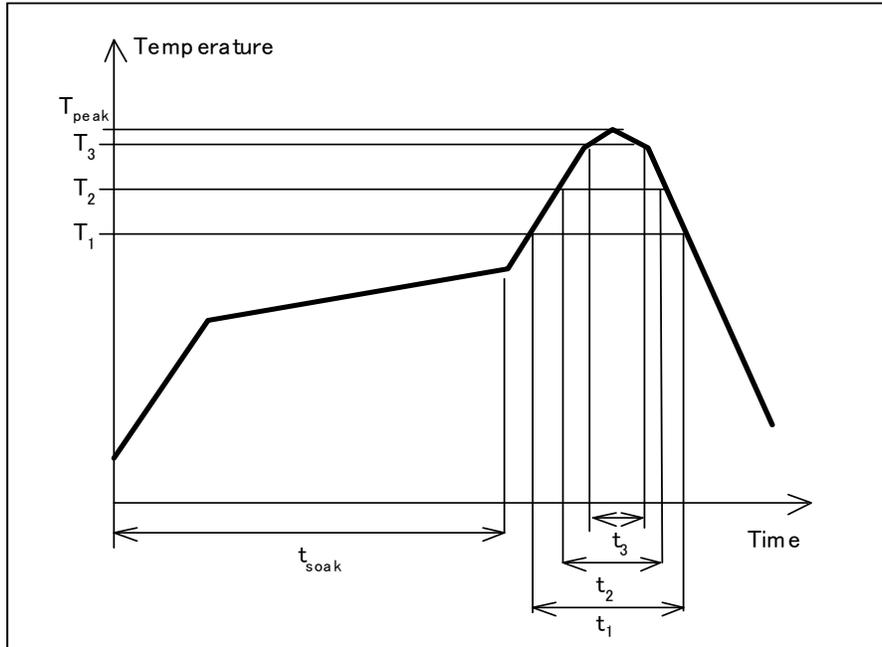
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ATTACHMENT A

TEMPERATURE REFLOW PROFILE FOR HEAT RESISTANCE TEST



Pb-free reflow profile requirements for soldering heat resistance

Parameter	Reference	Specification
Average temperature gradient in preheating		2.5°C/s
Soak time	t _{soak}	2-3 minutes
Time above 217°C	t ₁	Max 60 sec
Time above 230°C	t ₂	Max 50 sec
Time above 250°C	t ₃	Max 10 sec
Peak temperature in reflow	T ₂	255°C (-0/+5°C)
Temperature gradient in cooling		Max -6°C/s

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