



MACRONIX INTERNATIONAL CO., LTD.

Product/Process Change Notice

PCN # P-1510-0005

Date: 2015/11/26

Dear Customer:

Please be informed that Macronix is going to implement a process change; transferring the molding compound from Sumitomo G631 to Sumitomo EME-G700 for LINGSEN 48TSOP package products to avoid compound shortage in the future. Sumitomo EME-G700 compound is LINGSEN's standard molding compound and used by most of LINGSEN's customers. Some Macronix's 48TSOP products also use Sumitomo EME-G700 compound for production.

The detailed information about this change is described in the following pages. This process change has passed Macronix' qualification based on JEDEC standard, and the qualification report is attached below.

If you have any questions, concerns, or requests about this change, please contact your local Macronix Sales Representatives within 30 days, otherwise Macronix will assume customer received the PCN with no comments and the change is acceptable to the customer. Macronix follows JEDEC standards, in JESD-46D, it stipulates: ".....Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change".

Thank you.

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(Note: For the customers who receive Macronix PCNs via distributors, Macronix will assist the distributors to convey the PCNs to the customers. It is each distributor's responsibility to communicate and track the responses of each customers and report back to Macronix, the distributor shall assume full responsibilities if failed to do so.)

PCN No.: P-1510-0005

Issue Date : 2015/11/26

Subject: Molding compound change from Sumitomo G631 to Sumitomo EME-G700 for LINGSEN 48TSOP package products.

Change Category :Assembly Material (Molding compound)

Affected Products:

MX29LV160DBTI-70G, MX29LV160DTTI-70G, MX29LV320DBTI-70G, MX29LV320DTTI-70G
MX29LV320EBTI-70G, MX29LV320ETTI-70G, MX29LV321DTTI-90G, MX29LV640EBTI-70G
MX29LV640ETTI-70G, KH29LV160DBTC-70G

Reason of Change:

Avoid shortage of molding compound.

Before Change :

Molding compound: Sumitomo G631

After Change :

Molding compound: Sumitomo EME-G700

Assessment of Change:

1. No impact on Fit, Form, Function, Quality and Reliability.
2. The new 48TSOP molding compound material passed internal Macronix's qualification based on JEDEC MSL level 3 standard (refer to attached package qualification report) and is also Halogen-Free, and meets RoHS compliance (European RoHS Directive . 2011/65/EU).

Schedule:

CS Sample available: 2015/11/1

Mass production: 2016/1/31



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LINGSEN 48L TSOP(I) Package Qualification Report

1. PURPOSE:

To qualify new molding compound material for 48TSOP package at LINGSEN.

2. PACKAGE PROFILE:

ASSEMBLY HOUSE	LINGSEN
PACKAGE	48L TSOP(I) (12x20 mm)
DIE SIZE	3502 x 5144 μm^2
DIE ATTACH	Sumitomo CRM-1076WA
LEAD FRAME	Copper
WIRE BOND MATERIAL	Au
MOLD COMPOUND	Sumitomo EME-G700
LEAD FINISH	Matte Sn

3. QUALIFICATION ITEMS, TEST CONDITIONS, AND TEST FLOW:

3-1. QUALIFICATION ITEMS:

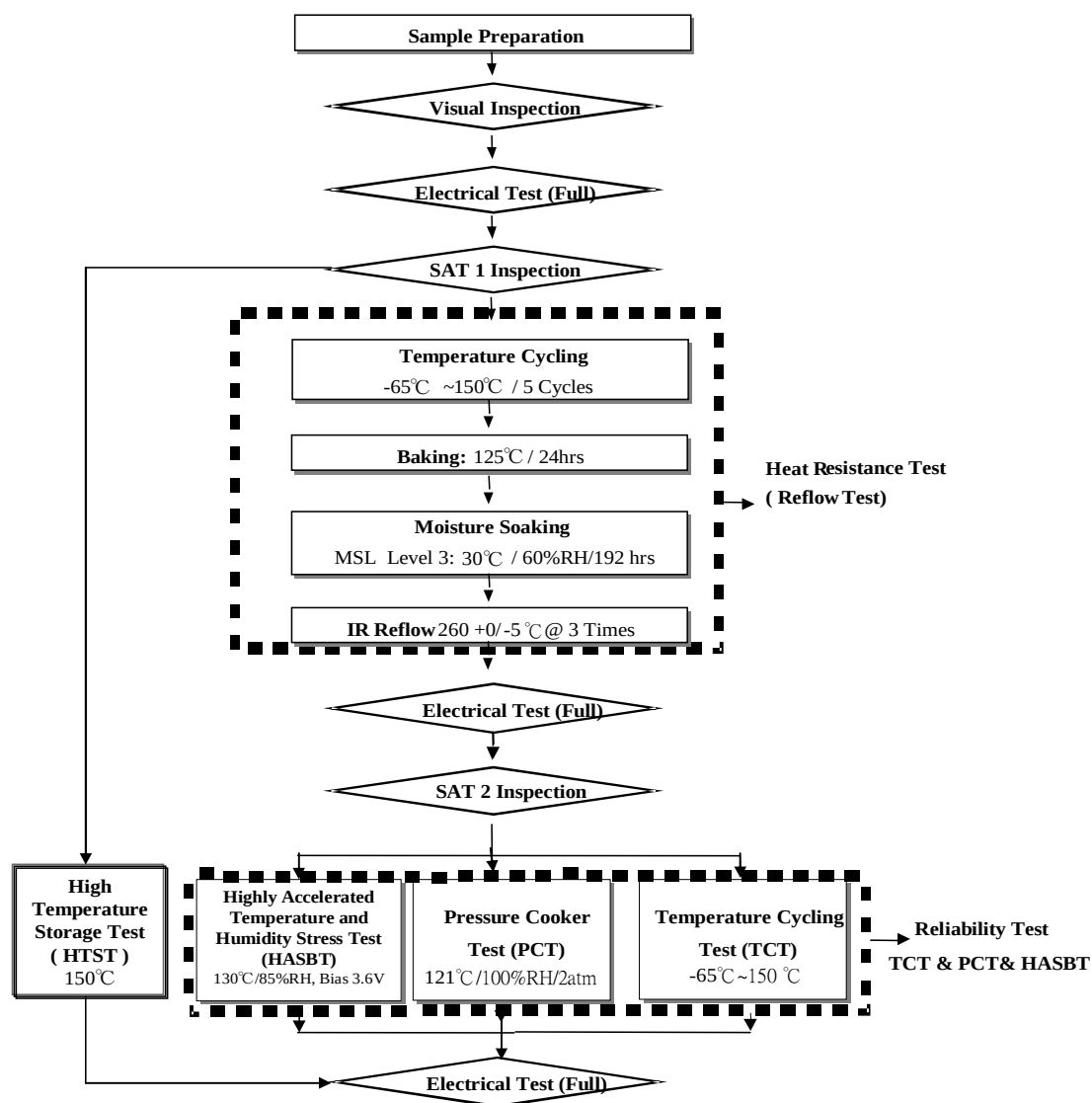
Test Item	Reference	Test Condition
1. Heat Resistance Test: Reflow Test	JEDEC J-STD-020	MSL: Follow JEDEC MSL Level 3 (30°C / 60%RH, 192hrs)
2. Pressure Cooker Test	JESD22-A102	121°C / 100%RH/2 atm
3. Temperature Cycling Test	JESD22-A104	-65°C ~150°C
4. Highly Accelerated Temperature and Humidity Stress Test	JESD22-A110	130°C / 85% RH, Bias: 3.6V
5. High Temperature Storage Test	JESD22-A103	@150°C
6. Solderability Test	JESD22-B102	■ Steam aging 8hrs & Dipping Time $\leq$ 5sec ■ Sn-Ag-Cu solder paste: 245°C ■ Sn-Pb solder paste: 235°C

*** Perform SAT examination before and after Preconditioning per JESD22-A112.**



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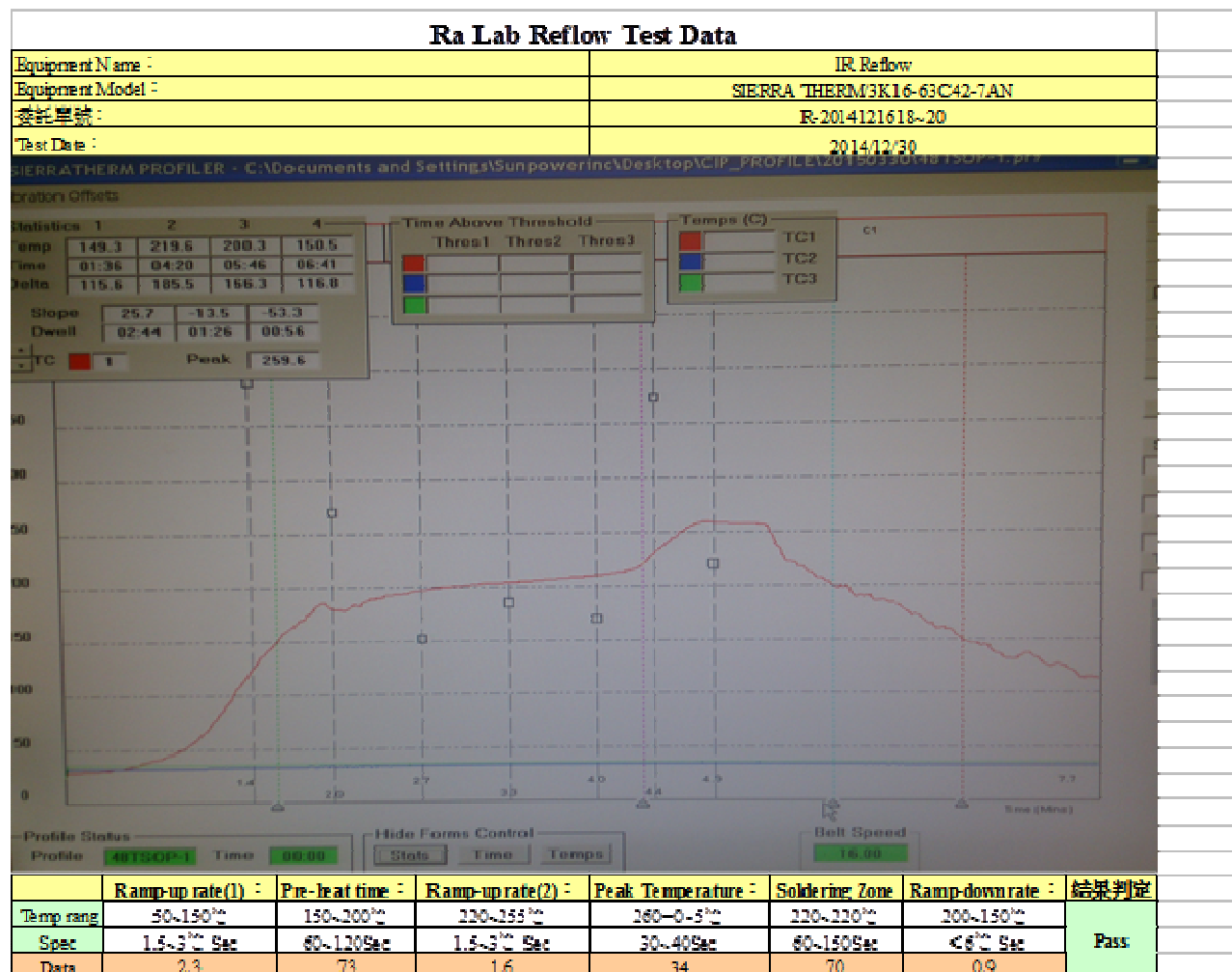
3-2. HEAT RESISTANT TEST (REFLOW TEST) AND RELIABILITY TEST FLOW





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3-2-1 REFLOW PROFILE:



Note 1: Subject the samples to 3 cycles of the above defined reflow conditions

Note 2: Time 25°C to peak temperature: 8 minutes max.

Note 3: The time between reflows shall be 5 minutes minimum and 40 minutes maximum.

3-2-2. CRITERIA:

LTPD= 3%, PCT 96 hours and TCT 500 cycles & HASBT 96 hours & HTST 500 hours.

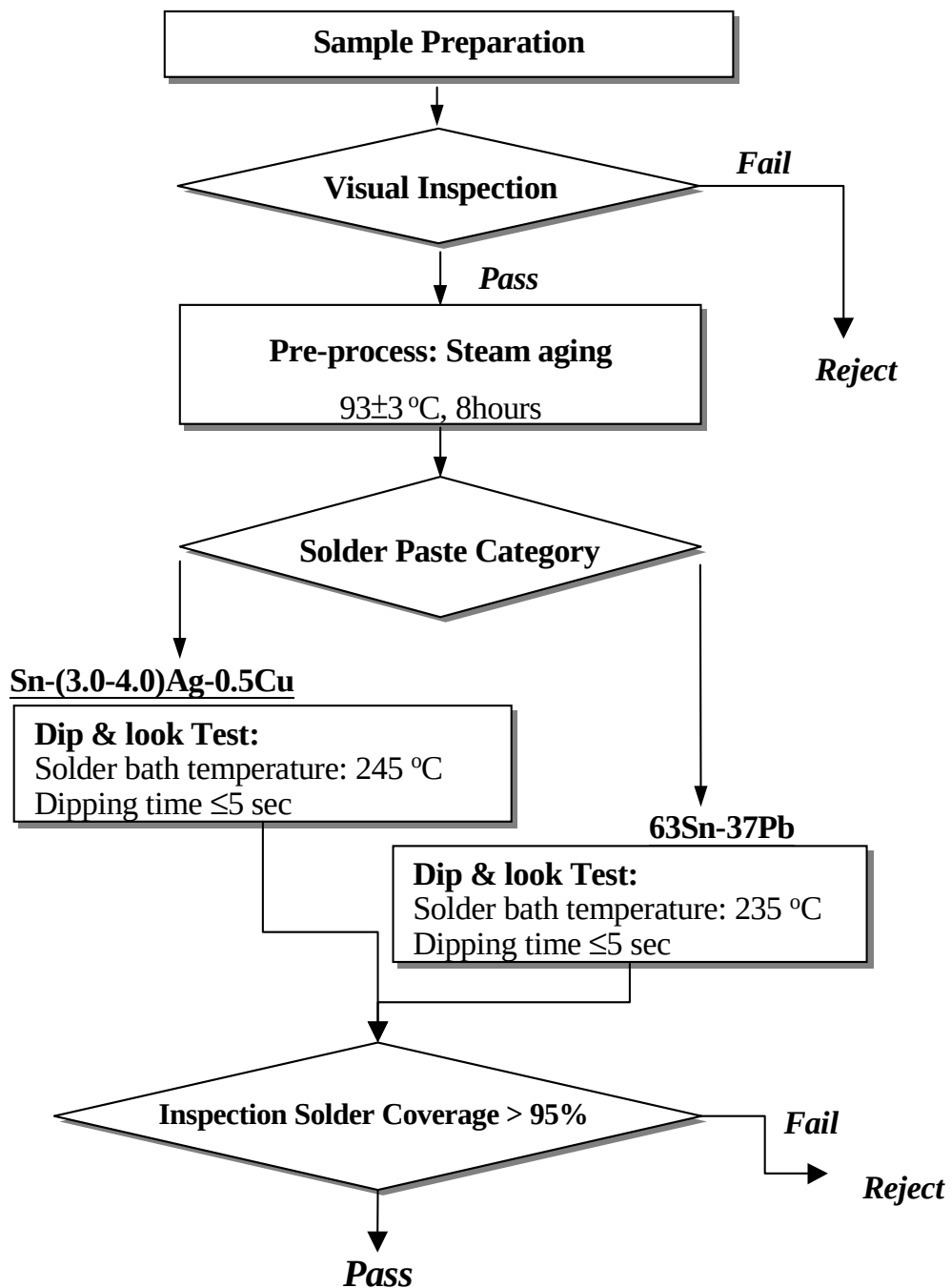
3-2-3. REFERENCE SPECIFICATION:

5650-0901: ASSYMBLY RELIABILITY QUALIFICATION SPEC



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3-3. SOLDERABILITY TEST FLOW





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4. RESULTS:

4-1. HEAT RESISTANCE TEST and RELIABILITY TEST RESULTS:

PRODUCT	6310		
LOT#	8B683000B8-1	8B683000B8-2	8B683000B8-3
DATE CODE	L1509	L1509	L1510
SAT 1	0/22	0/22	0/22
PRECON	0/250	0/250	0/250
SAT 2	0/22	0/22	0/22
PCT 96 HRS	0/77	0/77	0/77
TCT 500 CYC	0/77	0/77	0/77
HASBT 96 HRS	0/77	0/77	0/77
HTST 500 HRS	0/45	0/45	0/45

FAIL / SAMPLE SIZE

4-2. SOLDERABILITY TEST RESULTS:

Matte Sn Plating

Plating Material	Matte Sn		
Solder Paste Material	Sn-(3.0-4.0)Ag-0.5Cu		
INSPECTION	0/5	0/5	0/5

FAIL / SAMPLE SIZE

Plating Material	Matte Sn		
Solder Paste Material	63Sn-37Pb		
INSPECTION	0/5	0/5	0/5

FAIL / SAMPLE SIZE

4-3. CONCLUSION:

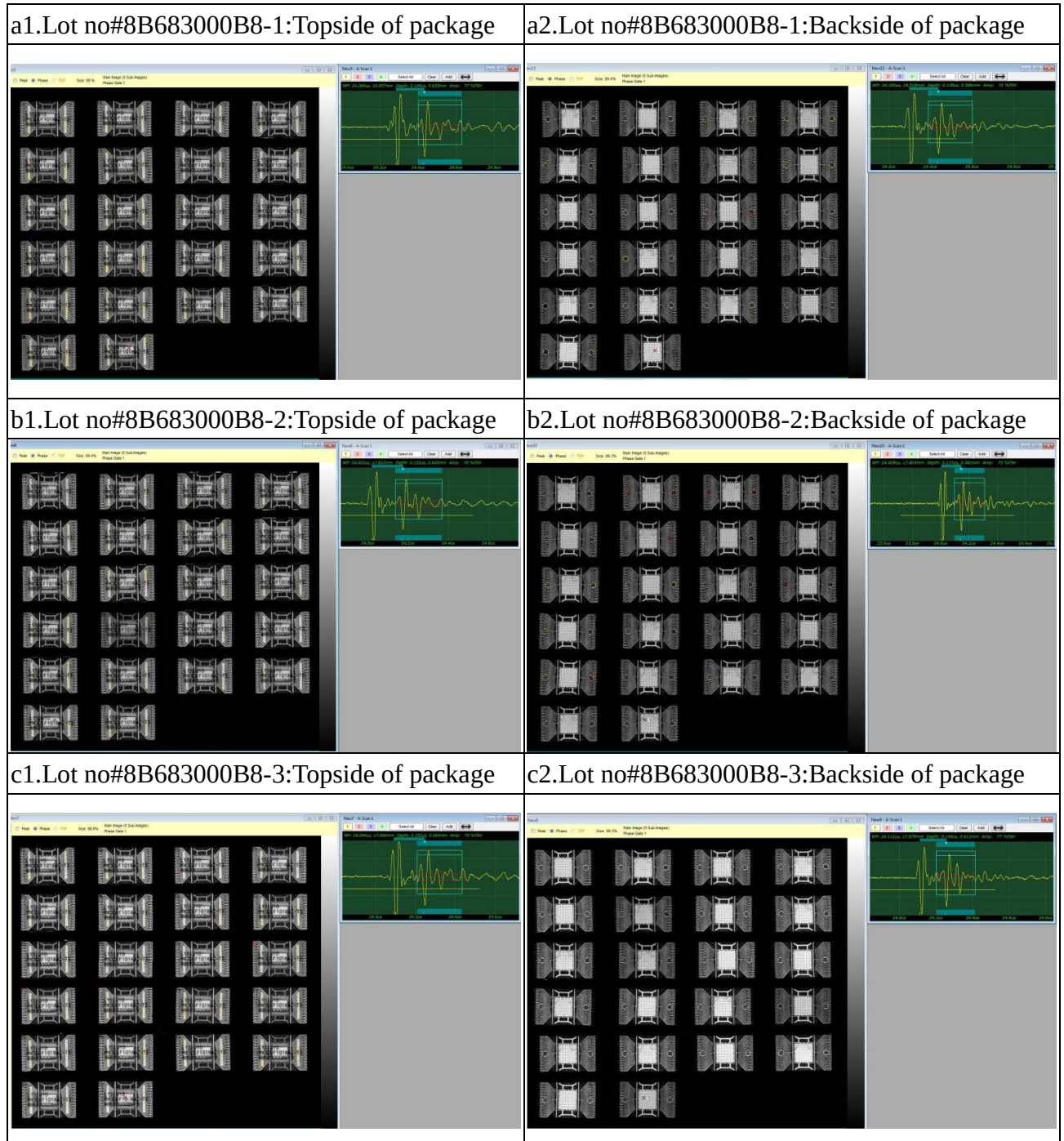
LINGSEN 48L TSOP package with Sumitomo EME-G700 compound passed Macronix qualification.



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5. SAT Photo:

5-1 Before Pre-Condition (SAT1)





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5-2. After Pre-Condition (SAT2)

