
IT3D(M)-300S-BGA (37) Lead-Free
CROSS SECTION TEST REPORT

- Post 6000 cycles Report -

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HIROSE ELECTRIC

[1] Objective

To evaluate SnCu intermetallic at BGA joints by cross sectioning initial state and post 6000 thermal cycle in accordance with IPC-9701.

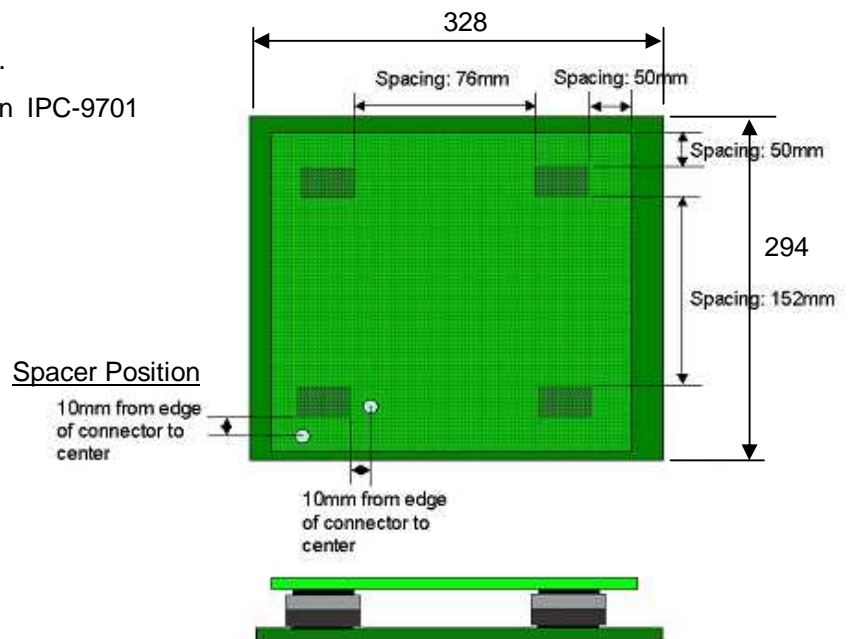
[2] Specimens

No.	Product Name	State	Solder paste	Assembly
1	IT3M-300S-BGA (37) Lead Free	Initial	No clean	Virgin Assembly
2				Reworked
3			Water Soluble	Virgin Assembly
4				Reworked
5		Post 6000 cycle	No clean	Virgin Assembly
6				Reworked
7			Water Soluble	Virgin Assembly
8				Reworked

	Virgin	Reworked
Solder Ball on Connector	Sn-3.0Ag-0.5Cu	Sn-3.0Ag-0.5Cu

Remarks

- *Specimens are assembled as Fig.1.
- *The test board design is based on IPC-9701 specification.
- *Thickness of the PCB: 3.3mm



[3] Test Period

From July 16, 2008 to January 20, 2009

Cross Sectioning

1. Requirements

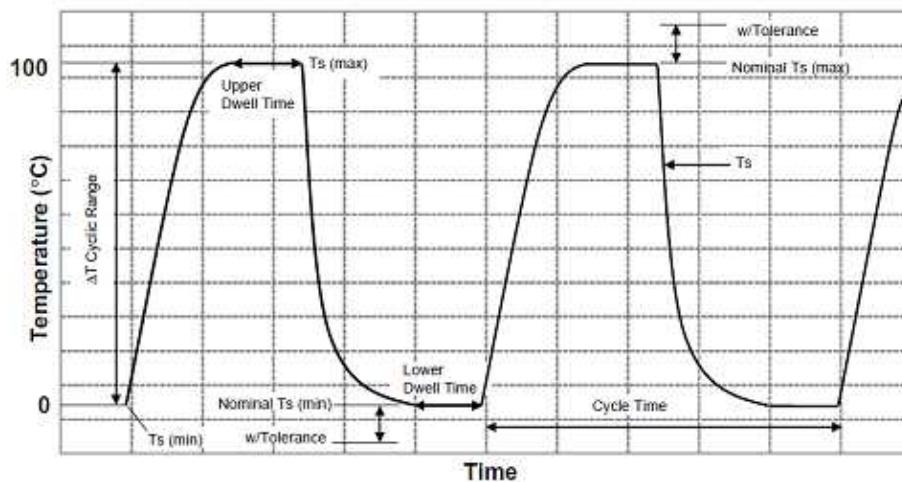
SnCu intermetallic is observed at 'the solder to connector pin interface' and 'the solder to pad interface'.

2. Conditions

2-1 Test condition

□ Thermal cycle profile:

- $T_{max} = 100\text{ }^{\circ}\text{C}$ (+10 / 0 $^{\circ}\text{C}$)
- $T_{min} = 0\text{ }^{\circ}\text{C}$ (0 / -10 $^{\circ}\text{C}$)
- Ramp rate = Approximately 10 $^{\circ}\text{C}/\text{min}$ (10% to 90% of test temperature range)
- Dwell time = 5 to 10 min (Holding time of maximum and minimum temperature)

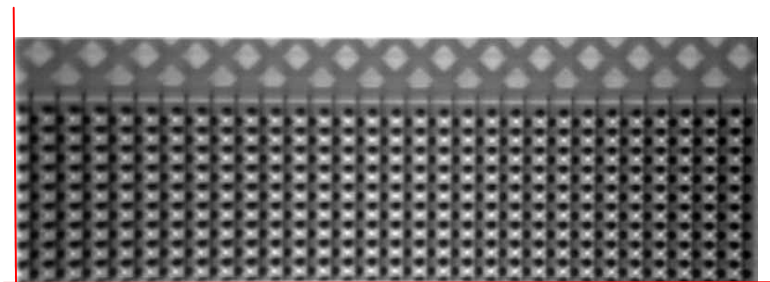


- Number of cycles : 6000
- For details, please refer to IPC-9701 and JESD22-A-104-B.

2-2 Cross Sectioning Locations

1st Column of Solder Joints

Pin 1 Side

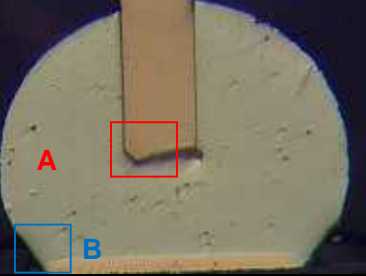




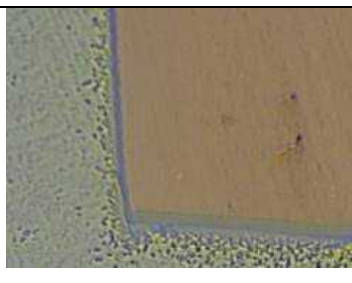
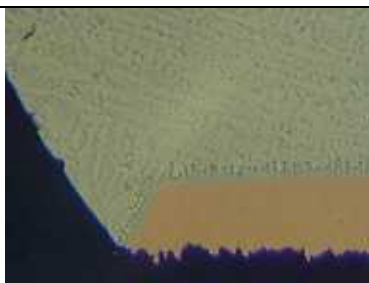


1st Row of Solder Joints

3. Results

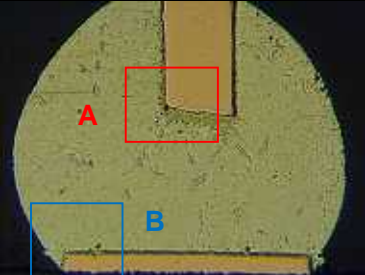
Typical SnCu intermetallic was observed in all specimens.



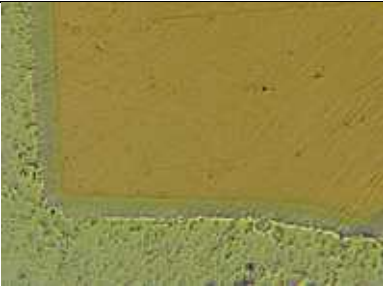
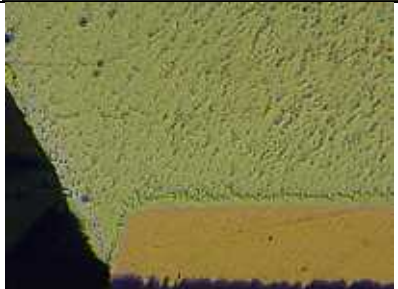


■ Initial

Representative Cross Section		
(Cross Section)	A	B
3-1: No clean, Virgin Assembly		
3-2: No clean, Reworked		
3-3: Water Soluble, Virgin Assembly		

3-4: Water Soluble, Reworked		
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■ Post 6000 cycles

Representative Cross Section		
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(Cross Section)	A	B
3-1: No clean, Virgin Assembly		
3-2: No clean, Reworked		
3-3: Water Soluble, Virgin Assembly		

<p>3-4: Water Soluble, Reworked</p>		
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