# Anti-whisker formation of leadfree plating

1. The Applicable Product

BR93G56NUX-3BTTR

2. Evaluation Package

| No | Item | Information |
|---|---|---|
| 1 | Subject | LSI product of Leadfree plating |
| 2 | Type of Terminal Plating | Sn |
| 3 | Plating Grain Size | 2μm to 10μm |
| 4 | Bath type | Alkyl sulfonic acid, Electro plating |
| 5 | Matt or Bright | Matt |
| 6 | Under Plating | None |
| 7 | Type of Frame | Cu Alloy frame |

3. Compliance standerds

Tin Whisker Acceptance Test Requirements (NEMI Tin Whisker Users Group, July 28, 2004)

4. Test Flow

| No | Test Flow | Test Condition |
|---|---|---|
| 1 | Preparation | M.P. condition |
| 2 | Pre Inspection | SEM x 250, Top/Side/Forming Section |
| 3 | Preconditioning-1 | Storage at ambient temp. for 4 weeks |
| 4 | Preconditioning-2 | 215°C Reflow, 255°C Reflow |
| 5 | Applying Stress | 1. 30°C, 70% RH, 4,000hr<br>2. 60°C, 87% RH, 4,000hr<br>3. -55/+85°C, 2,000cyc<br>4. 30°C, 70%, Bias, 4,000hr |
| 6 | Screening Inspection | x 50, Top/Side/Forming Section |
| 7 | Detailed Inspection | SEM x 250, Top/Side/Forming Section |

5. Test Result

Criteria : Not allow, the whisker is larger than 40μm between lead to lead.

| No | Preconditioning-1 | Preconditioning-2 | Stress Condition | Result:Pn/n (pcs) |
|---|---|---|---|---|
| 1 | Storage at ambient temprature. 4 weeks | None | 30°C, 70% RH 4,000hr | 0 / 96 |
| 2 | | | 60°C, 87% RH 4,000hr | 0 / 96 |
| 3 | | 215°C Reflow Simulation | 30°C, 70% RH 4,000hr | 0 / 96 |
| 4 | | | 60°C, 87% RH 4,000hr | 0 / 96 |
| 5 | | 255°C Reflow Simulation | 30°C, 70% RH 4,000hr | 0 / 96 |
| 6 | | | 60°C, 87% RH 4,000hr | 0 / 96 |
| 7 | | 215°C Reflow Simulation | –55/+85°C 2,000cyc | 0 / 96 |
| 8 | | 255°C Reflow Simulation | –55/+85°C 2,000cyc | 0 / 96 |
| 9 | | 215°C Reflow Assembly | 30°C, 70%, Bias 4,000hr | 0 / 96 |

**Therefore, wisker is no problem.**

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