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# **Cypress Semiconductor Package Qualification Report**

**QTP 092205 VERSION \*C  
August 2014**

**44 Lead TSOP II (2-Die Stack)  
Pure Sn, MSL3, 260C Reflow  
ASE-Taiwan (G)**

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT  
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**PACKAGE QUALIFICATION HISTORY**

| <b>Qual Report</b> | <b>Description of Qualification Purpose</b>  | <b>Date Comp</b> |
|--------------------|--|------------------|
| 092205             | Larger Die Qualification for 44L TSOPII Stack Die Packages assembled in ASE-Taiwan using FH-900 Tape Film Die Attach Material, HITACHI CEL9200 THF mold compound, Pure Sn lead finish, Moisture Sensitivity Level 3, 260C solder reflow temperature. | Sep 09           |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION |                           |
|--|---------------------------|
| Package Designation:                                 | 44-Lead TSOP II           |
| Package Outline, Type, or Name:                      | 4L-TSOP II in 2-Die Stack |
| Mold Compound Name/Manufacturer:                     | CEL-9200THF-U / Hitachi   |
| Mold Compound Flammability Rating:                   | UL-94                     |
| Mold Compound Alpha Emission Rate :                  | N/A                       |
| Oxygen Rating Index:                                 | N/A                       |
| Leadframe Material:                                  | Alloy 42                  |
| Lead Finish, Composition / Thickness:                | Pure Sn                   |
| Die Backside Preparation Method/Metallization:       | Backgrinding              |
| Die Separation Method:                               | Saw                       |
| Die Attach Supplier:                                 | Hitachi                   |
| Die Attach Material:                                 | FH-900-25                 |
| Die Attach Method:                                   | Film Tape                 |
| Wire Bond Method:                                    | Thermosonic               |
| Wire Material/Size:                                  | Au / 1.0 mil              |
| Thermal Resistance Theta JA °C/W:                    | N/A                       |
| Package Cross Section Yes/No:                        | Yes                       |
| Assembly Process Flow:                               | 001-17644                 |
| Name/Location of Assembly (prime) facility:          | ASE-Taiwan (G)            |
| MSL Level  | 3                         |
| Reflow Profile                                       | 260C                      |

| ELECTRICAL TEST / FINISH DESCRIPTION |             |
|--------------------------------------|-------------|
| Test Location:                       | CML-R, KYEC |

## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

| Stress/Test                             | Test Condition (Temp/Bias)  | Result<br>P/F |
|---|---|---------------|
| High Accelerated Saturation Test (HAST) | JEDEC STD 22-A110: 130 C, 85%RH, 3.3V<br>Precondition: JESD22 Moisture Sensitivity Level<br>(192 Hrs., 30 C°, 60% RH, 260C Reflow)                  | P             |
| Pressure Cooker Test                    | JESD22-A102:121 C, 100%RH, 15 PSIG<br>Precondition: JESD22 Moisture Sensitivity Level<br>(192 Hrs., 30 C°, 60% RH, 260C Reflow)                     | P             |
| Temperature Cycle                       | MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C<br>Precondition: JESD22 Moisture Sensitivity Level<br>(192 Hrs., 30 C°, 60% RH, 260C Reflow) | P             |
| High Temp Storage                       | JESD22-A103 :150 C, no bias   | P             |
| Acoustic Microscopy                     | J-STD-020<br>Precondition: JESD22 Moisture Sensitivity Level<br>(192 Hrs., 30 C°, 60% RH, 260C Reflow)  | P             |
| Ball Shear                              | JESD22-B116A, Cpk : 1.33, Ppk : 1.66  | P             |
| Bond Pull                               | MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66   | P             |
| Constructional Analysis                 | Criteria: Meet external and internal characteristics of Cypress package   | P             |
| Dye Penetrant Test                      | Test to determine the existence and extent of cracks,<br>Criteria: No Package Crack   | P             |
| Internal Visual                         | MIL-STD-883-2014  | P             |
| Final Visual Inspection                 | JESD22-B101B  | P             |
| Thermal Shock                           | MIL-STD-883C, Method 1011, Condition B, -55 C to 125C<br>and JESD22-A106B, Condition C, -55 C to 125C   | P             |
| X-Ray                                   | MIL-STD-883 - 2012  | P             |

## Reliability Test Data

QTP #: 092205

| Device   | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|--|-----------|------------|----------|----------|------|-----|-------------------|
| <b>STRESS: ACOUSTIC, MSL3</b>  |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | COMP     | 15   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4839870   | 610904599  | TAIWAN-G | COMP     | 15   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4844914   | 610916942  | TAIWAN-G | COMP     | 15   | 0   |                   |
| <b>STRESS: BALL SHEAR</b>  |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4844914   | 610916942  | TAIWAN-G | COMP     | 10   | 0   |                   |
| <b>STRESS: BOND PULL</b>   |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4844914   | 610916942  | TAIWAN-G | COMP     | 20   | 0   |                   |
| <b>STRESS: CONSTRUCTIONAL ANALYSIS</b>   |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | COMP     | 5    | 0   |                   |
| <b>STRESS: DYE PENETRATION TEST</b>  |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | COMP     | 15   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4839870   | 610904599  | TAIWAN-G | COMP     | 15   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4844914   | 610916942  | TAIWAN-G | COMP     | 15   | 0   |                   |
| <b>STRESS: HIGH TEMP STORAGE</b>   |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 500      | 80   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 1000     | 80   | 0   |                   |
| <b>STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.3V), PRE COND 192 HR 30C/60%RH, MSL3</b> |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 128      | 80   | 0   |                   |
| <b>STRESS: INTERNAL VISUAL</b>   |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | COMP     | 5    | 0   |                   |
| <b>STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3</b>           |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 168      | 80   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 288      | 80   | 0   |                   |
| <b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3</b>                     |           |            |          |          |      |     |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 500      | 80   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4847673   | 610907084  | TAIWAN-G | 1000     | 80   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4839870   | 610904599  | TAIWAN-G | 500      | 77   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4839870   | 610904599  | TAIWAN-G | 1000     | 77   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4844914   | 610916942  | TAIWAN-G | 500      | 77   | 0   |                   |
| CY14B108L (7C1408B8BC)   | 4844914   | 610916942  | TAIWAN-G | 1000     | 77   | 0   |                   |

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## Reliability Test Data

QTP #: 092205

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|--------|-----------|------------|----------|----------|------|-----|-------------------|
|--------|-----------|------------|----------|----------|------|-----|-------------------|

**STRESS: THERMAL SHOCK**

|                        |         |           |          |     |    |   |  |
|------------------------|---------|-----------|----------|-----|----|---|--|
| CY14B108L (7C1408B8BC) | 4847673 | 610907084 | TAIWAN-G | 200 | 80 | 0 |  |
|------------------------|---------|-----------|----------|-----|----|---|--|

|                        |         |           |          |      |    |   |  |
|------------------------|---------|-----------|----------|------|----|---|--|
| CY14B108L (7C1408B8BC) | 4847673 | 610907084 | TAIWAN-G | 1000 | 80 | 0 |  |
|------------------------|---------|-----------|----------|------|----|---|--|

**STRESS: X-RAY**

|                        |         |           |          |      |    |   |  |
|------------------------|---------|-----------|----------|------|----|---|--|
| CY14B108L (7C1408B8BC) | 4844914 | 610916942 | TAIWAN-G | COMP | 15 | 0 |  |
|------------------------|---------|-----------|----------|------|----|---|--|

## Document History Page

Document Title: QTP 092205: 44 LEAD TSOP II (2-DIE STACK) PURE SN, MSL3, 260C REFLOW ASE-TAIWAN (G)  
Document Number: 001-71490

| Rev. | ECN No. | Orig. of Change | Description of Change  |
|------|---------|-----------------|--|
| **   | 3318914 | NSR             | Initial spec release   |
| *A   | 3682038 | NSR             | Added reference Industry standards in reliability tests performed and removed all the reference Cypress specs.<br>Removed version 1.0 in the QTP 092205 in the title page. |
| *B   | 4079890 | HSTO            | Deleted obsolete cypress specifications 001-41579<br>Updated test location facility based on current qualified test site.  |
| *C   | 4462875 | HSTO            | Align qualification report based on the new template in the front page   |

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