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Cypress Semiconductor Automotive Package Qualification Report

QTP# 093602 VERSION*A
October 2014

**Automotive 32-Lead TSOP II
(11.5 x20.8x1.2mm)
Pure Sn, MSL3, 260C Reflow
OSE-Taiwan (T)**

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

| Qual Report | Description of Qualification Purpose | Date Comp |
|--------------------|---|------------------|
| 093602 | Qualify Automotive Package 32-Lead TSOP II using device 7A1319G, Cel 9200THF Mold Compound, Ablestik 8340 DA Epoxy , Pure Sn, MSL3/260C, OSE-Taiwan (T) | Sep 09 |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|--|------------------------|
| Package Designation: | ZW32A |
| Package Outline, Type, or Name: | 32-Lead TSOP II |
| Mold Compound Name/Manufacturer: | CEL 9200THF/ Hitachi |
| Mold Compound Flammability Rating: | V-O per UL94 |
| Mold Compound Alpha Emission Rate: | Maximum 0.005 C/cm2.hr |
| Oxygen Rating Index: | 50% |
| Lead Frame Material: | Copper |
| Lead Finish, Composition / Thickness: | Pure Sn |
| Die Backside Preparation Method/Metallization: | Backgrind |
| Die Separation Method: | Sawing |
| Die Attach Supplier: | Ablestik |
| Die Attach Material: | 8340 |
| Die Attach Method: | Epoxy |
| Bond Diagram Designation: | 001-54166 |
| Wire Bond Method: | Thermosonic |
| Wire Material/Size: | Au, 1.0mil |
| Thermal Resistance Theta JA °C/W: | 68.67°C/W |
| Package Cross Section Yes/No: | Yes |
| Assembly Process Flow: | 49-35029 |
| Name/Location of Assembly (prime) facility: | OSE-Taiwan (T) |
| MSL Level: | 3 |
| Reflow Profile: | 260C |

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

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

| Stress/Te st | Test Condition | Result P/F |
|---|--|---------------|
| High Accelerated Saturation Test (HAST) | JESD22-A110, 130C, 5.5V, 85%RH Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C | P |
| High Temperature Storage Life Test | JESD22-A103, 150 C | P |
| Temperature Cycle | JESD22-A104, -65°C to 150°C Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C | P |
| Pressure Cooker | JESD22-A102, 121C, 100%RH, 15 Psig Precondition: JESD22-A113 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 260°C+0, -5°C | P |
| Acoustic Microscopy | JEDEC JSTD-020 | P |
| External Visual | MIL-PRF-38535, MILSTD-883, METHOD 2009 | P |
| Solderability | JESD22-B102, | P |

Reliability Test Data

QTP #:093602

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

STRESS: ACOUSTIC, MSL3

| | | | | | | | |
|---------------------------|---------|-------------|----------|------|----|---|--|
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | COMP | 15 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | COMP | 15 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M1 | T-TAIWAN | COMP | 15 | 0 | |
| CY62167DV30LL (7C62164DC) | 4330158 | 610349238 | T-TAIWAN | COMP | 15 | 0 | |
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | COMP | 15 | 0 | |
| CY62148ELL (7C62148FC) | 4736832 | 610761852 | T-TAIWAN | COMP | 15 | 0 | |
| CY7C1019D (7C1019NC) | 4709988 | 610743323 | T-TAIWAN | COMP | 15 | 0 | |

STRESS: EXTERNAL VISUAL

| | | | | | | | |
|-----------------------|---------|------------|----------|------|----|---|--|
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | COMP | 15 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | COMP | 15 | 0 | |

STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3

| | | | | | | | |
|------------------------|---------|-----------|----------|-----|----|---|--|
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | 168 | 46 | 0 | |
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | 168 | 80 | 0 | |
| CY62148ELL (7C62148FC) | 4736832 | 610761852 | T-TAIWAN | 168 | 80 | 0 | |
| CY7C1019D (7C1019NC) | 4709988 | 610743323 | T-TAIWAN | 168 | 80 | 0 | |

STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 5.5V, PRE COND 192 HR 30C/60%RH, MSL3

| | | | | | | | |
|------------------------|---------|------------|----------|-----|----|---|--|
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | 128 | 50 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | 128 | 45 | 0 | |
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | 128 | 80 | 0 | |
| CY62148ELL (7C62148FC) | 4736832 | 610761852 | T-TAIWAN | 128 | 72 | 0 | |

STRESS: HIGH TEMPERATURE STORAGE LIFE TEST, 150C

| | | | | | | | |
|------------------------|---------|-----------|----------|------|----|---|--|
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | 500 | 80 | 0 | |
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | 1000 | 80 | 0 | |

STRESS: SOLDERABILITY

| | | | | | | | |
|-----------------------|---------|-------------|----------|------|---|---|--|
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | COMP | 3 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | COMP | 3 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M1 | T-TAIWAN | COMP | 3 | 0 | |

Reliability Test Data

QTP #:093602

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

STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3

| | | | | | | | |
|---------------------------|---------|-------------|----------|------|----|---|--|
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | 300 | 50 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | 500 | 50 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548 | T-TAIWAN | 1000 | 50 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | 300 | 45 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | 500 | 45 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M | T-TAIWAN | 1000 | 45 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M1 | T-TAIWAN | 300 | 50 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M1 | T-TAIWAN | 500 | 50 | 0 | |
| CY62148BLL (7C62148C) | 4330154 | 610342548M1 | T-TAIWAN | 1000 | 50 | 0 | |
| CY62167DV30LL (7C62164DC) | 4330158 | 610349238 | T-TAIWAN | 300 | 45 | 0 | |
| CY62167DV30LL (7C62164DC) | 4330158 | 610349238 | T-TAIWAN | 500 | 45 | 0 | |
| CY62167DV30LL (7C62164DC) | 4330158 | 610349238 | T-TAIWAN | 1000 | 45 | 0 | |
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | 500 | 80 | 0 | |
| CY62148ELL (7C62148FC) | 4745171 | 610813551 | T-TAIWAN | 1000 | 80 | 0 | |
| CY62148ELL (7C62148FC) | 4736832 | 610761852 | T-TAIWAN | 500 | 80 | 0 | |
| CY62148ELL (7C62148FC) | 4736832 | 610761852 | T-TAIWAN | 1000 | 80 | 0 | |
| CY7C1019D (7C1019NC) | 4709988 | 610743323 | T-TAIWAN | 500 | 80 | 0 | |
| CY7C1019D (7C1019NC) | 4709988 | 610743323 | T-TAIWAN | 1000 | 79 | 0 | |

Document History Page

Document Title: QTP#093602: Automotive 32-Lead TSOP II (11.5 x20.8x1.2mm) Pure Sn, MSL3, 260C Reflow
OSE-Taiwan (T)
Document Number: 001-89579

| Rev. | ECN No. | Orig. of Change | Description of Change |
|------|---------|-----------------|--|
| ** | 4149076 | HSTO | Initial Spec Release. Initiate report as per memo HGA-956. |
| *A | 4526481 | HSTO | Align qualification report based on the new template in the front page |

Distribution: WEB

Posting: None