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# Cypress Semiconductor
# Package Qualification Report

**QTP# 024701 VERSION*A**
**September 2014**

## 8/28-Lead Thin Small Outline Package (TSSOP)
## Pure Matte , MSL3
## 235C & 260C Reflow
## OSE Taiwan (T)

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

| QUAL REPORT | | DESCRIPTION OF QUALIFICATION PURPOSE | | DATE COMP. |
|---|---|---|---|---|
| 043102 | | ALL TSSOP & SSOP (MSL1), ALL TSOP (MSL3) Packages, New Lead Finish Option for Pb-Free, using Matte Sn with Post Plate Bake and Annealing Process, 260C Reflow temperature assembled in OSE-Taiwan | | Dec 04 |
| 024701 | | Qualify all ≤28-Lead TSSOP with Sn/Bi Lead frame at MSL1, 260°C solder reflow peak temperature at OSE Taiwan | | Apr 03 |
| 024701 | | Cypress established policy requiring MSL and Reflow Peak Temperature alignment for Cypress and its Assembly Subcontractors. Downgrade from MSL1 to MSL3 | | Nov 06 |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|---|---|
| **Package Designation:** | Z2813 |
| **Package Outline, Type, or Name:** | 28-lead Thin Small Outline Package (TSSOP) |
| **Mold Compound Name/Manufacturer:** | Hitachi CEL9200THF |
| **Mold Compound Flammability Rating:** | V-O per UL94 |
| **Oxygen Rating Index:** | >28% |
| **Lead Frame Material:** | Copper |
| **Lead Finish, Composition / Thickness:** | 97%Sn, 3%Bi |
| **Die Backside Preparation Method/Metallization:** | N/A |
| **Die Separation Method:** | Wafer Saw |
| **Die Attach Supplier:** | Ablestik |
| **Die Attach Material:** | 8340 |
| **Wire Bond Method:** | Thermosonic |
| **Wire Material/Size:** | Au, 1.2mil |
| **Thermal Resistance Theta JA °C/W** | 97.37°C/W |
| **Package Cross Section Yes/No:** | N/A |
| **Assembly Process Flow:** | 49-35999 |
| **Name/Location of Assembly (prime) facility:** | OSE Taiwan (TAIWN-T) |
| **MSL Level** | 3 |
| **Reflow Profile** | 235C & 260C |

| ELECTRICAL TEST / FINISH DESCRIPTION | |
|---|---|
| Test Location: | OSE Taiwan (TAIWN-T) |

**Note:** Please contact a Cypress Representative for other packages availability

## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

| Stress/Test | Test Condition (Temp/Bias) | Result P/F |
|---|---|---|
| Temperature Cycle | Precondition: JESD22 Moisture Sensitivity MSL 1<br>168 Hrs 85°C/85%RH+3IR-Reflow, 260°C+0, -5°C | P |
| High Accelerated Saturation Test | 130C, 3.63V, 85%RH<br>Precondition: JESD22 Moisture Sensitivity MSL 1<br>168 Hrs 85°C/85%RH+3IR-Reflow, 260°C+0, -5°C | P |
| Pressure Cooker | 168Hrs 100% RH<br>Precondition: JESD22 Moisture Sensitivity MSL 1<br>168 Hrs 85°C/85%RH+3IR-Reflow, 260°C+0, -5°C | P |
| Adhesion of lead finish | MIL-STD-883, Method 2025 | P |
| Solderability, Steam Aged | J-STD-002, JESD22-B102 | P |
| External Visual | MIL-PRF-38535, MIL-STD-883, METHOD 2009, | P |
| SEM X-Section | MIL-STD-883, Method 883-2018-2 | P |
| Acoustic Microscopy Test (C-SAM) | J-STD-020 | P |

# Reliability Test Data

## QTP #:043102

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ADHESION OF LEAD FINISH*** | | | | | | | |
| CY62148BLL | | | OSE-T | COMP | 3 | 0 | |
| CY8C27443 | | | OSE-T | COMP | 3 | 0 | |
| ***STRESS: EXTERNAL VISUAL*** | | | | | | | |
| CY62148BLL | | | OSE-T | COMP | 15 | 0 | |
| CY8C27443 | | | OSE-T | COMP | 15 | 0 | |
| ***STRESS: SOLDERABILITY*** | | | | | | | |
| CY62148BLL | | | OSE-T | COMP | 9 | 0 | |
| CY8C27443 | | | OSE-T | COMP | 9 | 0 | |

# Reliability Test Data

## QTP #:024701

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ACOUSTIC, MSL1*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | COMP | 15 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | COMP | 15 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-3* | TAIWN-T | COMP | 15 | 0 | |
| ***STRESS: SOLDERABILITY*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | COMP | 5 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | COMP | 5 | 0 | |
| ***STRESS: ADHESION OF LEAD FINISH*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | COMP | 5 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | COMP | 5 | 0 | |
| ***STRESS: EXTERNAL VISUAL*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | COMP | 15 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | COMP | 15 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 168 HR 85C/85%RH, MSL1*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9151563 | *610144814* | TAIWN-T | 128 | 42 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9151563 | *610144868* | TAIWN-T | 128 | 43 | 0 | |
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 168 HR 85C/85%RH, MSL1*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | 168 | 50 | 0 | |
| ***STRESS: TC CONDITION C, 150C TO -65C, PRE COND 168 HR 85C/85%RH, MSL1*** | | | | | | | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | 300 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | 500 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-1* | TAIWN-T | 1000 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | 300 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | 500 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-2* | TAIWN-T | 1000 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-3* | TAIWN-T | 300 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-3* | TAIWN-T | 500 | 45 | 0 | |
| IMIC9716C-ZC (7C8C9716C) | 9140641 | *610240875-3* | TAIWN-T | 1000 | 45 | 0 | |

# Document History Page

Document Title: QTP#024701: 8/28-Lead Thin Small Outline Package (TSSOP) Pure Matte, MSL3 235C & 260C Reflow OSE Taiwan (T)
Document Number: 001-89442

| Rev. | ECN No. | Orig. of Change | Description of Change |
|---|---|---|---|
| ** | 4140860 | HSTO | Initial Spec Release<br>Initiate report as per memo LGQ-627. |
| *A | 4516872 | HSTO | Align qualification report based on the new template in the front page |

Distribution: WEB

Posting: None