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# Cypress Semiconductor
# Package Qualification Report

**QTP 100401 VERSION*D**
**October 2014**

## 68-Lead Saw QFN (Quad Flat No-Lead)
## (8 x 8 x 1.0mm)
## NiPdAu, MSL3, 260°C Reflow
## CML-RA

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

| QUAL REPORT | DESCRIPTION OF QUALIFICATION PURPOSE | DATE COMP. |
|---|---|---|
| 100401 | Qualify 68-Lead Saw QFN (8 x 8 x 1.0 mm), NiPdAu, using Nitto GE7470 Mold Compound, QMI519 Epoxy, MSL3, 260C Reflow assembled at CML-RA | March 2011 |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|---|---|
| **Package Designation:** | LT68A |
| **Package Outline, Type, or Name:** | 68-Lead Saw Quad Flat No Lead (QFN) |
| **Mold Compound Name/Manufacturer:** | GE7470 / Nitto |
| **Mold Compound Flammability Rating:** | V-O per UL94 |
| **Mold Compound Alpha Emission Rate:** | <0.1 cm2/h |
| **Oxygen Rating Index:** | N/A |
| **Lead Frame Material:** | Copper |
| **Lead Finish, Composition / Thickness:** | NiPdAu |
| **Die Backside Preparation Method/Metallization:** | Backgrind |
| **Die Separation Method:** | Wafer Saw |
| **Die Attach Supplier:** | Henkel |
| **Die Attach Material:** | QMI519 |
| **Die Attach Method:** | Epoxy |
| **Bond Diagram Designation** | 001-54870 |
| **Wire Bond Method:** | Thermosonic |
| **Wire Material/Size:** | 0.8mil / Au |
| **Thermal Resistance Theta JA °C/W:** | 45°C/W |
| **Package Cross Section Yes/No:** | Yes |
| **Assembly Process Flow:** | 11-21099 |
| **Name/Location of Assembly (prime) facility:** | CML-RA |
| **MSL Level** | 3 |
| **Reflow Profile** | 260C |

| ELECTRICAL TEST / FINISH DESCRIPTION | |
|---|---|
| **Test Location:** | CML-RA |

**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 | MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C<br>Precondition: JESD22 Moisture Sensitivity MSL3<br>(192 Hrs., 30C, 60% RH) | P |
| Pressure Cooker Test | JESD22-A102: 121°C, 100%RH, 15 Psig<br>Precondition: JESD22 Moisture Sensitivity MSL3<br>(192 Hrs., 30C, 60% RH) | P |
| Electrostatic Discharge<br>Human Body Model (ESD HBM) | (750V)<br>JEDEC EIA/JESD22-A114-B | P |
| Electrostatic Discharge<br>Charge Device Model (ESD CDM) | (500V)<br>JESD22-C101 | P |
| High Accelerated Saturation Test (HAST) | JEDEC STD 22-A110: 130 C, 85%RH, 3.63V<br>Precondition: JESD22 Moisture Sensitivity Level<br>(192 Hrs., 30C, 60% RH) | P |
| High Temp Storage | JESD22-A103: 150C, no bias | 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 |
| Die Shear | MIL-STD-883, Method 2019<br>Per die size:<br>• <3000 sq. mils = 1.2 kgf<br>• 30001-5000 sq. mils = 1.2 kgf<br>• >5001 sq. mils = 1.2 kgf | P |
| Dye Penetrant Test | Test to determine the existence and extent of cracks, Criteria: No Package Crack | P |
| Physical Dimension | MIL-STD-1835, JESD22-B100 | P |
| Solderability , Steam Aged | J-STD-002, JESD22-B102<br>95% solder coverage minimum | P |
| Thermal Shock | MIL-STD-883C, Method 1011, Condition B, -55 C to 125C and JESD22-A106B, Condition C, -55 C to 125C | P |
| X-ray | MIL-STD-883 2012 | P |

# Reliability Test Data

## QTP #: 100401

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ACOUSTIC, MSL3*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 15 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-2 | CML-RA | COMP | 15 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-3 | CML-RA | COMP | 15 | 0 | |
| ***STRESS: BOND PULL*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 10 | 0 | |
| ***STRESS: BALL SHEAR*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 10 | 0 | |
| ***STRESS: CONSTRUCTIONAL ANALYSIS*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 5 | 0 | |
| ***STRESS: DIE SHEAR*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 15 | 0 | |
| ***STRESS: DYE PENETRANT TEST*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 15 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-2 | CML-RA | COMP | 15 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-3 | CML-RA | COMP | 15 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, (500V)*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 9 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, 750V*** | | | | | | | |
| CY8C3866AXI (8C38661CC) | 4016039 | WAFER 21 | CML-RA | COMP | 10 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, 130C, 3.63V, 60%RH, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY8CTMA301E (8C20323D) | 4937898 | 610944485-1 | CML-RA | 128 | 75 | 0 | |
| ***STRESS: HIGH TEMP STORAGE*** | | | | | | | |
| CY7C65640A (7C65642EC) | 4841890 | 610902567-1 | CML-RA | 500 | 76 | 0 | |
| CY7C65640A (7C65642EC) | 4841890 | 610902567-1 | CML-RA | 1000 | 76 | 0 | |
| ***STRESS: INTERNAL VISUAL*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 5 | 0 | |
| ***STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | 168 | 70 | 0 | |

# Reliability Test Data

**QTP #: 100401**

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: PHYSICAL DIMENSION*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 30 | 0 | |
| ***STRESS: SOLDERABILITY*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 3 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-2 | CML-RA | COMP | 3 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-3 | CML-RA | COMP | 3 | 0 | |
| ***STRESS: TC COND. C –65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | 500 | 80 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-2 | CML-RA | 500 | 80 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-3 | CML-RA | 500 | 80 | 0 | |
| ***STRESS: THERMAL SHOCK*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | 200 | 80 | 0 | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | 1000 | 80 | 0 | |
| ***STRESS: X-RAY*** | | | | | | | |
| CY8C3866LTI (8C38661BC) | 4942670 | 611006167-1 | CML-RA | COMP | 15 | 0 | |

# Document History Page

Document Title: QTP 100401: 68-Lead Saw QFN (Quad Flat No-Lead) - 8 X 8 X 1.0mm NiPdAu, MSL3, 260C Reflow CML-RA
Document Number: 001-64406

| Rev. | ECN No. | Orig. of Change | Description of Change |
|---|---|---|---|
| ** | 3041906 | NRG | Initial spec release |
| *A | 3072361 | NRG | Modified HBM data to reflect 750V readpoint. |
| *B | 3184909 | NRG | Removed the word "Preliminary Qualification Report"<br>Modified the reliability test table using the new template<br>Updated the completion date and PCT result<br>Updated the mold compound name to exclude the alphabetic revision. |
| *C | 3761797 | NSR | Removed reference Cypress specs in reliability tests performed table and replace with industry standards.<br>Removed VERSION 2.0 in the title page.<br>Removed obsolete specs. |
| *D | 4550042 | HSTO | Align qualification report based on the new template in the front page |

Distribution: WEB

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