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Cypress Semiconductor Package Qualification Report

QTP# 140204 VERSION**
May, 2015

48 VFBGA (6x8x1.0mm)
SAC 105, CuPd Wire
MSL3, 260°C Reflow
CML-RA

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

| QTP Number | Description of Qualification Purpose | Date |
|---------------|--|------------|
| 140204 | Qualification of Amazon ULL65 on 48 VFBGA (6x8x1.0 mm) at CML-RA using Kinsus Substrate, GR9810-1PLA Mold Compound, QMI-506 Die Attach Epoxy, SAC-105 Solder Ball, 0.8 mil CuPd Wire, with MSL 3, 260°C Reflow Temperature | March 2014 |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|--|-----------------------------------|
| Package Designation: | BZ48A |
| Package Outline, Type, or Name: | VFBGA (Very Fine Ball Grid Array) |
| Mold Compound Name/Manufacturer: | GR9810-1PLA/Henkel |
| Mold Compound Flammability Rating: | V-0 / UL94 |
| Oxygen Rating Index: | 54 (Typical) / 28 (Min. value) |
| Substrate Material: | BT resin |
| Lead Finish, Composition / Thickness: | SAC105 |
| Die Backside Preparation Method/Metallization: | Backgrind |
| Die Separation Method: | Saw |
| Die Attach Supplier: | Henkel |
| Die Attach Material: | QMI 506 |
| Bond Diagram Designation: | 001-85195 |
| Wire Bond Method: | Thermosonic |
| Wire Material/Size: | CuPd, 0.8 mil |
| Thermal Resistance Theta JA °C/W: | 32°C/W |
| Package Cross Section Yes/No: | N/A |
| Assembly Process Flow: | 001-91553 |
| 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 REQUIREMENTS

| Stress/Test | Test Condition (Temp/Bias) | Result P/F |
|--|---|---------------|
| Acoustic Microscopy | J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| Ball Shear | JESD22-B116 | P |
| Bond Pull | MIL-STD-883 – Method 2011 | P |
| Constructional Analysis | Criteria: Meet external and internal characteristics of Cypress package | P |
| Die Shear | MIL-STD-883, Method 2019 Per die size: <input type="checkbox"/> <3000 sq. mils = 1.2 kgf <input type="checkbox"/> 30001-5000 sq. mils = 1.2 kgf <input type="checkbox"/> >5001 sq. mils = 1.2 kgf | P |
| Dye Penetrant Test | Test to determine the existence and extent of cracks, Criteria: No Package Crack | P |
| Electrostatic Discharge Charge Device Model (ESD-CDM) | 500V/1,000V/1,250V JESD22-C101 | P |
| Final Visual | JESD22-B101 | P |
| High Accelerated Saturation Test (HAST) | JEDEC STD 22-A110: 110°C, 85%RH, 3.65V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| High Temperature Storage | JESD22-A103:150°C No bias | P |
| Internal Visual | MIL-STD-883-2014 | P |
| Physical Dimension | MIL-STD-1835, JESD22-B100 | P |
| Pressure Cooker | JESD22-A102: 121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| Solder Ball Shear | JESD22-B117 | P |
| Temperature Cycle | MIL-STD-883, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| X-Ray | MIL-STD-883 - 2012 | P |



Reliability Test Data

QTP #: 140204

| Device | Fab Lot # | Assy Lot # | Ass Loc | Duration | Samp | Rej | Failure Mechanism |
|--|-----------|------------|---------|----------|------|-----|-------------------|
| STRESS: ACOUSTIC, MSL3 | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 170 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 15 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 15 | 0 | |
| STRESS: BALL SHEAR | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 30 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 30 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 30 | 0 | |
| STRESS: BOND PULL | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 30 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 30 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 30 | 0 | |
| STRESS: CONSTRUCTIONAL ANALYSIS | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 5 | 0 | |
| STRESS: DIE SHEAR | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 15 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 15 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 15 | 0 | |
| STRESS: DYE PENETRANT TEST | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 15 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 15 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 15 | 0 | |
| STRESS: ESD-CHARGE DEVICE MODEL | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | 500 | 9 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | 1000 | 3 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | 1250 | 3 | 0 | |
| STRESS: FINAL VISUAL | | | | | | | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 834 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 805 | 0 | |
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 528 | 0 | |



Reliability Test Data

QTP #: 140204

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

STRESS: HI-ACCEL SATURATION TEST, 110C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3

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|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | 264 | 30 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C

| | | | | | | | |
|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611333088 | CML-RA | 500 | 79 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611333088 | CML-RA | 1000 | 79 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

STRESS: INTERNAL VISUAL

| | | | | | | | |
|--------------------------|---------|-----------|--------|------|---|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 5 | 0 | |
|--------------------------|---------|-----------|--------|------|---|---|--|

STRESS: PHYSICAL DIMENSION

| | | | | | | | |
|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 30 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 30 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 30 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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

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|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611333088 | CML-RA | 168 | 78 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

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|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611333088 | CML-RA | 288 | 78 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

STRESS: SOLDER BALL SHEAR

| | | | | | | | |
|--------------------------|---------|-----------|--------|------|-----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 150 | 0 | |
|--------------------------|---------|-----------|--------|------|-----|---|--|

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|--------------------------|---------|-----------|--------|------|-----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 150 | 0 | |
|--------------------------|---------|-----------|--------|------|-----|---|--|

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|--------------------------|---------|-----------|--------|------|-----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 150 | 0 | |
|--------------------------|---------|-----------|--------|------|-----|---|--|

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

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|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | 500 | 80 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | 1000 | 78 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | 500 | 80 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | 1000 | 79 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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|--------------------------|---------|-----------|--------|-----|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | 500 | 80 | 0 | |
|--------------------------|---------|-----------|--------|-----|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | 1000 | 80 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

STRESS: X-RAY

| | | | | | | | |
|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348182 | CML-RA | COMP | 15 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348183 | CML-RA | COMP | 15 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

| | | | | | | | |
|--------------------------|---------|-----------|--------|------|----|---|--|
| CY7C1061G30 (7CC171061A) | 9313001 | 611348184 | CML-RA | COMP | 15 | 0 | |
|--------------------------|---------|-----------|--------|------|----|---|--|

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Document History Page

Document Title: QTP#140204:48 VFBGA (6X8X1.0MM) SAC 105, CUPD WIRE, MSL3, 260C REFLOW, CML-RA
Document Number: 001-97552

| Rev. | ECN No. | Orig. of Change | Description of Change |
|------|---------|-----------------|-----------------------|
| ** | 4761406 | JYF | Initial spec release. |

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