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# Cypress Semiconductor Automotive Package Qualification Report

**QTP# 073205 VERSION*A**
**March, 2015**

## 48 Balls FBGA (1.2mm Thickness) & 48 Balls FBGA (6 x 8 x 1mm) SnAgCu, MSL3, 260°C Reflow ASE-Taiwan

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

| QTP Number | Description of Qualification Purpose | Date Comp |
|---|---|---|
| 073205 | Automotive 48 FBGA(1.2mm Thickness) SnAgCu, MSL3, 260C Reflow using CY7C1041CV33-20BAXI device with NSM Fix assembled at ASE, Taiwan | Oct 07 |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|---|---|
| **Package Designation:** | BK48 |
| **Package Outline, Type, or Name:** | 48 Fine Ball Grid Array (FBGA) |
| **Mold Compound Name/Manufacturer:** | KE-G2270/KYOCERA |
| **Mold Compound Flammability Rating:** | V-0 UL-94 |
| **Oxygen Rating Index:** | N/A |
| **Substrate Material:** | BT Resin |
| **Lead Finish, Composition / Thickness:** | N/A |
| **Die Backside Preparation Method/Metallization:** | Backgrind |
| **Die Separation Method:** | Saw |
| **Die Attach Supplier:** | Ablestik |
| **Die Attach Material:** | 2025D |
| **Die Attach Method:** | Epoxy |
| **Wire Bond Method:** | Thermosonic |
| **Wire Material/Size:** | Au/ 1.0mil |
| **Thermal Resistance Theta JA °C/W:** | 9.12 |
| **Package Cross Section Yes/No:** | N/A |
| **Assembly Process Flow:** | 49-41040 |
| **Name/Location of Assembly (prime) facility:** | ASE-Taiwan |
| **MSL Level** | 3 |
| **Reflow Profile** | 260C |

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

## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

| Stress/Test | Test Condition (Temp/Bias) | Result P/F |
|---|---|---|
| High Accelerated Saturation Test (HAST) | JESD22-A110, 130℃, 85%RH ,3.65V<br>Precondition: JESD22-A113 Moisture Sensitivity MSL<br>(192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| High Temp Storage Life Test | JESD22-A103, 150℃ | P |
| Temperature Cycle | JESD22-A104, -65℃ to +150℃<br>Precondition: JESD22-A113 Moisture Sensitivity MSL<br>(192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| Post Temperature Cycle Wire Bond Pull | Mil-Std 883, Method 2011 | P |
| Pressure Cooker Test | JESD22-A102,121°C, 100%RH, 15 PSIG<br>Precondition: JESD22-A113 Moisture Sensitivity MSL<br>(192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| Wire Bond Shear | AEC Q100-001 | P |
| Wire Bond Pull | Mil-Std 883, Method 2011 | P |
| Acoustic Microscopy | J-STD-020<br>Precondition: JESD22 Moisture Sensitivity Level<br>(192 Hrs., 30°C, 60% RH, 260°C Reflow) | P |
| Solder Ball Shear | AEC Q100-010 | P |
| External Visual | MIL-PRF-38535, MIL-STD-883, METHOD 2009 | P |
| Physical Dimension | JESD22B100 and B108 | P |
| X-Ray | MIL-STD-883 - 2012 | P |

# Reliability Test Data

## QTP #: 073205

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ACOUSTIC*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | COMP | 15 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 15 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | COMP | 15 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540434 | ASE-TAIWAN | COMP | 15 | 0 | |
| ***STRESS: BALL SHEAR*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 30 | 0 | |
| ***STRESS: BOND PULL*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 30 | 0 | |
| ***STRESS: EXTERNAL VISUAL*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | COMP | 356 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 319 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | COMP | 170 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540434 | ASE-TAIWAN | COMP | 50 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, (130C, 3.65V), 85%RH, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | 96 | 83 | 0 | |
| ***STRESS: HIGH TEMP STORAGE*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | 1000 | 50 | 0 | |
| ***STRESS: TC COND. -65C TO 150 C, PRECONDITION 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | 500 | 83 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | 300 | 55 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | 500 | 54 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | 300 | 60 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | 500 | 60 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540434 | ASE-TAIWAN | 500 | 15 | 0 | |
| ***STRESS: PHYSICAL DIMENSIONS*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 10 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | COMP | 10 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540434 | ASE-TAIWAN | COMP | 10 | 0 | |
| ***STRESS: POST 500 TEMPERATURE CYCLE WIRE BOND PULL*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | COMP | 5 | 0 | |

# Reliability Test Data

## QTP #: 073205

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | 96 | 45 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4636615 | 610738761 | ASE-TAIWAN | 168 | 45 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | 96 | 50 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | 168 | 50 | 0 | |
| ***STRESS: SOLDER BALL SHEAR*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 10 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | COMP | 10 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540434 | ASE-TAIWAN | COMP | 10 | 0 | |
| ***STRESS: X-RAY*** | | | | | | | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610539901 | ASE-TAIWAN | COMP | 15 | 0 | |
| CY7C1041CV33 (7C1341RC) | 4529531 | 610540575 | ASE-TAIWAN | COMP | 15 | 0 | |

# History Page

Document Title: QTP 073205: 48 BALLS FBGA (1.2MM THICKNESS) & 48 BALLS FBGA (6 X 8 X 1MM), SNAGCU, MSL3, 260C REFLOW ASE-TAIWAN
Document Number: 001-76019

| Rev. | ECN No. | Orig. of Change | Description of Change |
|---|---|---|---|
| ** | 3521093 | NSR | Initial spec release, initial qual report Rev 1.0 was released in memo HGA-192.<br>Added 48 Balls FBGA (6 x 8 x 1mm) in the title page as covered in memo ILZ-413. |
| *A | 4674343 | JYF | Sunset review:<br>Updated QTP title page and Reliability Tests Performed table (X-Ray, External, Acoustic, PCT, TCT, HAST) for template alignment.<br>Deleted obsolete spec#10-06790 in Major Package Information table. |

Distribution: WEB

Posting: None