

# **Cypress Semiconductor Package Qualification Report**

**QTP# 99043 VERSION 1.1  
July, 2001**

**388-ball Ball Grid Array (BGA) Package  
MSL 3  
ASE, Taiwan**

## **CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:**

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### PACKAGE QUALIFICATION HISTORY

| <b>Qual Report</b> | <b>Description of Qualification Purpose</b>  | <b>Date Comp</b> |
|--------------------|--|------------------|
| 99043              | 388-ball, Ball Grid Array (35 x 35mm), (BGA) package, $\leq 227.7 \times 589$ mls die size, ASE Taiwan | Apr 99           |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION  |                                |
|---|--------------------------------|
| <b>Package Designation:</b>                           | BG388A                         |
| <b>Package Outline, Type, or Name:</b>                | 388-ball Ball Grid Array (BGA) |
| <b>Mold Compound Name/Manufacturer:</b>               | PLASKON SMT-B-1                |
| <b>Mold Compound Flammability Rating:</b>             | V-O per UL94                   |
| <b>Oxygen Rating Index:</b>                           | >28%                           |
| <b>Lead Frame Designation:</b>                        | BG                             |
| <b>Substrate Material:</b>                            | BT Resin                       |
| <b>Lead Finish, Composition / Thickness:</b>          | Solder Ball, 63%Sn, 37%Pb      |
| <b>Die Backside Preparation Method/Metallization:</b> | N/A                            |
| <b>Die Separation Method:</b>                         | Wafer Saw                      |
| <b>Die Attach Supplier:</b>                           | Ablestik                       |
| <b>Die Attach Material:</b>                           | Ablestik 8355F                 |
| <b>Die Attach Method:</b>                             | Epoxy                          |
| <b>Bond Diagram Designation:</b>                      | 10-03507                       |
| <b>Wire Bond Method:</b>                              | Thermosonic                    |
| <b>Wire Material/Size:</b>                            | Au, 1.3um                      |
| <b>Thermal Resistance Theta JA °C/W:</b>              | 20.3°C/W                       |
| <b>Package Cross Section Yes/No:</b>                  | N/A                            |
| <b>Assembly Process Flow:</b>                         | 49-41008M                      |
| <b>Name/Location of Assembly (prime) facility:</b>    | ASE Taiwan                     |

| ELECTRICAL TEST / FINISH DESCRIPTION |            |
|--------------------------------------|------------|
| <b>Test Location:</b>                | ASE Taiwan |
| <b>Fault Coverage:</b>               | 100%       |

**RELIABILITY TESTS PERFORMED**

| <b>Stress/Test</b>               | <b>Test Condition<br/>(Temp/Bias)</b>   | <b>Result<br/>P/F</b> |
|----------------------------------|---|-----------------------|
| Temperature Cycle                | MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C<br>Precondition: JESD22 Moisture Sensitivity Level 3<br>192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C | P                     |
| High Accelerated Saturation Test | 140°C/85%RH/5.5V<br>Precondition: JESD22 Moisture Sensitivity Level 3<br>192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C                                       | P                     |
| Tj for HAST                      | 153.4°C   | P                     |
| Acoustic Microscopy              | Cypress Spec. 25-00104  | P                     |
| High Temperature Storage         | 165°C, no bias  | P                     |
| Physical Dimension               | Cypress Spec. 25-00031  | P                     |
| Solderability, Steam Aged        | Cypress Spec. 25-00018  | P                     |
| Die Shear                        | Cypress Spec 24-00004   | P                     |
| Ball Shear                       | Cypress Spec 24-00018   | P                     |
| Bond Pull                        | Cypress Spec 24-00002   | P                     |
| Thermal Shock                    | -55 - 125°C   | P                     |
| X-Ray                            | Cypress Spec 12-000149  | P                     |

**RELIABILITY TEST DATA**

**QTP#: 99043**

| DEVICE  | ASSY-LOC | FABLOT# | ASSYLOT#  | DURATION | S/S | REJ | FAIL MODE |
|---|----------|---------|-----------|----------|-----|-----|-----------|
| <b>STRESS: HI-ACCEL SATURATION TEST (140C, 85%RH, 5.5V), PRECOND. 192 HRS 30C/60%RH</b> |          |         |           |          |     |     |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9850158 | 619900229 | 128      | 50  | 0   |           |
| <b>STRESS: HIGH TEMPERATURE STORAGE (165C, NO BIAS)</b>                                 |          |         |           |          |     |     |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619816568 | 336      | 48  | 0   |           |
| <b>STRESS: TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH (MSL 3)</b>              |          |         |           |          |     |     |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619816568 | 300      | 48  | 0   |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619817346 | 300      | 50  | 0   |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619817346 | 1000     | 50  | 0   |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619817683 | 300      | 50  | 0   |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619817683 | 1000     | 50  | 0   |           |
| <b>STRESS: THERMAL SHOCK, CONDITION B</b>   |          |         |           |          |     |     |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619816568 | 100      | 48  | 0   |           |
| CY37512P352-BG(7C37677A)  | TAIWN-G  | 9847148 | 619816568 | 200      | 48  | 0   |           |