



# 165-FBGA (13 x 15 mm) Pb-Free Package

## PACKAGE MATERIAL DECLARATION DATASHEET (PMDD)

|                                |  |                                |                                    |
|--------------------------------|--|--------------------------------|------------------------------------|
| <b>Cypress Package Code</b>    | BW   | <b>Body Size (mil/mm)</b>      | 13 x 15 mm                         |
| <b>Package Weight – Site 1</b> | B1: 588.9801 mg<br>B2: 629.1347 mg<br>B3: 412.7573 mg<br>B4: 412.7573 mg | <b>Package Weight – Site 2</b> | 474.2273 mg                        |
| <b>Package Weight – Site 3</b> | 473.6882 mg  | <b>Package Weight – Site 4</b> | B1: 506.8201 mg<br>B2: 498.6761 mg |

### SUMMARY

The 165-BGA Pb-Free package is compliant to RoHS. Cypress Ordering Part Numbers containing an “X” (e.g. CY7C1328G-133AXI, CY2308SXC-1HT) meet the Directive 2002/95/EC (RoHS) requirement.

### ASSEMBLY Site 1 – Package Qualification Report #s 050704, 113007, 120107, 120612 (Note 1)

## I. DECLARATION OF PACKAGED UNITS

### A. BANNED SUBSTANCES

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

| Substances / Compounds                     | Weight by mg | PPM   | Analysis Report (Note2) |
|--|--------------|-------|-------------------------|
| Cadmium and Cadmium Compounds              | 0            | < 5.0 | CoA-BW165-G             |
| Hexavalent Chromium and its Compounds      | 0            | < 5.0 |                         |
| Lead and Lead Compounds                    | 0            | < 5.0 |                         |
| Mercury and Mercury Compounds              | 0            | < 5.0 |                         |
| Polybrominated Biphenyls (PBB)             | 0            | < 5.0 |                         |
| Polybrominated Diphenylethers (PBDE)       | 0            | < 5.0 |                         |
| Asbestos                                   | 0            | 0     | As per MSDS             |
| Azo colorants                              | 0            | 0     |                         |
| Ozone Depleting Substances                 | 0            | 0     |                         |
| Polychlorinated Biphenyls (PCBs)           | 0            | 0     |                         |
| Polychlorinated Napthalenes                | 0            | 0     |                         |
| Radioactive Substances                     | 0            | 0     |                         |
| Shortchain Chlorinated Paraffins           | 0            | 0     |                         |
| Tributyl Tin (TBT) and Triphenyl Tin (TPT) | 0            | 0     |                         |
| Tributyl Tin Oxide (TBTO)                  | 0            | 0     |                         |
| Formaldehyde                               | 0            | 0     |                         |

Note 1: Qualification reports are available at [www.cypress.com](http://www.cypress.com). Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered “non-existent in the product” or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B1. MATERIAL COMPOSITION (Note 3)**

**Adhesive using epoxy paste**

| Material      | Purpose of Use   | Substance Composition | CAS Number | Weight by mg | % weight of substance per Homogenous material | PPM     | % weight of substance per package |
|---------------|------------------|-----------------------|------------|--------------|---|---------|-----------------------------------|
| Substrate     | Base Material    | SiO <sub>2</sub>      | 60676-86-0 | 17.7650      | 11.0000%                                      | 30,162  | 3.0162%                           |
|               |                  | Acrylic               | 29690-82-2 | 16.1500      | 10.0000%                                      | 27,420  | 2.7420%                           |
|               |                  | Epoxy                 | 68541-56-0 | 12.9200      | 8.0000%                                       | 21,936  | 2.1936%                           |
|               |                  | Bisphenol             | 13676-54-5 | 24.2250      | 15.0000%                                      | 41,130  | 4.1130%                           |
|               |                  | Triazol               | 25722-66-1 | 28.2625      | 17.5000%                                      | 47,986  | 4.7986%                           |
|               |                  | Cu                    | 7440-50-8  | 58.7860      | 36.4000%                                      | 99,810  | 9.9810%                           |
|               |                  | Ni                    | 7440-02-0  | 2.4225       | 1.5000%                                       | 4,113   | 0.4113%                           |
|               |                  | Au                    | 7440-57-5  | 0.8075       | 0.5000%                                       | 1,371   | 0.1371%                           |
|               |                  | Br                    | 7726-95-6  | 0.1615       | 0.1000%                                       | 274     | 0.0274%                           |
| Solder Ball   | External Plating | Sn                    | 7440-31-5  | 76.4955      | 95.5000%                                      | 129,878 | 12.9878%                          |
|               |                  | Ag                    | 7440-22-4  | 3.2040       | 4.0000%                                       | 5,440   | 0.5440%                           |
|               |                  | Cu                    | 7440-50-8  | 0.4005       | 0.5000%                                       | 680     | 0.0680%                           |
| Die Attach    | Adhesive         | Fused Silica          | 60676-86-0 | 50.1876      | 54.0000%                                      | 85,211  | 8.5211%                           |
|               |                  | Diester               | -----      | 25.5585      | 27.5000%                                      | 43,395  | 4.3395%                           |
|               |                  | Epoxy Resin           | -----      | 5.1117       | 5.5000%                                       | 8,679   | 0.8679%                           |
|               |                  | Functionalized esters | -----      | 9.2940       | 10.0000%                                      | 15,780  | 1.5780%                           |
|               |                  | Polymeric Resin       | -----      | 2.7882       | 3.0000%                                       | 4,734   | 0.4734%                           |
| Die           | Circuit          | Si                    | 7440-21-3  | 54.8900      | 100.0000%                                     | 93,195  | 9.3195%                           |
| Wire          | Interconnect     | Au                    | 7440-57-5  | 5.2400       | 100.0000%                                     | 8,897   | 0.8897%                           |
| Mold Compound | Encapsulation    | Silica Fused          | 60676-86-0 | 172.9359     | 89.0000%                                      | 293,619 | 29.3619%                          |
|               |                  | Epoxy Resin           | -----      | 10.6871      | 5.5000%                                       | 18,145  | 1.8145%                           |
|               |                  | Phenolic Resin        | -----      | 10.6871      | 5.5000%                                       | 18,145  | 1.8145%                           |

**Package Weight (mg):** **588.9801**

**% Total:** **100.0000**

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Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B2. MATERIAL COMPOSITION (Note 3)**  
**Adhesive using film**

| Material          | Purpose of Use   | Substance Composition                       | CAS Number   | Weight by mg | % weight of substance per Homogenous material | PPM    | % weight of substance per package |
|-------------------|------------------|---|--------------|--------------|---|--------|-----------------------------------|
| Substrate         | Base Material    | SiO2  | 60676-86-0   | 16.9088      | 10.4900%                                      | 26876  | 2.6876%                           |
|                   |                  | Acrylic                                     | 29690-82-2   | 14.8295      | 9.2000%                                       | 23571  | 2.3571%                           |
|                   |                  | Epoxy                                       | 68541-56-0   | 9.8971       | 6.1400%                                       | 15731  | 1.5731%                           |
|                   |                  | Bisphenol                                   | 13676-54-5   | 24.1463      | 14.9800%                                      | 38380  | 3.8380%                           |
|                   |                  | Triazol                                     | 25722-66-1   | 28.9820      | 17.9800%                                      | 46066  | 4.6066%                           |
|                   |                  | Cu  | 7440-50-8    | 63.3960      | 39.3300%                                      | 100767 | 10.0767%                          |
|                   |                  | Ni  | 7440-02-0    | 2.2405       | 1.3900%                                       | 3561   | 0.3561%                           |
|                   |                  | Au  | 7440-57-5    | 0.7898       | 0.4900%                                       | 1255   | 0.1255%                           |
| Solder Ball       | External Plating | Sn  | 7440-31-5    | 172.6875     | 95.5000%                                      | 274484 | 27.4484%                          |
|                   |                  | Ag  | 7440-22-4    | 7.2330       | 4.0000%                                       | 11497  | 1.1497%                           |
|                   |                  | Cu  | 7440-50-8    | 0.9041       | 0.5000%                                       | 1437   | 0.1437%                           |
| Die Attach (FILM) | Adhesive         | Cresol-epichlorohydrin-formaldehyde polymer | 37382-79-9   | 33.5580      | 60.0000%                                      | 53340  | 5.3340%                           |
|                   |                  | Rubber modified epoxy                       | Trade Secret | 16.7790      | 30.0000%                                      | 26670  | 2.6670%                           |
|                   |                  | Aromatic amine                              | Trade Secret | 2.7965       | 5.0000%                                       | 4445   | 0.4445%                           |
|                   |                  | Silicon-based glycidyl ether                | 2530-83-8    | 2.2372       | 4.0000%                                       | 3556   | 0.3556%                           |
|                   |                  | 4,4'Isopropylidene nediphenol               | 80-05-7      | 0.5593       | 1.0000%                                       | 889    | 0.0889%                           |
| Die               | Circuit          | Si  | 7440-21-3    | 32.9900      | 100.0000%                                     | 52437  | 5.2437%                           |
| Wire              | Interconnect     | Au  | 7440-57-5    | 3.8996       | 99.9900%                                      | 6198   | 0.6198%                           |
|                   |                  | Ion Impurities                              | Trade Secret | 0.0004       | 0.0100%                                       | 1      | 0.0001%                           |
| Mold Compound     | Encapsulation    | Silica fused                                | 60676-86-0   | 172.9270     | 89.0000%                                      | 274865 | 27.4865%                          |
|                   |                  | Epoxy Resin(1)                              | 93705-66-9   | 8.7435       | 4.5000%                                       | 13898  | 1.3898%                           |
|                   |                  | Epoxy Resin(2)                              | Undisclosed  | 3.8860       | 2.0000%                                       | 6177   | 0.6177%                           |
|                   |                  | Phenol resin                                | 106466-55-1  | 8.7435       | 4.5000%                                       | 13898  | 1.3898%                           |

**Package Weight (mg):** **629.1347**

**% Total:** **100**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B3. MATERIAL COMPOSITION (Note 3)  
Copper Wire Material**

| Material          | Purpose of Use   | Substance Composition | CAS Number   | Weight by mg | % weight of substance per Homogenous material | PPM    | % weight of substance per package |
|-------------------|------------------|-----------------------|--------------|--------------|---|--------|-----------------------------------|
| Substrate         | Base Material    | SiO2                  | 60676-86-0   | 17.7306      | 11.0000%                                      | 42955  | 4.2955%                           |
|                   |                  | Acrylic               | 29690-82-2   | 16.1187      | 10.0000%                                      | 39051  | 3.9051%                           |
|                   |                  | Epoxy                 | 68541-56-0   | 12.895       | 8.0000%                                       | 31241  | 3.1241%                           |
|                   |                  | Bisphenol             | 13676-54-5   | 24.178       | 15.0000%                                      | 58577  | 5.8577%                           |
|                   |                  | Triazol               | 25722-66-1   | 28.2077      | 17.5000%                                      | 68340  | 6.8340%                           |
|                   |                  | Cu                    | 7440-50-8    | 58.7526      | 36.4500%                                      | 142342 | 14.2342%                          |
|                   |                  | Ni                    | 7440-02-0    | 2.4178       | 1.5000%                                       | 5858   | 0.5858%                           |
|                   |                  | Au                    | 7440-57-5    | 0.8865       | 0.5500%                                       | 2148   | 0.2148%                           |
| Solder Ball       | External Plating | Sn                    | 7440-31-5    | 76.1824      | 95.5000%                                      | 184568 | 18.4568%                          |
|                   |                  | Ag                    | 7440-22-4    | 3.1909       | 4.0000%                                       | 7731   | 0.7731%                           |
|                   |                  | Cu                    | 7440-50-8    | 0.3989       | 0.5000%                                       | 966    | 0.0966%                           |
| Die Attach (FILM) | Adhesive         | Modified Epoxy resin  | Trade Secret | 1.1619       | 61.5463%                                      | 2815   | 0.2815%                           |
|                   |                  | Epoxy resin           | Trade Secret | 0.4624       | 24.4905%                                      | 1120   | 0.1120%                           |
|                   |                  | Dapsone               | 80-08-0      | 0.1466       | 7.7629%                                       | 355    | 0.0355%                           |
|                   |                  | Treated fume silica   | 67762-90-7   | 0.0395       | 2.0928%                                       | 96     | 0.0096%                           |
|                   |                  | Substituted silane    | Trade Secret | 0.0286       | 1.5155%                                       | 69     | 0.0069%                           |
|                   |                  | Elastomeric polymer   | Trade Secret | 0.0250       | 1.3267%                                       | 61     | 0.0061%                           |
|                   |                  | Epoxy resin           | Trade Secret | 0.0239       | 1.2653%                                       | 58     | 0.0058%                           |
| Die               | Circuit          | Si                    | 7440-21-3    | 51.273       | 100.0000%                                     | 124221 | 12.4221%                          |
| Wire              | Interconnect     | Copper (Cu)           | 7440-50-8    | 2.008        | 99.9900%                                      | 4865   | 0.4865%                           |
|                   |                  | Ion Impurities        | Trade Secret | 0.0002       | 0.0100%                                       | 1      | 0.0001%                           |
| Mold Compound     | Encapsulation    | Silica                | 60676-86-0   | 104.6163     | 89.7000%                                      | 253457 | 25.3457%                          |
|                   |                  | Epoxy Resin           | Undisclosed  | 6.4146       | 5.5000%                                       | 15541  | 1.5541%                           |
|                   |                  | Phenol resin          | Undisclosed  | 5.2483       | 4.5000%                                       | 12715  | 1.2715%                           |
|                   |                  | Carbon Black          | 1333-86-4    | 0.3499       | 0.3000%                                       | 849    | 0.0849%                           |

**Package Weight (mg):** **412.7573**

**% Total:** **100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B4. MATERIAL COMPOSITION (Note 3)  
Copper-Palladium Wire Material**

| Material          | Purpose of Use   | Substance Composition | CAS Number   | Weight by mg | % weight of substance per Homogenous material | PPM    | % weight of substance per package |
|-------------------|------------------|-----------------------|--------------|--------------|---|--------|-----------------------------------|
| Substrate         | Base Material    | SiO2                  | 60676-86-0   | 17.7306      | 11.0000%                                      | 42956  | 4.2956%                           |
|                   |                  | Acrylic               | 29690-82-2   | 16.1187      | 10.0000%                                      | 39051  | 3.9051%                           |
|                   |                  | Epoxy                 | 68541-56-0   | 12.895       | 8.0000%                                       | 31241  | 3.1241%                           |
|                   |                  | Bisphenol             | 13676-54-5   | 24.178       | 15.0000%                                      | 58577  | 5.8577%                           |
|                   |                  | Triazol               | 25722-66-1   | 28.2077      | 17.5000%                                      | 68340  | 6.8340%                           |
|                   |                  | Cu                    | 7440-50-8    | 58.7526      | 36.4500%                                      | 142342 | 14.2342%                          |
|                   |                  | Ni                    | 7440-02-0    | 2.4178       | 1.5000%                                       | 5858   | 0.5858%                           |
|                   |                  | Au                    | 7440-57-5    | 0.8865       | 0.5500%                                       | 2148   | 0.2148%                           |
| Solder Ball       | External Plating | Sn                    | 7440-31-5    | 76.1824      | 95.5000%                                      | 184569 | 18.4569%                          |
|                   |                  | Ag                    | 7440-22-4    | 3.1909       | 4.0000%                                       | 7731   | 0.7731%                           |
|                   |                  | Cu                    | 7440-50-8    | 0.3989       | 0.5000%                                       | 966    | 0.0966%                           |
| Die Attach (FILM) | Adhesive         | Modified Epoxy resin  | Trade Secret | 1.1619       | 61.5463%                                      | 2815   | 0.2815%                           |
|                   |                  | Epoxy resin           | Trade Secret | 0.4624       | 24.4905%                                      | 1120   | 0.1120%                           |
|                   |                  | Dapsone               | 80-08-0      | 0.1466       | 7.7629%                                       | 355    | 0.0355%                           |
|                   |                  | Treated fume silica   | 67762-90-7   | 0.0395       | 2.0928%                                       | 96     | 0.0096%                           |
|                   |                  | Substituted silane    | Trade Secret | 0.0286       | 1.5155%                                       | 69     | 0.0069%                           |
|                   |                  | Elastomeric polymer   | Trade Secret | 0.0250       | 1.3267%                                       | 61     | 0.0061%                           |
|                   |                  | Epoxy resin           | Trade Secret | 0.0239       | 1.2653%                                       | 58     | 0.0058%                           |
| Die               | Circuit          | Si                    | 7440-21-3    | 51.2729      | 100.0000%                                     | 124220 | 12.4220%                          |
| Wire              | Interconnect     | Copper (Cu)           | 7440-50-8    | 1.954        | 97.3000%                                      | 4734   | 0.4734%                           |
|                   |                  | Palladium (Pd)        | 5/3/7440     | 0.0542       | 2.7000%                                       | 131    | 0.0131%                           |
| Mold Compound     | Encapsulation    | Silica                | 60676-86-0   | 104.6164     | 89.7000%                                      | 253457 | 25.3457%                          |
|                   |                  | Epoxy Resin           | Undisclosed  | 6.4146       | 5.5000%                                       | 15542  | 1.5542%                           |
|                   |                  | Phenol resin          | Undisclosed  | 5.2483       | 4.5000%                                       | 12715  | 1.2715%                           |
|                   |                  | Carbon Black          | 1333-86-4    | 0.3499       | 0.3000%                                       | 848    | 0.0848%                           |

**Package Weight (mg): 412.7573**

**% Total: 100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

## **II. DECLARATION OF PACKAGING / INDIRECT MATERIALS**

| Type        | Material                      | Lead PPM | Cadmium PPM | Cr VI PPM | Mercury PPM | PBB PPM | PBDE PPM | Analysis Report (Note2) |
|-------------|-------------------------------|----------|-------------|-----------|-------------|---------|----------|-------------------------|
| Tape & Reel | Cover tape                    | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-COVT-R              |
|             | Carrier tape                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-CART-R              |
|             | Plastic Reel                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PLRL-R              |
| Tray        | Tray                          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-TRAY-R              |
| Tube        | Plastic Tube                  | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Plug                      | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Pin                       | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
| Others      | Moisture Barrier bag          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-MBBG-R              |
|             | Shielding bag                 | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-SBAG-R              |
|             | Protective Band               | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PROB-R              |
|             | Shipping and inner/ pizza box | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-ABOX-R              |

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**ASSEMBLY Site 2 – Package Qualification Report #s 071207 (Note 1)**

**I. DECLARATION OF PACKAGED UNITS**

**A. BANNED SUBSTANCES**

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

| Substances / Compounds                     | Weight by mg | PPM   | Analysis Report (Note2) |
|--|--------------|-------|-------------------------|
| Cadmium and Cadmium Compounds              | 0            | < 5.0 | CoA-BW165-AT            |
| Hexavalent Chromium and its Compounds      | 0            | < 5.0 |                         |
| Lead and Lead Compounds                    | 0            | < 5.0 |                         |
| Mercury and Mercury Compounds              | 0            | < 5.0 |                         |
| Polybrominated Biphenyls (PBB)             | 0            | < 5.0 |                         |
| Polybrominated Diphenylethers (PBDE)       | 0            | < 5.0 |                         |
| Asbestos                                   | 0            | 0     | As per MSDS             |
| Azo colorants                              | 0            | 0     |                         |
| Ozone Depleting Substances                 | 0            | 0     |                         |
| Polychlorinated Biphenyls (PCBs)           | 0            | 0     |                         |
| Polychlorinated Naphthalenes               | 0            | 0     |                         |
| Radioactive Substances                     | 0            | 0     |                         |
| Shortchain Chlorinated Paraffins           | 0            | 0     |                         |
| Tributyl Tin (TBT) and Triphenyl Tin (TPT) | 0            | 0     |                         |
| Tributyl Tin Oxide (TBTO)                  | 0            | 0     |                         |
| Formaldehyde                               | 0            | 0     |                         |

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Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered “non-existent in the product” or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.



**B. MATERIAL COMPOSITION (Note 3)**

| Material      | Purpose of Use   | Substance Composition |  | CAS Number                             | Weight by mg | % weight of substance per Homogenous material | PPM     | % weight of substance per package |
|---------------|------------------|-----------------------|--|--|--------------|---|---------|-----------------------------------|
| Substrate     | Base Material    | Plating 1             | Au, metal & alloy                      | 7440-57-5                              | 1.0746       | 0.7400%                                       | 2,266   | 0.2266%                           |
|               |                  |                       | Ni, metal & alloy                      | 7440-02-0                              | 4.9375       | 3.4000%                                       | 10,412  | 1.0412%                           |
|               |                  | Plating 2             | Cu, metal & alloy                      | 7440-50-8                              | 37.1037      | 25.5500%                                      | 78,240  | 7.8240%                           |
|               |                  |                       | Acrylic Resin                          | -----                                  | 1.1182       | 0.7700%                                       | 2,358   | 0.2358%                           |
|               |                  |                       | Phthalcyanine Blue, Organic Pigment    | -----                                  | 0.0145       | 0.0100%                                       | 31      | 0.0031%                           |
|               |                  |                       | Fillers (Barium Sulfate, Silica, Talc) | -----                                  | 0.8568       | 0.5900%                                       | 1,807   | 0.1807%                           |
|               |                  |                       | Aromatic Carbonyl Compound             | -----                                  | 0.1162       | 0.0800%                                       | 245     | 0.0245%                           |
|               |                  |                       | Amine Compound                         | -----                                  | 0.1888       | 0.1300%                                       | 398     | 0.0398%                           |
|               |                  |                       | Levelling Agents & Others              | -----                                  | 0.0436       | 0.0300%                                       | 92      | 0.0092%                           |
|               |                  |                       | Acrylic Monomer                        | -----                                  | 0.1452       | 0.1000%                                       | 306     | 0.0306%                           |
|               |                  |                       | Epoxy Resin                            | 29690-82-2<br>68541-56-0<br>25068-38-6 | 0.4937       | 0.3400%                                       | 1,041   | 0.1041%                           |
|               |                  |                       | Barium Sulfate                         | -----                                  | 0.2178       | 0.1500%                                       | 459     | 0.0459%                           |
|               |                  |                       | Organic Fillers                        | -----                                  | 0.0436       | 0.0300%                                       | 92      | 0.0092%                           |
|               |                  |                       | BT Resin                               | 13676-54-5<br>25722-66-1               | 43.5660      | 30.0000%                                      | 91,867  | 9.1867%                           |
|               |                  |                       | Fibrous-glass-wool                     | 65997-17-3                             | 55.3288      | 38.1000%                                      | 116,672 | 11.6672%                          |
| Solder Ball   | External Plating | Sn                    |  | 7440-31-5                              | 76.9975      | 98.5000%                                      | 162,364 | 16.2364%                          |
|               |                  | Ag                    |  | 744-22-4                               | 0.7817       | 1.0000%                                       | 1,648   | 0.1648%                           |
|               |                  | Cu                    |  | 7440-50-8                              | 0.3909       | 0.5000%                                       | 824     | 0.0824%                           |
| Die Attach    | Adhesive         | Ag                    |  | 7440-22-4                              | 5.0330       | 70.0000%                                      | 10,613  | 1.0613%                           |
|               |                  | Epoxy Resin           |  | Trade Secret                           | 0.3595       | 5.0000%                                       | 758     | 0.0758%                           |
|               |                  | Diester               |  | Trade Secret                           | 0.7190       | 10.0000%                                      | 1,516   | 0.1516%                           |
|               |                  | Polymeric Resin       |  | Trade Secret                           | 0.3595       | 5.0000%                                       | 758     | 0.0758%                           |
|               |                  | Functionalized Ester  |  | Trade Secret                           | 0.7190       | 10.0000%                                      | 1,516   | 0.1516%                           |
| Die           | Circuit          | Si                    |  | 7440-21-3                              | 25.4000      | 100.0000%                                     | 53,561  | 5.3561%                           |
| Wire          | Interconnect     | Au                    |  | 7440-57-5                              | 18.1782      | 99.9900%                                      | 38,332  | 3.8332%                           |
| Mold Compound | Encapsulation    | Fused Silica          |  | 60676-86-0%                            | 190.0380     | 95.0000%                                      | 400,732 | 40.0732%                          |
|               |                  | Epoxy Resin           |  | Trade Secret                           | 4.0008       | 2.0000%                                       | 8,436   | 0.8436%                           |

Note 1: Qualification reports are available at [www.cypress.com](http://www.cypress.com). Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.





# 165-FBGA (13 x 15 mm) Pb-Free Package

|                             |  |                 |              |                 |                 |       |                 |
|-----------------------------|--|-----------------|--------------|-----------------|-----------------|-------|-----------------|
|                             |  | Phenol Resin    | Trade Secret | 1.0002          | 0.5000%         | 2,109 | 0.2109%         |
|                             |  | Phenol Novolac  | 9003-35-4    | 2.0004          | 1.0000%         | 4,218 | 0.4218%         |
|                             |  | Metal Hydroxide | Trade Secret | 2.0004          | 1.0000%         | 4,218 | 0.4218%         |
|                             |  | Carbon Black    | 1333-86-4    | 1.0002          | 0.5000%         | 2,109 | 0.2109%         |
| <b>Package Weight (mg):</b> |  |                 |              | <b>474.2273</b> | <b>% Total:</b> |       | <b>100.0000</b> |

## II. DECLARATION OF PACKAGING / INDIRECT MATERIALS

| Type        | Material                      | Lead PPM | Cadmium PPM | Cr VI PPM | Mercury PPM | PBB PPM | PBDE PPM | Analysis Report (Note2) |
|-------------|-------------------------------|----------|-------------|-----------|-------------|---------|----------|-------------------------|
| Tape & Reel | Cover tape                    | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-COVT-R              |
|             | Carrier tape                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-CART-R              |
|             | Plastic Reel                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PLRL-R              |
| Tray        | Tray                          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-TRAY-R              |
| Tube        | Plastic Tube                  | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Plug                      | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Pin                       | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
| Others      | Moisture Barrier bag          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-MBBG-R              |
|             | Shielding bag                 | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-SBAG-R              |
|             | Protective Band               | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PROB-R              |
|             | Shipping and inner/ pizza box | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-ABOX-R              |

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Note 2: Report available from Cypress Sales Offices or Distributors.

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**ASSEMBLY Site 3 – Package Qualification Report #s 073509 (Note 1)**

**I. DECLARATION OF PACKAGED UNITS**

**B. BANNED SUBSTANCES**

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

| Substances / Compounds                     | Weight by mg | PPM   | Analysis Report (Note2) |
|--|--------------|-------|-------------------------|
| Cadmium and Cadmium Compounds              | 0            | < 5.0 | CoA-BW165-AT1           |
| Hexavalent Chromium and its Compounds      | 0            | < 5.0 |                         |
| Lead and Lead Compounds                    | 0            | < 5.0 |                         |
| Mercury and Mercury Compounds              | 0            | < 5.0 |                         |
| Polybrominated Biphenyls (PBB)             | 0            | < 5.0 |                         |
| Polybrominated Diphenylethers (PBDE)       | 0            | < 5.0 |                         |
| Asbestos                                   | 0            | 0     | As per MSDS             |
| Azo colorants                              | 0            | 0     |                         |
| Ozone Depleting Substances                 | 0            | 0     |                         |
| Polychlorinated Biphenyls (PCBs)           | 0            | 0     |                         |
| Polychlorinated Napthalenes                | 0            | 0     |                         |
| Radioactive Substances                     | 0            | 0     |                         |
| Shortchain Chlorinated Paraffins           | 0            | 0     |                         |
| Tributyl Tin (TBT) and Triphenyl Tin (TPT) | 0            | 0     |                         |
| Tributyl Tin Oxide (TBTO)                  | 0            | 0     |                         |
| Formaldehyde                               | 0            | 0     |                         |

Note 1: Qualification reports are available at [www.cypress.com](http://www.cypress.com). Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered “non-existent in the product” or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B. MATERIAL COMPOSITION (Note 3)**

| Material             | Purpose of Use   | Substance Composition                  |                    | CAS Number                             | Weight by mg | % weight of substance per Homogenous material | PPM     | % weight of substance per package |
|----------------------|------------------|--|--------------------|--|--------------|---|---------|-----------------------------------|
| Substrate            | Base Material    | Plating 1                              | Au, metal & alloy  | 7440-57-5                              | 1.0710       | 0.7400%                                       | 2,261   | 0.2261%                           |
|                      |                  |  | Ni, metal & alloy  | 7440-02-0                              | 4.9208       | 3.4000%                                       | 10,388  | 1.0388%                           |
|                      |                  | Plating 2                              | Cu, metal & alloy  | 7440-50-8                              | 36.9785      | 25.5500%                                      | 78,065  | 7.8065%                           |
|                      |                  |  |                    | Acrylic Resin                          | -----        | 1.1144  | 0.7700% | 2,353                             |
|                      |                  | Phthalcyanine Blue, Organic Pigment    |                    | -----                                  | 0.0145       | 0.0100%                                       | 31      | 0.0031%                           |
|                      |                  | Fillers (Barium Sulfate, Silica, Talc) |                    | -----                                  | 0.8539       | 0.5900%                                       | 1,803   | 0.1803%                           |
|                      |                  | Aromatic Carbonyl Compound             |                    | -----                                  | 0.1158       | 0.0800%                                       | 244     | 0.0244%                           |
|                      |                  | Amine Compound                         |                    | -----                                  | 0.1881       | 0.1300%                                       | 397     | 0.0397%                           |
|                      |                  | Levelling Agents & Others              |                    | -----                                  | 0.0434       | 0.0300%                                       | 92      | 0.0092%                           |
|                      |                  | Acrylic Monomer                        |                    | -----                                  | 0.1447       | 0.1000%                                       | 306     | 0.0306%                           |
|                      |                  | Epoxy Resin                            |                    | 29690-82-2<br>68541-56-0<br>25068-38-6 | 0.0000       |   | 0       | 0.0000%                           |
|                      |                  | Barium Sulfate                         |                    | -----                                  | 0.2171       | 0.1500%                                       | 458     | 0.0458%                           |
|                      |                  | Organic Fillers                        |                    | -----                                  | 0.0434       | 0.0300%                                       | 92      | 0.0092%                           |
|                      |                  |  | BT Resin           | 13676-54-5<br>25722-66-1               | 43.8821      | 30.3200%                                      | 92,639  | 9.2639%                           |
|                      |                  |  | Fibrous-glass-wool | 65997-17-3                             | 55.1421      | 38.1000%                                      | 116,410 | 11.6410%                          |
| Solder Ball          | External Plating | Sn                                     |                    | 7440-31-5                              | 76.9975      | 98.5000%                                      | 162,549 | 16.2549%                          |
|                      |                  | Ag                                     |                    | 744-22-4                               | 0.7817       | 1.0000%                                       | 1,650   | 0.1650%                           |
|                      |                  | Cu                                     |                    | 7440-50-8                              | 0.3909       | 0.5000%                                       | 825     | 0.0825%                           |
| Die Attach           | Adhesive         | Bismaleimide                           |                    | Trade Secret                           | 4.3260       | 60.0000%                                      | 9,133   | 0.9133%                           |
|                      |                  | Silicon Resin                          |                    | Trade Secret                           | 1.8025       | 25.0000%                                      | 3,805   | 0.3805%                           |
|                      |                  | Epoxy Resin                            |                    | 9003-36-5                              | 0.7210       | 10.0000%                                      | 1,522   | 0.1522%                           |
|                      |                  | Diluent                                |                    | Trade Secret                           | 0.2884       | 4.0000%                                       | 609     | 0.0609%                           |
|                      |                  | Carbon Black                           |                    | 1333-86-4                              | 0.0361       | 0.5000%                                       | 76      | 0.0076%                           |
|                      |                  | Dicyandiamide                          |                    | 461-58-5                               | 0.0361       | 0.5000%                                       | 76      | 0.0076%                           |
| Die                  | Circuit          | Si                                     |                    | 7440-21-3                              | 25.4000      | 100.0000%                                     | 53,622  | 5.3622%                           |
| Wire                 | Interconnect     | Au                                     |                    | 7440-57-5                              | 18.1782      | 99.9900%                                      | 38,376  | 3.8376%                           |
| Mold Compound        | Encapsulation    | Fused Silica                           |                    | 60676-86-0                             | 190.0000     | 95.0000%                                      | 401,108 | 40.1108%                          |
|                      |                  | Solid Epoxy Resin                      |                    | -----                                  | 4.0000       | 2.0000%                                       | 8,444   | 0.8444%                           |
|                      |                  | Phenol Resin                           |                    | -----                                  | 1.0000       | 0.5000%                                       | 2,111   | 0.2111%                           |
|                      |                  | Carbon Black                           |                    | 1333-86-4                              | 2.0000       | 1.0000%                                       | 4,222   | 0.4222%                           |
|                      |                  | Crystallin eSilica                     |                    | 14808-60-7                             | 2.0000       | 1.0000%                                       | 4,222   | 0.4222%                           |
|                      |                  | Metal Hydro Oxide                      |                    | -----                                  | 1.0000       | 0.5000%                                       | 2,111   | 0.2111%                           |
| Package Weight (mg): |                  |  |                    |  | 473.6882     | % Total:                                      |         | 100.000                           |

Note 1: Qualification reports are available at [www.cypress.com](http://www.cypress.com). Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

## **II. DECLARATION OF PACKAGING / INDIRECT MATERIALS**

| Type        | Material                      | Lead PPM | Cadmium PPM | Cr VI PPM | Mercury PPM | PBB PPM | PBDE PPM | Analysis Report (Note2) |
|-------------|-------------------------------|----------|-------------|-----------|-------------|---------|----------|-------------------------|
| Tape & Reel | Cover tape                    | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-COVT-R              |
|             | Carrier tape                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-CART-R              |
|             | Plastic Reel                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PLRL-R              |
| Tray        | Tray                          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-TRAY-R              |
| Tube        | Plastic Tube                  | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Plug                      | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Pin                       | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
| Others      | Moisture Barrier bag          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-MBBG-R              |
|             | Shielding bag                 | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-SBAG-R              |
|             | Protective Band               | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PROB-R              |
|             | Shipping and inner/ pizza box | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-ABOX-R              |

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**ASSEMBLY Site 4 – Package Qualification Report #s 094002, 120610 (Note 1)**

**I. DECLARATION OF PACKAGED UNITS**

**A. BANNED SUBSTANCES**

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS are listed in section 1A. Materials from this list may be contained or intentionally added to this product, as it is not considered Pb-Free or RoHS compliant.

| Substances / Compounds                     | Weight by mg | PPM   | Analysis Report (Note2) |
|--|--------------|-------|-------------------------|
| Cadmium and Cadmium Compounds              | 0            | < 5.0 | CoA-BW165-RA            |
| Hexavalent Chromium and its Compounds      | 0            | < 5.0 |                         |
| Lead and Lead Compounds                    | 0            | < 5.0 |                         |
| Mercury and Mercury Compounds              | 0            | < 5.0 |                         |
| Polybrominated Biphenyls (PBB)             | 0            | < 5.0 |                         |
| Polybrominated Diphenylethers (PBDE)       | 0            | < 5.0 |                         |
| Asbestos                                   | 0            | 0     | As per MSDS             |
| Azo colorants                              | 0            | 0     |                         |
| Ozone Depleting Substances                 | 0            | 0     |                         |
| Polychlorinated Biphenyls (PCBs)           | 0            | 0     |                         |
| Polychlorinated Napthalenes                | 0            | 0     |                         |
| Radioactive Substances                     | 0            | 0     |                         |
| Shortchain Chlorinated Paraffins           | 0            | 0     |                         |
| Tributyl Tin (TBT) and Triphenyl Tin (TPT) | 0            | 0     |                         |
| Tributyl Tin Oxide (TBTO)                  | 0            | 0     |                         |
| Formaldehyde                               | 0            | 0     |                         |

Note 1: Qualification reports are available at [www.cypress.com](http://www.cypress.com). Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered “non-existent in the product” or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B1. MATERIAL COMPOSITION (Note 3)  
Using Gold wire material**

| Material             | Purpose of Use   | Substance Composition                     | CAS Number  | Weight by mg | % weight of substance per Homogeneous material | PPM     | % weight of substance per package |
|----------------------|------------------|---|-------------|--------------|--|---------|-----------------------------------|
| Substrate            | Base Material    | Cured Resin                               | Proprietary | 73.4076      | 28.0000%                                       | 144,840 | 14.4840                           |
|                      |                  | Glass Fabrics                             | Proprietary | 57.6774      | 22.0000%                                       | 113,803 | 11.3803                           |
|                      |                  | Copper Foil                               | Proprietary | 78.6510      | 30.0000%                                       | 155,185 | 15.5185                           |
|                      |                  | Diethylene Glycol Monoethyl Ether Acetate | Proprietary | 13.1085      | 5.0000%  | 25,864  | 2.5864                            |
|                      |                  | Acetophenone Derivative                   | Proprietary | 13.1085      | 5.0000%  | 25,864  | 2.5864                            |
|                      |                  | Silica Crystalline                        | Proprietary | 13.1085      | 5.0000%  | 25,864  | 2.5864                            |
|                      |                  | Solvent naptha                            | Proprietary | 13.1085      | 5.0000%  | 25,864  | 2.5864                            |
| Solder Ball          | External Plating | Sn  | 7440-31-5   | 84.7754      | 95.5000%                                       | 167,269 | 16.7269                           |
|                      |                  | Ag  | 7440-22-4   | 3.5508       | 4.0000%  | 7,006   | 0.7006                            |
|                      |                  | Cu  | 7440-50-8   | 0.4439       | 0.5000%  | 876     | 0.0876                            |
| Die Attach           | Adhesive         | Ag  | 7440-22-4   | 3.2480       | 80.0000%                                       | 6,409   | 0.6409                            |
|                      |                  | Bismaleimide                              | Proprietary | 0.4060       | 10.0000%                                       | 801     | 0.0801                            |
|                      |                  | Polymer                                   | Proprietary | 0.4060       | 10.0000%                                       | 801     | 0.0801                            |
| Die                  | Circuit          | Silicon                                   | 7440-21-3   | 33.1000      | 100.0000%                                      | 65,309  | 6.5309                            |
| Wire                 | Interconnect     | Au  | 7440-57-5   | 15.2600      | 100.0000%                                      | 30,109  | 3.0109                            |
| Mold Compound        | Encapsulation    | Silica                                    | 60676-86-0  | 89.4929      | 86.5000%                                       | 176,577 | 17.6577                           |
|                      |                  | Non-Brominated Flame Retardant            | Proprietary | 5.1730       | 5.0000%  | 10,207  | 1.0207                            |
|                      |                  | Epoxy Resin                               | Proprietary | 5.1730       | 5.0000%  | 10,207  | 1.0207                            |
|                      |                  | Phenol Resin                              | Proprietary | 2.5865       | 2.5000%  | 5,103   | 0.5103                            |
|                      |                  | Mixed Siloxanes                           | Proprietary | 0.5173       | 0.5000%  | 1,021   | 0.1021                            |
|                      |                  | Carbon Black Pigment                      | 1333-86-4   | 0.5173       | 0.5000%  | 1,021   | 0.1021                            |
| Package Weight (mg): |                  |   |             | 506.8201     | % Total:                                       |         | 100.0000                          |

Note 1: Qualification reports are available at [www.cypress.com](http://www.cypress.com). Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B2. MATERIAL COMPOSITION (Note 3)  
Using Copper-Palladium wire material**

| Material             | Purpose of Use   | Substance Composition                     | CAS Number  | Weight by mg | % weight of substance per Homogeneous material | PPM    | % weight of substance per package |
|----------------------|------------------|---|-------------|--------------|--|--------|-----------------------------------|
| Substrate            | Base Material    | Cured Resin                               | Proprietary | 73.4000      | 27.9971%                                       | 147190 | 14.7190%                          |
|                      |                  | Glass Fabrics                             | Proprietary | 57.6800      | 22.0010%                                       | 115666 | 11.5666%                          |
|                      |                  | Copper Foil                               | Proprietary | 78.6500      | 29.9996%                                       | 157718 | 15.7718%                          |
|                      |                  | Diethylene Glycol Monoethyl Ether Acetate | Proprietary | 13.1100      | 5.0006%  | 26290  | 2.6290%                           |
|                      |                  | Acetophenone Derivative                   | Proprietary | 13.1100      | 5.0006%  | 26290  | 2.6290%                           |
|                      |                  | Silica Crystalline                        | Proprietary | 13.1100      | 5.0006%  | 26290  | 2.6290%                           |
|                      |                  | Solvent naptha                            | Proprietary | 13.1100      | 5.0006%  | 26290  | 2.6290%                           |
| Solder Ball          | External Plating | Sn  | 7440-31-5   | 84.7800      | 95.5052%                                       | 170010 | 17.0010%                          |
|                      |                  | Ag  | 7440-22-4   | 3.5500       | 3.9991%  | 7119   | 0.7119%                           |
|                      |                  | Cu  | 7440-50-8   | 0.4400       | 0.4957%  | 882    | 0.0882%                           |
| Die Attach           | Adhesive         | Silver                                    | 7440-22-4   | 3.2400       | 79.8030%                                       | 6496   | 0.6492%                           |
|                      |                  | Bismaleimide Resin                        | 65997-17-3  | 0.4100       | 10.0985%                                       | 822    | 0.0822%                           |
|                      |                  | Synthetic Resin                           | Proprietary | 0.2659       | 6.5493%  | 533    | 0.0533%                           |
|                      |                  | Additive                                  | Proprietary | 0.1441       | 3.5493%  | 289    | 0.0289%                           |
| Die                  | Circuit          | Silicon                                   | 7440-21-3   | 33.1000      | 100.0000%                                      | 66376  | 6.6376%                           |
| Wire                 | Interconnect     | Cu  | 7440-50-8   | 7.0449       | 98.9995%                                       | 14127  | 1.4127%                           |
|                      |                  | Pd  | 7440-05-3   | 0.0712       | 1.0005%  | 143    | 0.0143%                           |
| Mold Compound        | Encapsulation    | Silica                                    | 60676-86-0  | 92.0798      | 89.0004%                                       | 184649 | 18.4649%                          |
|                      |                  | Epoxy Resin                               | Proprietary | 7.2419       | 6.9997%  | 14522  | 1.4522%                           |
|                      |                  | Phenol Resin                              | Proprietary | 3.1037       | 2.9999%  | 6224   | 0.6224%                           |
|                      |                  | Melamine Cyanurate                        | Proprietary | 0.5173       | 0.5000%  | 1037   | 0.1037%                           |
|                      |                  | Carbon Black Pigment                      | 1333-86-4   | 0.5173       | 0.5000%  | 1037   | 0.1037%                           |
| Package Weight (mg): |                  |   |             | 498.6761     | % Total:                                       |        | 100                               |

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Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.



## **II. DECLARATION OF PACKAGING INDIRECT MATERIALS**

| Type        | Material                      | Lead PPM | Cadmium PPM | Cr VI PPM | Mercury PPM | PBB PPM | PBDE PPM | Analysis Report (Note2) |
|-------------|-------------------------------|----------|-------------|-----------|-------------|---------|----------|-------------------------|
| Tape & Reel | Cover tape                    | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-COVT-R              |
|             | Carrier tape                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-CART-R              |
|             | Plastic Reel                  | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PLRL-R              |
| Tray        | Tray                          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-TRAY-R              |
| Tube        | Plastic Tube                  | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Plug                      | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
|             | End Pin                       | N/A      | N/A         | N/A       | N/A         | N/A     | N/A      | N/A                     |
| Others      | Moisture Barrier bag          | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-MBBG-R              |
|             | Shielding bag                 | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-SBAG-R              |
|             | Protective Band               | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-PROB-R              |
|             | Shipping and inner/ pizza box | < 5.0    | < 5.0       | < 5.0     | < 5.0       | < 5.0   | < 5.0    | CoA-ABOX-R              |

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

## Document History Page

Document Title: 165-FBGA (13 X 15 MM) PB-FREE PACKAGE MATERIAL DECLARATION DATASHEET (PMDD)  
Document Number: 001-05409

| Rev. | ECN No. | Orig. of Change | Description of Change  |
|------|---------|-----------------|--|
| **   | 402752  | GFJ             | New document   |
| *A   | 979562  | VFR             | Change Cypress Logo.<br>Added PMDD for site 2 – AIT, Batam, Indonesia.   |
| *B   | 1639867 | VFR             | Added new PMDD for AIT, Batam, Indonesia under Assembly site 3 – there is a change in mold compound and epoxy used. It uses low alpha mold compound and non-conductive epoxy.  |
| *C   | 2584298 | HLR             | Added the CAS number for Br.<br>Changed CAS number of Au on Assembly site 1.<br>Added the %weight of homogenous material on Assembly site 1's material composition table.<br>Removed the name of material for substrate on Assembly Site 1 and 2.                                    |
| *D   | 2711410 | JARG            | Changed reference QTP # for Assembly Site 1  |
| *E   | 2828353 | HLR             | Added Assembly Site 4.   |
| *F   | 3361110 | HLR             | Added package weight B2 for Site 1. Added "adhesive using epoxy paste" for Material Composition table for Site-1. Added Material Composition table B2 using adhesive film material at ASE-G site.  |
| *G   | 3428794 | MAHA            | Corrected the CAS number of Au on the wire of assembly site 1 – B2.  |
| *H   | 3546873 | EBZ<br>UDR      | Added package weight B3 for Site 1. Added Material Composition table B3 using copper wire material for Site 1. Added reference QTP #120107 for Site 1<br>Added new Material Composition Table B2 at Assembly Site 4 – Autoline RA Copper Wire Qualification. Reference QTP # 120610. |
| *I   | 3559733 | EBZ             | Added package weight B4 for Site 1. Added Material Composition table B4 using copper palladium wire material for Site 1. Added reference QTP #120612 for Site 1.<br>Specified wire material for B1 and B2 for Site 4.  |
| *J   | 3749957 | HLR             | Updated the material composition tables for Assembly Site 1.B1, Assembly Site 2, Assembly Site 3 and Assembly Site 4.B1 to reflect 4 decimal places on values.   |

Distribution: WEB

Posting: None

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