



# 100% Material Declaration Data Sheet FF1153

PK191 (v1.2) March 29, 2013

**Average Weight: 10.6621 g**

| Component            | Substance Description               | CAS Number or Description | Percentage of Component | Use in Product | Component Weight/ Substance Weight (grams) | Component Percent of Total |
|----------------------|-------------------------------------|---------------------------|-------------------------|----------------|--|----------------------------|
| <b>Silicon Die</b>   |                                     |                           |                         | Silicon IC     | <b>0.548912</b>                            | <b>5.148</b>               |
|                      | Doped silicon                       | 7440-21-3                 | 100.00                  |                | 0.548912                                   |                            |
| <b>Solder Bump</b>   |                                     |                           |                         | Die to package | <b>0.041809</b>                            | <b>0.392</b>               |
|                      | Tin (Sn)                            | 7440-31-5                 | 63.00                   |                | 0.026340                                   |                            |
|                      | Lead (Pb)                           | 7439-92-1                 | 37.00                   |                | 0.015469                                   |                            |
| <b>Die Underfill</b> |                                     |                           |                         |                | <b>0.065000</b>                            | <b>0.610</b>               |
|                      | Bisphenol F-type liquid epoxy resin | 9003-36-5                 | 20.00                   | Basis          | 0.013000                                   |                            |
|                      | Phenolic resin                      | Trade secret              | 15.00                   | Basis          | 0.009750                                   |                            |
|                      | Bisphenol A-type liquid epoxy resin | 25068-38-6                | 5.00                    | Basis          | 0.003250                                   |                            |
|                      | Amine type accelerator              | Trade secret              | 5.00                    | Basis          | 0.003250                                   |                            |
|                      | Silicon dioxide                     | 60676-86-0                | 51.50                   | Basis          | 0.033475                                   |                            |
|                      | Carbon black                        | 1333-86-4                 | 1.00                    | Basis          | 0.000650                                   |                            |
|                      | Additives                           | Trade secret              | 2.50                    | Basis          | 0.001625                                   |                            |
| <b>Solder Paste</b>  |                                     |                           |                         |                | <b>0.070000</b>                            | <b>0.657</b>               |
|                      | Tin (Sn)                            | 7440-31-5                 | 96.50                   | Basis          | 0.067550                                   |                            |
|                      | Silver (Ag)                         | 7440-22-4                 | 3.00                    | Basis          | 0.002100                                   |                            |
|                      | Copper (Cu)                         | 7440-50-8                 | 0.50                    | Basis          | 0.000350                                   |                            |
| <b>Substrate</b>     |                                     |                           |                         |                | <b>3.600000</b>                            | <b>33.764</b>              |
|                      | Copper (Cu)                         | 7440-50-8                 | 35.00                   | Main material  | 1.260108                                   |                            |
|                      | Nickel (Ni)                         | 7440-02-0                 | 0.44                    | Main material  | 0.015963                                   |                            |
|                      | Gold (Au)                           | 7440-57-5                 | 0.10                    | Main material  | 0.003458                                   |                            |
|                      | Lead (Pb)                           | 7439-92-1                 | 0.49                    | Main material  | 0.017562                                   |                            |
|                      | Tin (Sn)                            | 7440-31-5                 | 0.83                    | Main material  | 0.029903                                   |                            |
|                      | Core                                | N/A                       | 53.64                   | Main material  | 1.930681                                   |                            |
|                      | ABF                                 | N/A                       | 8.56                    | Main material  | 0.308092                                   |                            |
|                      | Solder Mask                         | N/A                       | 0.94                    | Main material  | 0.034232                                   |                            |

© Copyright 2011-2013 Xilinx, Inc. XILINX, the Xilinx logo, Virtex, Spartan, ISE, and other designated brands included herein are trademarks of Xilinx in the United States and other countries. All other trademarks are the property of their respective owners

| Component                 | Substance Description | CAS Number or Description | Percentage of Component | Use in Product  | Component Weight/ Substance Weight (grams) | Component Percent of Total |
|---------------------------|-----------------------|---------------------------|-------------------------|-----------------|--|----------------------------|
| <b>Capacitor 1</b>        |                       |                           |                         |                 | <b>0.028000</b>                            | <b>0.263</b>               |
|                           | Ceramic (BaTiO3 type) | Trade secret              | 61.80                   | Ceramic         | 0.017304                                   |                            |
|                           | Inner electrode (Ni)  | 7440-02-0                 | 27.00                   | Inner electrode | 0.007560                                   |                            |
|                           | Outer electrode (Cu)  | 7440-50-8                 | 9.90                    | Outer electrode | 0.002772                                   |                            |
|                           | Plating1 (Ni)         | 7440-02-0                 | 0.40                    | Plating1        | 0.000112                                   |                            |
|                           | Plating2 (Sn)         | 7440-31-5                 | 0.90                    | Plating2        | 0.000252                                   |                            |
| <b>Capacitor 2</b>        |                       |                           |                         |                 | <b>0.093600</b>                            | <b>0.878</b>               |
|                           | Ceramic (BaTiO3 type) | Trade secret              | 61.54                   | Ceramic         | 0.057600                                   |                            |
|                           | Inner electrode (Ni)  | 7440-02-0                 | 18.21                   | Inner electrode | 0.017040                                   |                            |
|                           | Outer electrode (Cu)  | 7440-50-8                 | 17.95                   | Outer electrode | 0.016800                                   |                            |
|                           | Plating1 (Ni)         | 7440-02-0                 | 0.77                    | Plating1        | 0.000720                                   |                            |
|                           | Plating2 (Sn)         | 7440-31-5                 | 1.54                    | Plating2        | 0.001440                                   |                            |
| <b>Heat Sink</b>          |                       |                           |                         |                 | <b>4.965400</b>                            | <b>46.570</b>              |
|                           | Copper (Cu)           | 7440-50-8                 | 99.54                   | Main material   | 4.942559                                   |                            |
|                           | Nickel (Ni)           | 7440-02-0                 | 0.46                    | Main material   | 0.022841                                   |                            |
| <b>Heat Sink Adhesive</b> |                       |                           |                         |                 | <b>0.152000</b>                            | <b>1.426</b>               |
|                           | Aluminum oxide        | 1344-28-1                 | 70.00                   | Main material   | 0.106400                                   |                            |
|                           | Zinc oxide            | 1314-13-2                 | 15.00                   | Main material   | 0.022800                                   |                            |
|                           | Silicone              | Trade Secret              | 15.00                   | Main material   | 0.022800                                   |                            |
|                           | Additives             | Trade Secret              |                         | Additive        |  |                            |
| <b>Solder Balls</b>       |                       |                           |                         |                 | <b>1.097422</b>                            | <b>10.293</b>              |
|                           | Tin (Sn)              | 7440-31-5                 | 63.00                   | Base metal      | 0.691376                                   |                            |
|                           | Lead (Pb)             | 7440-50-8                 | 37.00                   | Base metal      | 0.406046                                   |                            |

## Revision History

The following table shows the revision history for this document.

| Date     | Version | Description of Revisions    |
|----------|---------|-----------------------------|
| 05/19/10 | 1.0     | Initial Xilinx release.     |
| 07/08/11 | 1.1     | Update component weights    |
| 03/29/13 | 1.2     | Updated Substrate Component |

## Notice of Disclaimer

Xilinx regards this materials data to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Xilinx subcontracts the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Xilinx has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Xilinx products.