



# 100% Material Declaration Data Sheet FFG1153

PK192 (v1.1) March 4, 2011

**Average Weight: 10.5305 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 (FPGA)</b> |                                     |                           |                         | Silicon IC     | <b>0.548912</b>                            | <b>5.213</b>               |
|                           | Doped silicon                       | 7440-21-3                 | 100.00                  |                | 0.548912                                   |                            |
| <b>Solder Bump</b>        |                                     |                           |                         | Die to package | <b>0.041809</b>                            | <b>0.397</b>               |
|                           | Tin                                 | 7440-31-5                 | 63.00                   |                | 0.026340                                   |                            |
|                           | Lead                                | 7439-92-1                 | 37.00                   |                | 0.015469                                   |                            |
| <b>Die Underfill</b>      |                                     |                           |                         |                | <b>0.065000</b>                            | <b>0.617</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>0.665</b>               |
|                           | Tin                                 | 7440-31-5                 | 96.50                   | Basis          | 0.067550                                   |                            |
|                           | Silver                              | 7440-22-4                 | 3.00                    | Basis          | 0.002100                                   |                            |
|                           | Copper                              | 7440-50-8                 | 0.50                    | Basis          | 0.000350                                   |                            |

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|--------------------|---|--|-------------------------|----------------|--|----------------------------|
| <b>Substrate</b>   |   |  |                         |                | <b>3.600000</b>                            | <b>34.186</b>              |
| <b>Plating</b>     | Copper (Cu)                                 | 7440-50-8                              | 32.04                   | Main material  | 1.153525                                   |                            |
|                    | Nickel (Ni)                                 | 7440-02-0                              | 0.44                    | Main material  | 0.015963                                   |                            |
|                    | Gold (Au)                                   | 7440-57-5                              | 0.10                    | Main material  | 0.003458                                   |                            |
| <b>Bump</b>        | Lead (Pb)                                   | 7439-92-1                              | 0.49                    | Main material  | 0.017562                                   |                            |
|                    | Tin (Sn)                                    | 7440-31-5                              | 0.83                    | Main material  | 0.029903                                   |                            |
| <b>Copper Foil</b> | Copper (Cu)                                 | 7440-50-8                              | 2.96                    | Main material  | 0.106584                                   |                            |
| <b>Core</b>        | Bismaleimide                                | 13676-54-5                             | 16.09                   | Main material  | 0.579204                                   |                            |
|                    | Triazine                                    | 25722-66-1                             | 16.09                   | Main material  | 0.579204                                   |                            |
|                    | Epoxy Resin                                 | 29690-82-2<br>68541-56-0<br>25068-38-6 | 4.83                    | Main material  | 0.173761                                   |                            |
|                    | Inorganic filler                            | 13776-74-4<br>7631-86-9                | 0.54                    | Main material  | 0.019307                                   |                            |
|                    | Fiberglass                                  | 65997-17-3                             | 16.09                   | Main material  | 0.579204                                   |                            |
| <b>ABF</b>         | Bisphenol A-type epoxy resin                | 25068-38-6                             | 2.14                    | Main material  | 0.077023                                   |                            |
|                    | Cyclohexane                                 | 108-94-1                               | 2.14                    | Main material  | 0.077023                                   |                            |
|                    | N, N-dimethylformamide                      | 68-12-2                                | 2.14                    | Main material  | 0.077023                                   |                            |
|                    | Silica powder (Silicon dioxide)             | 7631-86-9                              | 2.14                    | Main material  | 0.077023                                   |                            |
| <b>Solder Mask</b> | Levelling agents and others                 | N/A                                    | 0.01                    | Main material  | 0.000274                                   |                            |
|                    | Phthalocyanine blue, organic pigment        | N/A                                    | 0.00                    | Main material  | 0.000068                                   |                            |
|                    | Amine compound                              | N/A                                    | 0.00                    | Main material  | 0.000137                                   |                            |
|                    | Barium sulfate                              | 7727-43-7                              | 0.13                    | Main material  | 0.004656                                   |                            |
|                    | Silica                                      | 15468-32-3                             | 0.06                    | Main material  | 0.002328                                   |                            |
|                    | Talc  | 14807-96-6                             | 0.06                    | Main material  | 0.002328                                   |                            |
|                    | Diethylene glycol monoethyl ether acetate   | N/A                                    | 0.03                    | Main material  | 0.001232                                   |                            |
|                    | Dipropylane glycol monomethyl ether         | N/A                                    | 0.03                    | Main material  | 0.001061                                   |                            |
|                    | Dipropylane glycol monomethyl ether acetate | N/A                                    | 0.09                    | Main material  | 0.003115                                   |                            |
|                    | High boiling-point petroleum solvent        | N/A                                    | 0.07                    | Main material  | 0.002602                                   |                            |
|                    | Aromatic carbonyl compound                  | N/A                                    | 0.03                    | Main material  | 0.000924                                   |                            |
|                    | Acrylic monomer                             | N/A                                    | 0.03                    | Main material  | 0.001164                                   |                            |
|                    | Acrylic resin                               | N/A                                    | 0.25                    | Main material  | 0.009140                                   |                            |
|                    | Epoxy resin                                 | N/A                                    | 0.14                    | Main material  | 0.005203                                   |                            |

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| <b>Capacitor</b>          |                       |                           |                         |                 | <b>0.028000</b>                            | <b>0.266</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</b>          |                       |                           |                         |                 | <b>0.093600</b>                            | <b>0.889</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>47.152</b>              |
|                           | Copper                | 7440-50-8                 | 99.54                   | Main material   | 4.942559                                   |                            |
|                           | Nickel                | 7440-02-0                 | 0.46                    | Main material   | 0.022841                                   |                            |
| <b>Heat Sink Adhesive</b> |                       |                           |                         |                 | <b>0.152000</b>                            | <b>1.443</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>0.965783</b>                            | <b>9.171</b>               |
|                           | Tin                   | 7440-31-5                 | 95.50                   | Base metal      | 0.922323                                   |                            |
|                           | Silver                | 7440-22-4                 | 4.00                    | Base metal      | 0.038631                                   |                            |
|                           | Copper                | 7440-50-8                 | 0.50                    | Base metal      | 0.004829                                   |                            |

## 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.  |
| 03/04/11 | 1.1     | Update component weights |

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