



## Device Material Content

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Assembly: ASEM  
Size (mm): 23 x 23

Package: 484 fpBGA  
Total Device Weight 2.21 Grams

Package Code: **FN484**

Lead pitch (mm): 1.0  
MSL: 3

June, 2019

Products: LAE3

Reflow max (°C): 250

|                      | % of Total Pkg. Wt. | Weight (g) | % of Total Pkg. Wt. | Weight (g) | Substance                           | CAS #       | % of Subst. | Notes / Assumptions:                                |
|----------------------|---------------------|------------|---------------------|------------|-------------------------------------|-------------|-------------|---|
| <b>Die</b>           | 3.58%               | 0.0791     | 3.58%               | 0.0791     | Silicon chip                        | 7440-21-3   | 100.00%     | Die size: 9.63 x 11.36 mm                           |
| <b>Mold Compound</b> | 25.07%              | 0.5540     | 1.25%               | 0.0277     | Epoxy Resin                         | -           | 5.00%       | Mold Compound: Hitachi / CEL 9750ZHF10AKL-U B1(LSA) |
|                      |                     |            | 1.25%               | 0.0277     | Phenol Resin                        | -           | 5.00%       |   |
|                      |                     |            | 0.05%               | 0.0011     | Carbon Black                        | 1333-86-4   | 0.20%       |   |
|                      |                     |            | 22.01%              | 0.4865     | Silica                              | 60676-86-0  | 87.80%      |   |
|                      |                     |            | 0.50%               | 0.0111     | Others                              | -           | 2.00%       |   |
| <b>D/A Epoxy</b>     | 0.50%               | 0.0111     | 0.40%               | 0.00884    | Silver                              | 7440-22-4   | 80.00%      | Die attach epoxy: Henkel (Ablebond) 2100A           |
|                      |                     |            | 0.10%               | 0.00221    | Esters & resins                     | -           | 20.00%      |   |
| <b>Wire</b>          | 0.64%               | 0.0141     | 0.64%               | 0.0141     | Gold (Au)                           | 7440-57-5   | 100.00%     | 0.8 mil diameter; 1 wire per solder ball            |
| <b>Solder Balls</b>  | 21.30%              | 0.4707     | 20.55%              | 0.4543     | Tin (Sn)                            | 7440-31-5   | 96.50%      | SAC305  |
|                      |                     |            | 0.64%               | 0.0141     | Silver (Ag)                         | 7440-22-4   | 3.00%       |   |
|                      |                     |            | 0.11%               | 0.0024     | Copper (Cu)                         | 7440-50-8   | 0.50%       |   |
| <b>Substrate</b>     | 28.86%              | 0.6377     | 9.23%               | 0.2041     | BT Resins                           | -           | 32.00%      | BT Resin CCL-HL832NX-A*                             |
|                      |                     |            | 19.62%              | 0.4337     | Glass fiber                         | 65997-17-3  | 68.00%      |   |
| <b>Foil</b>          | 13.12%              | 0.2900     | 10.76%              | 0.2378     | Copper                              | 7440-50-8   | 82.00%      |   |
|                      |                     |            | 1.98%               | 0.0438     | Nickel plating                      | 7440-02-0   | 15.10%      |   |
|                      |                     |            | 0.38%               | 0.0084     | Gold plating                        | 7440-57-5   | 2.91%       |   |
| <b>Solder Mask</b>   | 6.93%               | 0.1532     | 3.77%               | 0.0833     | Quartz                              | 14808-60-7  | 54.37%      | Solder mask PSR4000 AUS 308                         |
|                      |                     |            | 0.51%               | 0.0112     | Dipropylene glycol monomethyl ether | 34590-94-8  | 7.33%       |   |
|                      |                     |            | 0.23%               | 0.0051     | Morpholine derivative               | 71868-10-5  | 3.32%       |   |
|                      |                     |            | 0.21%               | 0.0046     | Silicon dioxide                     | 7631-86-9   | 3.00%       |   |
|                      |                     |            | 0.21%               | 0.0046     | Silica, amorphous                   | 112945-52-5 | 3.00%       |   |
|                      |                     |            | 0.02%               | 0.0004     | Carbon black                        | 1333-86-4   | 0.24%       |   |
|                      |                     |            | 1.99%               | 0.0440     | Trade secret ingredients            | -           | 28.74%      |   |
|                      |                     |            |                     |            |                                     |             |             |   |

**Notes:** \* 0.29% max. concentration (of total pkg wt.) of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.

The values listed above are nominal values based on studies of representatives of this particular package type, and are believed to be as accurate as possible.

Constituent substances and proportions in epoxy materials are before curing.

The information provided above is representative of the package as of the date listed, and is subject to change at any time.

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