



## Device Material Content

5555 NE Moore Ct.  
Hillsboro OR 97124  
[custreq@latticesemi.com](mailto:custreq@latticesemi.com)

November, 2020

**Package:** 484 fpBGA  
**Total Device Weight** 2.214 Grams

**Package Code:**

**FG484**

**Products:**

XO2

Assembly: ASEM

Size (mm): 23 x 23

Lead pitch (mm): 1.0

MSL: 3

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>           | 0.99%               | 0.0219     | 0.99%               | 0.0219     | Silicon chip                   | 7440-21-3   | 100.00%     | Die size: 5.66 x 6.71mm                   |
| <b>Mold Compound</b> | 34.35%              | 0.7604     | 2.23%               | 0.0494     | Epoxy Resin                    | -           | 6.50%       | Mold Compound: Sumitomo G750SE            |
|                      |                     |            | 1.72%               | 0.0380     | Phenol Novolac                 | 9003-35-4   | 5.00%       |                                           |
|                      |                     |            | 1.72%               | 0.0380     | Metal Hydroxide                | -           | 5.00%       |                                           |
|                      |                     |            | 0.10%               | 0.0023     | Carbon Black                   | 1333-86-4   | 0.30%       |                                           |
|                      |                     |            | 28.58%              | 0.6327     | Silica Fused                   | 60676-86-0  | 83.20%      |                                           |
| <b>D/A Epoxy</b>     | 0.14%               | 0.0032     | 0.12%               | 0.00255    | Silver                         | 7440-22-4   | 80.00%      | Die attach epoxy: Henkel (Ablebond) 2100A |
|                      |                     |            | 0.03%               | 0.00064    | Esters & resins                | -           | 20.00%      |                                           |
| <b>Wire</b>          | 0.22%               | 0.0050     | 0.22%               | 0.0049     | Copper                         | 7440-50-8   | 98.55%      | 0.8 mil diameter; 1 wire per solder ball  |
|                      |                     |            | 0.00%               | 0.0001     | Palladium                      | 7440-05-3   | 1.45%       |                                           |
| <b>Solder Balls</b>  | 21.21%              | 0.4696     | 20.47%              | 0.4531     | Tin (Sn)                       | 7440-31-5   | 96.50%      | SAC305                                    |
|                      |                     |            | 0.64%               | 0.0141     | Silver (Ag)                    | 7440-22-4   | 3.00%       |                                           |
|                      |                     |            | 0.11%               | 0.0023     | Copper (Cu)                    | 7440-50-8   | 0.50%       |                                           |
| <b>Substrate</b>     | 20.15%              | 0.4460     | 6.45%               | 0.1427     | BT Resins                      | -           | 32.00%      | BT Resin CCL-HL832NX-A                    |
|                      |                     |            | 13.70%              | 0.3033     | Glass fiber                    | 65997-17-3  | 68.00%      |                                           |
| <b>Foil</b>          | 18.31%              | 0.4053     | 16.70%              | 0.3696     | Copper                         | 7440-50-8   | 91.18%      |                                           |
|                      |                     |            | 1.54%               | 0.0340     | Nickel plating                 | 7440-02-0   | 8.40%       |                                           |
|                      |                     |            | 0.08%               | 0.0017     | Gold plating                   | 7440-57-5   | 0.42%       |                                           |
| <b>Solder Mask</b>   | 4.61%               | 0.1021     | 2.59%               | 0.0574     | Quartz                         | 14808-60-7  | 56.20%      | Solder mask PSR4000 AUS 308               |
|                      |                     |            | 0.74%               | 0.0163     | 3-methoxy-3-methylbutylacetate | 103429-90-9 | 16.00%      |                                           |
|                      |                     |            | 1.01%               | 0.0225     | Barium Sulfate                 | 7727-43-7   | 22.00%      |                                           |
|                      |                     |            | 0.14%               | 0.0031     | Talc                           | 14807-96-6  | 3.00%       |                                           |
|                      |                     |            | 0.02%               | 0.0005     | Naphthalene                    | 91-20-3     | 0.50%       |                                           |
|                      |                     |            | 0.11%               | 0.0023     | Trade secret ingredients       | -           | 2.30%       |                                           |
|                      |                     |            |                     |            |                                |             |             |                                           |

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Rev. K



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|                      |                     |            | 1.72%               | 0.0380     | Phenol Resin                   | -           | 5.00%       |                                           |
|                      |                     |            | 0.07%               | 0.0015     | Carbon Black                   | 1333-86-4   | 0.20%       |                                           |
|                      |                     |            | 30.16%              | 0.6676     | Silica                         | 60676-86-0  | 87.80%      |                                           |
|                      |                     |            | 0.69%               | 0.0152     | Others                         | -           | 2.00%       |                                           |
| <b>D/A Epoxy</b>     | 0.14%               | 0.0032     | 0.12%               | 0.00255    | Silver                         | 7440-22-4   | 80.00%      | Die attach epoxy: Henkel (Ablebond) 2100A |
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