



Device Material Content

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Assembly: ATP
Size (mm): 9 x 9
Lead pitch (mm): 0.8
MSL: 3
Reflow max (°C): 260

Package: **121 caBGA** **Package Code: BG121**
Total Device Weight 0.157 Grams **Products: ICE40HX**

| June, 2019 | Package: 121 caBGA | | Total Device Weight 0.157 Grams | | Package Code: BG121 | Products: ICE40HX | | |
|----------------------|---------------------|------------|---------------------------------|------------|-------------------------------------|-------------------|-------------|---|
| | % of Total Pkg. Wt. | Weight (g) | % of Total Pkg. Wt. | Weight (g) | Substance | CAS # | % of Subst. | Notes / Assumptions: |
| Die | 1.05% | 0.0016 | 1.05% | 0.0016 | Silicon chip | 7440-21-3 | 100.00% | Die size: 2.7 x 2.4 x 0.102 mm |
| Mold Compound | 44.60% | 0.0701 | 3.12% | 0.0049 | Solid Epoxy Resin | - | 7.00% | Mold Compound: Hitachi GE-110LS-V (ULA) |
| | | | 2.23% | 0.0035 | Phenol Resin | - | 5.00% | |
| | | | 37.91% | 0.0596 | Silica | 60676-86-0 | 85.00% | |
| | | | 1.12% | 0.0018 | Metal Hydroxide | - | 2.50% | |
| | | | 0.22% | 0.0004 | Carbon Black | 1333-86-4 | 0.50% | |
| D/A Tape | 0.09% | 0.0001 | 0.04% | 0.00006 | Polyolefin | - | 45.00% | Die attach: Adwill Lintec LE-5000 |
| | | | 0.01% | 0.00002 | Soft PVC | 9002-86-2 | 15.00% | |
| | | | 0.00% | 0.00001 | Acrylic Resin | - | 5.00% | |
| | | | 0.01% | 0.00001 | Epoxy Resin | - | 10.00% | |
| | | | 0.02% | 0.00004 | Polyethylene terephthalate | 25038-59-9 | 25.00% | |
| Wire | 0.54% | 0.0008 | 0.53% | 0.00084 | Copper | 7440-50-8 | 98.70% | Pd coated Copper, 0.018 mm diameter |
| | | | 0.01% | 0.00001 | Palladium | 7440-05-3 | 1.30% | |
| Solder Balls | 18.73% | 0.0294 | 18.45% | 0.0290 | Tin (Sn) | 7440-31-5 | 98.50% | SAC105 |
| | | | 0.19% | 0.0003 | Silver (Ag) | 7440-22-4 | 1.00% | |
| | | | 0.09% | 0.0001 | Copper (Cu) | 7440-50-8 | 0.50% | |
| Substrate | 21.72% | 0.0341 | 6.95% | 0.0109 | BT Resins | - | 32.00% | BT Resin CCL-HL832NX* |
| | | | 14.77% | 0.0232 | Glass fiber | 65997-17-3 | 68.00% | |
| Foil | 8.09% | 0.0127 | 5.97% | 0.0094 | Copper | 7440-50-8 | 73.76% | |
| | | | 1.81% | 0.0028 | Nickel plating | 7440-02-0 | 22.40% | |
| | | | 0.31% | 0.0005 | Gold plating | 7440-57-5 | 3.85% | |
| Solder Mask | 5.17% | 0.0081 | 2.81% | 0.0044 | Quartz | 14808-60-7 | 54.37% | Solder mask PSR4000 AUS 308 |
| | | | 0.38% | 0.0006 | Dipropylene glycol monomethyl ether | 34590-94-8 | 7.33% | |
| | | | 0.17% | 0.0003 | Morpholine derivative | 71868-10-5 | 3.32% | |
| | | | 0.16% | 0.0002 | Silicon dioxide | 7631-86-9 | 3.00% | |
| | | | 0.16% | 0.0002 | Silica, amorphous | 112945-52-5 | 3.00% | |
| | | | 0.01% | 0.0000 | Carbon black | 1333-86-4 | 0.24% | |
| | | | 1.49% | 0.0023 | Trade secret ingredients | - | 28.74% | |

Notes: * 0.22% max. concentration of Bisphenol A (CAS# 80-05-7) 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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