



| Semiconductor Device Type: EMC LDFN-4L-7.0x5.0x1.6mm-NiAu |              |                              |                |         |        | Package Homogeneous Materials |                      |                     |                   |        |
|---|--------------|------------------------------|----------------|---------|--------|-------------------------------|----------------------|---------------------|-------------------|--------|
| Basic Substance   | CAS Number   | "Contained In" Sub-Component | % Total Weight | mg/part | ppm    | 22.19                         | (mg) Total           | Kovar               | % of Total Weight | 15.80  |
| Nickel  | 7440-02-0    | Kovar                        | 4.58           | 6.44    | 45813  |                               | Nickel               | 7440-02-0           | 29.00             |        |
| Cobalt  | 7440-48-4    | Kovar                        | 2.69           | 3.77    | 26856  |                               | Cobalt               | 7440-48-4           | 17.00             |        |
| Iron  | 7439-89-6    | Kovar                        | 8.46           | 11.88   | 84611  |                               | Iron                 | 7439-89-6           | 53.56             |        |
| Carbon  | 7440-44-0    | Kovar                        | 0.00           | 0.00    | 32     |                               | Carbon               | 7440-44-0           | 0.02              |        |
| Silicon   | 7440-21-3    | Kovar                        | 0.00           | 0.00    | 32     |                               | Silicon              | 7440-21-3           | 0.02              |        |
| Manganese   | 7439-96-5    | Kovar                        | 0.06           | 0.09    | 632    |                               | Manganese            | 7439-96-5           | 0.40              |        |
| Nickel  | 7440-02-0    | Nickel Plating               | 0.86           | 1.21    | 8614   |                               | Total                | 100.00              |                   |        |
| Aluminum Oxide  | 1344-28-1    | Ceramics                     | 54.92          | 77.14   | 549163 | 1.21                          | (mg) Total           | Nickel Plating      | % of Total Weight | 0.86   |
| Silicon Oxide   | 7631-86-9    | Ceramics                     | 3.66           | 5.14    | 36611  |                               | Nickel               | 7440-02-0           | 100.00            |        |
| Chromium oxide  | 1308-38-9    | Ceramics                     | 1.22           | 1.71    | 12204  |                               | Total                | 100.00              |                   |        |
| Molybdenum  | 7439-98-7    | Ceramics                     | 1.22           | 1.71    | 12204  |                               |                      |                     |                   |        |
| Iron  | 7439-89-6    | Kovar Seal Sing              | 4.41           | 6.20    | 44106  | 85.71                         | (mg) Total           | Ceramics            | % of Total Weight | 61.02  |
| Nickel  | 7440-02-0    | Kovar Seal Sing              | 2.51           | 3.52    | 25080  |                               | Aluminum Oxide       | 1344-28-1           | 90.00             |        |
| Cobalt  | 7440-48-4    | Kovar Seal Sing              | 1.56           | 2.19    | 15567  |                               | Silicon Oxide        | 7631-86-9           | 6.00              |        |
| Trade Secret  | Trade Secret | Kovar Seal Sing              | 0.17           | 0.24    | 1730   |                               | Chromium oxide       | 1308-38-9           | 2.00              |        |
| Gold  | 7440-57-5    | Plate                        | 0.48           | 0.67    | 4805   |                               | Molybdenum           | 7439-98-7           | 2.00              |        |
| Nickel  | 7440-02-0    | Plate                        | 0.32           | 0.45    | 3203   |                               | Total                | 100.00              |                   |        |
| Tungsten  | 7440-33-7    | Metalizing                   | 6.34           | 8.91    | 63420  | 12.15                         | (mg) Total           | Kovar Seal Sing     | % of Total Weight | 8.65   |
| Trade Secret  | Trade Secret | Metalizing                   | 0.06           | 0.09    | 641    |                               | Iron                 | 7439-89-6           | 51.00             |        |
| Silver  | 7440-22-4    | Solder                       | 2.27           | 3.19    | 22742  |                               | Nickel               | 7440-02-0           | 29.00             |        |
| Copper  | 7440-50-8    | Solder                       | 0.93           | 1.30    | 9289   |                               | Cobalt               | 7440-48-4           | 18.00             |        |
| Silicon   | 7440-21-3    | Integrated Circuit           | 0.25           | 0.35    | 2469   |                               | Trade Secret         | Trade Secret        | 2.00              |        |
| Aluminum  | 7429-90-5    | Integrated Circuit           | 0.00           | 0.00    | 10     |                               | Total                | 100.00              |                   |        |
| Titanium  | 7440-32-6    | Integrated Circuit           | 0.00           | 0.00    | 7      |                               |                      |                     |                   |        |
| Tungsten  | 7440-33-7    | Integrated Circuit           | 0.00           | 0.00    | 5      |                               |                      |                     |                   |        |
| Copper  | 7440-50-8    | Integrated Circuit           | 0.00           | 0.00    | 0      | 1.12                          | (mg) Total           | Plate               | % of Total Weight | 0.80   |
| Arsenic   | 7440-38-2    | Integrated Circuit           | 0.00           | 0.00    | 0      |                               | Gold                 | 7440-57-5           | 0.00              |        |
| Boron   | 7440-42-8    | Integrated Circuit           | 0.00           | 0.00    | 0      |                               | Nickel               | 7440-02-0           | 100.00            |        |
| Fluorine  | 7782-41-4    | Integrated Circuit           | 0.00           | 0.00    | 0      |                               | Total                | 100.00              |                   |        |
| Phosphorus  | 7723-14-0    | Integrated Circuit           | 0.00           | 0.00    | 0      |                               |                      |                     |                   |        |
| Silver  | 7440-22-4    | Adhesive                     | 0.23           | 0.32    | 2285   | 9.00                          | (mg) Total           | Metalizing          | % of Total Weight | 6.41   |
| Epoxy Resin   | Trade Secret | Adhesive                     | 0.05           | 0.06    | 457    |                               | Tungsten             | 7440-33-7           | 99.00             |        |
| Epoxy Resin Modifier                                      | Trade Secret | Adhesive                     | 0.03           | 0.04    | 305    |                               | Trade Secret         | Trade Secret        | 1.00              |        |
| Gold  | 7440-57-5    | Gold Wire                    | 0.43           | 0.60    | 4271   |                               | Total                | 100.00              |                   |        |
| Quartz  | 14808-60-7   | Blank                        | 1.04           | 1.46    | 10394  | 4.50                          | (mg) Total           | Solder              | % of Total Weight | 3.20   |
| Silver  | 7440-22-4    | Internal Electrode           | 0.01           | 0.01    | 77     |                               | Silver               | 7440-22-4           | 71.00             |        |
| Chromium  | 7440-47-3    | Internal Electrode           | 0.00           | 0.00    | 9      |                               | Copper               | 7440-50-8           | 29.00             |        |
| Silver  | 7440-22-4    | Conductive Adhesive          | 0.97           | 1.37    | 9729   |                               | Total                | 100.00              |                   |        |
| Silicon Oxide   | Trade Secret | Conductive Adhesive          | 0.13           | 0.18    | 1315   |                               |                      |                     |                   |        |
| Silicone Resin  | Trade Secret | Conductive Adhesive          | 0.13           | 0.18    | 1315   |                               |                      |                     |                   |        |
| TOTALS: 100.00 140.47 1,000,000                           |              |                              |                |         |        | 0.35                          | (mg) Total           | Integrated Circuit  | % of Total Weight | 0.25   |
| 140.47 mg Total Mass                                      |              |                              |                |         |        |                               | Silicon              | 7440-21-3           | 99.10             |        |
|   |              |                              |                |         |        |                               | Aluminum             | 7429-90-5           | 0.39              |        |
|   |              |                              |                |         |        |                               | Titanium             | 7440-32-6           | 0.30              |        |
|   |              |                              |                |         |        |                               | Tungsten             | 7440-33-7           | 0.20              |        |
|   |              |                              |                |         |        |                               | Copper               | 7440-50-8           | 0.01              |        |
|   |              |                              |                |         |        |                               | Arsenic              | 7440-38-2           | 0.00              |        |
|   |              |                              |                |         |        |                               | Boron                | 7440-42-8           | 0.00              |        |
|   |              |                              |                |         |        |                               | Fluorine             | 7782-41-4           | 0.00              |        |
|   |              |                              |                |         |        |                               | Phosphorus           | 7723-14-0           | 0.00              |        |
|   |              |                              |                |         |        |                               | Total                | 100.00              |                   |        |
|   |              |                              |                |         |        | 0.43                          | (mg) Total           | Adhesive            | % of Total Weight | 0.30   |
|   |              |                              |                |         |        |                               | Silver               | 7440-22-4           | 75.00             |        |
|   |              |                              |                |         |        |                               | Epoxy Resin          | Trade Secret        | 15.00             |        |
|   |              |                              |                |         |        |                               | Epoxy Resin Modifier | Trade Secret        | 10.00             |        |
|   |              |                              |                |         |        |                               | Total                | 100.00              |                   |        |
|   |              |                              |                |         |        | 0.60                          | (mg) Total           | Gold Wire           | % of Total Weight | 0.43   |
|   |              |                              |                |         |        |                               | Gold                 | 7440-57-5           | 100.00            |        |
|   |              |                              |                |         |        |                               | Total                | 100.00              |                   |        |
|   |              |                              |                |         |        | 1.46                          | (mg) Total           | Blank               | % of Total Weight | 1.04   |
|   |              |                              |                |         |        |                               | Quartz               | 14808-60-7          | 100.00            |        |
|   |              |                              |                |         |        |                               | Total                | 100.00              |                   |        |
|   |              |                              |                |         |        | 0.01                          | (mg) Total           | Internal Electrode  | % of Total Weight | 0.01   |
|   |              |                              |                |         |        |                               | Silver               | 7440-22-4           | 90.00             |        |
|   |              |                              |                |         |        |                               | Chromium             | 7440-47-3           | 10.00             |        |
|   |              |                              |                |         |        |                               | Total                | 100.00              |                   |        |
|   |              |                              |                |         |        | 1.74                          | (mg) Total           | Conductive Adhesive | % of Total Weight | 1.24   |
|   |              |                              |                |         |        |                               | Silver               | 7440-22-4           | 78.72             |        |
|   |              |                              |                |         |        |                               | Silicon Oxide        | Trade Secret        | 10.64             |        |
|   |              |                              |                |         |        |                               | Silicone Resin       | Trade Secret        | 10.64             |        |
|   |              |                              |                |         |        | 140.47                        | Total                | 100.00              |                   | 100.00 |

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