

## LTM9013-BGA, 196LD 15mm X 15mm X 2.82mm (TABLE OF MATERIAL DECLARATION)

The LTM9013 is RoHS compliant per EU RoHS Directive 2003/95/EC.

It contains less than 100ppm cadmium (Cd) and less than 1,000ppm of each - lead (Pb), mercury (Hg), hexavalent chromium (Cr+), polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE)

| No.                  | Part Name                 | Material Name | Component Weight (gram) | Materials Analysis (element)                                       | CAS Number   | Material Mass (gram) | Materials Analysis (weight %) |
|----------------------|---------------------------|---------------|-------------------------|--|--|----------------------|-------------------------------|
| 1                    | Substrate                 | Circuit Board | 0.2513                  | Barium Compounds   | 7727-43-7  | 0.004926             | 1.96                          |
|                      |                           |               |                         | Bismaleimide/Triazine Resin/Filler Substances (Silica Crystalline) | 105391-33-1,1156-51-0/9003-36-5/21645-51 2, non-disclosure | 0.044783             | 17.82                         |
|                      |                           |               |                         | Copper Metal   | 7440-50-8  | 0.151716             | 60.37                         |
|                      |                           |               |                         | Copper Compounds   | 147-14-8   | 0.000043             | 0.02                          |
|                      |                           |               |                         | Ecotoxic substances  | 7440-38-2, 7439-92-1                                       | 0.000019             | 0.01                          |
|                      |                           |               |                         | Phosphorus   | 7723-14-0  | 0.000276             | 0.11                          |
|                      |                           |               |                         | Palladium  | 7440-05-3  | 0.000045             | 0.02                          |
|                      |                           |               |                         | Gold metal or alloy  | 7440-57-5  | 0.000146             | 0.06                          |
|                      |                           |               |                         | Nickel   | 7440-02-0  | 0.003116             | 1.24                          |
|                      |                           |               |                         | Zinc   | 7440-66-6  | 0.000183             | 0.07                          |
|                      |                           |               |                         | Continuous Filament Fiber Glass                                    | 65997-17-3   | 0.035209             | 14.01                         |
|                      |                           |               |                         | Acrylic Resin  | non-disclosure   | 0.009374             | 3.73                          |
|                      |                           |               |                         | Chromium(III) Oxide  | 1308-38-9  | 0.000005             | 0.00                          |
|                      |                           |               |                         | Silica amorphous   | 7631-86-9  | 0.000060             | 0.02                          |
|                      |                           |               |                         | Talc;not containing fibers like asbestos                           | 14807-96-6   | 0.000578             | 0.23                          |
|                      |                           |               |                         | Aromatic Carbonyl compounds  | non-disclosure   | 0.000528             | 0.21                          |
|                      |                           |               |                         | Cyanoguanidine   | 461-58-5   | 0.000015             | 0.01                          |
|                      |                           |               |                         | Amine compounds  | non-disclosure   | 0.000070             | 0.03                          |
|                      |                           |               |                         | Leveling agent and others  | non-disclosure   | 0.000214             | 0.09                          |
| 2                    | Solder Paste              | Alloy         | 0.0140                  | Sn   | 7440-31-5  | 0.01326              | 95.00                         |
|                      |                           |               |                         | Sb   | 7440-36-0  | 0.00070              | 5.00                          |
| 3                    | Epoxy                     |               | 0.0023                  | Di-ester resin   | non-disclosure   | 0.00023              | 10.00                         |
|                      |                           |               |                         | Functionalized ester   | non-disclosure   | 0.00023              | 10.00                         |
|                      |                           |               |                         | Silver   | 7440-22-4  | 0.00184              | 80.00                         |
| 4                    | Passive/Active Components |               | 0.0450                  | Ni Oxide   | 1313-99-1  | 0.00061              | 1.36                          |
|                      |                           |               |                         | Cu Oxide   | 1317-38-0  | 0.00021              | 0.46                          |
|                      |                           |               |                         | Zn Oxide   | 1314-13-2  | 0.00093              | 2.07                          |
|                      |                           |               |                         | Fe Oxide   | 1309-37-1  | 0.00339              | 7.53                          |
|                      |                           |               |                         | Iron Powder (Fe)   | 7439-89-6  | 0.00010              | 0.22                          |
|                      |                           |               |                         | Copper (Cu)  | 7440-50-8  | 0.01357              | 30.15                         |
|                      |                           |               |                         | Nickel (Ni)  | 7440-02-0  | 0.00307              | 6.83                          |
|                      |                           |               |                         | Tin (Sn)   | 7440-31-5  | 0.00101              | 2.25                          |
|                      |                           |               |                         | Ceramic (Ba) Compounds   | 12047-27-7   | 0.02211              | 49.14                         |
| 5                    | Active Ics                | Silicon       | 0.0084                  | Silicon  | 7440-21-3  | 0.00844              | 100.00                        |
| 6                    | Wire                      | Gold          | 0.0015                  | Au   | 7440-57-5  | 0.00147              | 99.99                         |
| 7                    | Solder Ball               | SAC305        | 0.1617                  | Sn   | 7440-31-5  | 0.15601              | 96.50                         |
|                      |                           |               |                         | Ag   | 7440-22-4  | 0.00485              | 3.00                          |
|                      |                           |               |                         | Cu   | 7440-50-8  | 0.00081              | 0.50                          |
| 8                    | Encapsulation             | Epoxy Resin   | 0.8658                  | Fused Silica   | 60676-86-0   | 0.66842              | 77.20                         |
|                      |                           |               |                         | Epoxy Resin  | non-disclosure   | 0.07706              | 8.90                          |
|                      |                           |               |                         | Phenol Resin   | non-disclosure   | 0.07706              | 8.90                          |
|                      |                           |               |                         | Crytalline Silica  | 14808-60-7   | 0.02598              | 3.00                          |
|                      |                           |               |                         | Carbon Black   | 1333-86-4  | 0.00433              | 0.50                          |
|                      |                           |               |                         | Metal Hydroxide  | non-disclosure   | 0.01299              | 1.50                          |
| Total Package Weight |                           |               | 1.3500                  |  |  |                      |                               |

Note: Composition derived from MSDS and material C of C from Vendors

Component Weight based on assembly of generic parts