| PART INFORMATION | |
|---|---|
| Mfg Item Number | LS101MASN7DFA |
| Mfg Item Name | 448 23*23*1.93 P1 |

| SUPPLIER | |
|---|---|
| Company  Name | Freescale Semiconductor Inc |
| Company Unique ID | 14-141-7928 |
| Response Date | 2017-06-03 |
| Response Document ID | 00KLK50001S531A1.5 |
| Contact Name | Freescale Semiconductor Inc |
| Contact Title | Product Technical Support |
| Contact Phone | 1-800-521-6274 |
| Contact Email | support@freescale.com |
| Authorized Representative | Daniel Binyon |
| Representative Title | EPP Customer Response |
| Representative Phone | 512-895-3406 |
| Representative Email | eppanlst@freescale.com |
| URL for Additional Information | www.freescale.com |

| DECLARATION | |
|---|---|
| EU RoHS | Yes |
| Pb Free | Yes |
| HalogenFree | No |
| Plating Indicator | e1 |
| EU RoHS Exemption(s) | |

| MANUFACTURING | |
|---|---|
| Mfg Item Number | LS101MASN7DFA |
| Mfg Item Name | 448 23*23*1.93 P1 |
| Version | ALL |
| Weight | 1.752600 |
| UoM | g |
| Unit Volume | EACH |
| J-STD-020 MSL Rating | 4 |
| Peak Processing Temperature | 260 C |
| Max Time at Peak Temperature | 40 seconds |
| Number of Processing Cycles | 3 |

| | |
|---|---|
| **RoHS** | |
| RoHS Directive | 2011/65/EU |
| RoHS Definition | RoHS Definition: Quantity limit of 0.1% by mass (1000 PPM) of homogeneous material for: Lead (Pb), Mercury, Hexavalent Chromium, Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE) and quantity limit of 0.01% by mass (100 PPM) of homogeneous material of Cadmium |
| RoHS Legal Definition | Please indicate whether any homogeneous material (as defined by the RoHS Directive, EU 2011/65/EU and implemented by the laws of the European Union member states) of the part(s) identified on this form contains lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and/or polybrominated diphenyl ethers (each a RoHS restricted substance) in excess of the applicable quantity limit identified below. If a homogeneous material within the part(s) contains a RoHS restricted substance in excess of an applicable quantity limit, please indicate below which, if any, RoHS exemption you believe may apply. If the part is an assembly with lower level components, the declaration shall encompass all such components. Supplier certifies that it gathered the information it provides in this form using appropriate methods to ensure its accuracy and that such information is true and correct to the best of its knowledge and belief, as of the date that Supplier completes this form. Supplier acknowledges that Company will rely on this certification in determining the compliance of its products with European Union member state laws that implement the RoHS Directive. Company acknowledges that Supplier may have relied on information provided by others in completing this form, and that Supplier may not have independently verified such information. However, in situations where Supplier has not independently verified information provided by others, Supplier agrees that, at a minimum, its suppliers have provided certifications regarding their contributions to the part(s), and those certifications are at least as comprehensive as the certification in this paragraph. If the Company and the Supplier enter into a written agreement with respect to the identified part(s),the terms and conditions of that agreement, including any warranty rights and/or remedies provided as part of that agreement, will be the sole and exclusive source of the Suppliers liability and the Companys remedies for issues that arise regarding information the Supplier provides in this form. In the absence of such written agreement, the warranty rights and/or remedies of Suppliers Standard Terms and Conditions of Sale applicable to such part(s) shall apply. |
| RoHS Declaration | 1 - Item(s) do not contain RoHS restricted substances per the definition above |
| Supplier Acceptance | Accepted |
| Signature | Daniel Binyon |
| Exemption List Version | 2012/51/EU |
| | |
| List of Freescale Accepted Exemptions | 6(a) : Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight |
| | 6(b) : Lead as an alloying element in aluminium containing up to 0.4% lead by weight |
| | 6(c) : Copper alloy containing up to 4% lead by weight |
| | 7(a) : Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead) |
| | 7(b) : Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission, and network management for telecommunications |
| | 7(c)-I : Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound |
| | 7(c)-II : Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher |
| | 7(c)-III : Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC |
| | 7(c)-IV : Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors |
| | 15 : Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages |

# MATERIAL COMPOSITION

| Homogeneous Material | Weight | SubstanceClass | Substance | CAS | Exemption | SubstanceWeight | UoM | SubPart PPM | SubPart% | | ARTICLEPPM | ARTICLE% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Organic Substrate | 0.7973 | | | | | | g | | | | | |
| Organic Substrate | | Metals | Barium sulfate | 7727-43-7 | | 0.01423021 | g | 17848 | 1.7848 | | 8119 | 0.8119 |
| Organic Substrate | | Metals | Copper, metal | 7440-50-8 | | 0.15155238 | g | 190082 | 19.0082 | | 86472 | 8.6472 |
| Organic Substrate | | Plastics/polymers | 4,4'-dihydroxy-3,3',5,5'-tetramethylbiphenyl digycidyl ether | 85954-11-6 | | 0.00886996 | g | 11125 | 1.1125 | | 5061 | 0.5061 |
| Organic Substrate | | Metals | Gold, metal | 7440-57-5 | | 0.00614399 | g | 7706 | 0.7706 | | 3505 | 0.3505 |
| Organic Substrate | | Metals | Talc | 14807-96-6 | | 0.00158105 | g | 1983 | 0.1983 | | 902 | 0.0902 |
| Organic Substrate | | Nickel (external applications only) | Nickel | 7440-02-0 | | 0.02060702 | g | 25846 | 2.5846 | | 11757 | 1.1757 |
| Organic Substrate | | Glass | Fibrous-glass-wool | 65997-17-3 | | 0.19513838 | g | 244749 | 24.4749 | | 111342 | 11.1342 |
| Organic Substrate | | Glass | Silicon dioxide | 7631-86-9 | | 0.00039466 | g | 495 | 0.0495 | | 225 | 0.0225 |
| Organic Substrate | | Solvents, additives, and other materials | Proprietary Material-Other morpholine compounds | - | | 0.00158105 | g | 1983 | 0.1983 | | 902 | 0.0902 |
| Organic Substrate | | Metals | Aluminum Hydroxide | 21645-51-2 | | 0.07687248 | g | 96416 | 9.6416 | | 43861 | 4.3861 |
| Organic Substrate | | Solvents, additives, and other materials | Bromine atom | 10097-32-2 | | 0.02791108 | g | 35007 | 3.5007 | | 15925 | 1.5925 |
| Organic Substrate | | Solvents, additives, and other materials | Bis(3-ethyl-5-methyl-4-maleimidophenyl)methane | 105391-33-1 | | 0.29180143 | g | 365987 | 36.5987 | | 166496 | 16.6496 |
| Organic Substrate | | Solvents, additives, and other materials | Chlorine | 22537-15-1 | | 0.00061631 | g | 773 | 0.0773 | | 351 | 0.0351 |
| Epoxy Die Attach | 0.0025 | | | | | | g | | | | | |
| Epoxy Die Attach | | Solvents, additives, and other materials | Proprietary Material-Other acrylates | - | | 0.000025 | g | 10000 | 1 | | 14 | 0.0014 |
| Epoxy Die Attach | | Solvents, additives, and other materials | [3-(2,3-epoxypropoxy)propyl]trimethoxysilane | 2530-83-8 | | 0.0000025 | g | 1000 | 0.1 | | 1 | 0.0001 |
| Epoxy Die Attach | | Solvents, additives, and other materials | Other organic Silicon Compounds | - | | 0.0000025 | g | 1000 | 0.1 | | 1 | 0.0001 |
| Epoxy Die Attach | | Metals | Silver, metal | 7440-22-4 | | 0.00216484 | g | 865936 | 86.5936 | | 1235 | 0.1235 |
| Epoxy Die Attach | | Glass | Dimethyl silicone polymer with silica | 67762-90-7 | | 0.0000025 | g | 1000 | 0.1 | | 1 | 0.0001 |
| Epoxy Die Attach | | Solvents, additives, and other materials | Other Bismaleimides | - | | 0.00024941 | g | 99764 | 9.9764 | | 142 | 0.0142 |
| Epoxy Die Attach | | Solvents, additives, and other materials | 1,4-Dihydroxybenzene | 123-31-9 | | 0.00000025 | g | 100 | 0.01 | | 0 | 0 |
| Epoxy Die Attach | | Solvents, additives, and other materials | Triethylamine | 121-44-8 | | 0.00000025 | g | 100 | 0.01 | | 0 | 0 |
| Epoxy Die Attach | | Solvents, additives, and other materials | Sulfuric acid | 7664-93-9 | | 0.00000025 | g | 100 | 0.01 | | 0 | 0 |
| Epoxy Die Attach | | Solvents, additives, and other materials | 4-Isopropyl-4'-methyldiphenyliodonium tetrakis(pentafluorophenyl)borate | 178233-72-2 | | 0.0000015 | g | 600 | 0.06 | | 0 | 0 |
| Epoxy Die Attach | | Plastics/polymers | 2-Propenoic acid,2-methyl-, 1,1'-(2,2-dimethyl-1,3-propanediyl) ester | 1985-51-9 | | 0.000025 | g | 10000 | 1 | | 14 | 0.0014 |
| Epoxy Die Attach | | Plastics/polymers | Polybutadiene adducted with maleic anhydride | 25655-35-0 | | 0.000025 | g | 10000 | 1 | | 14 | 0.0014 |
| Epoxy Die Attach | | Solvents, additives, and other materials | 4-Methoxyphenol | 150-76-5 | | 0.00000075 | g | 300 | 0.03 | | 0 | 0 |
| Epoxy Die Attach | | Solvents, additives, and other materials | 6-Maleimidocaproic acid | 55750-53-3 | | 0.00000025 | g | 100 | 0.01 | | 0 | 0 |
| Solder Balls - Lead Free | 0.1658 | | | | | | g | | | | | |
| Solder Balls - Lead Free | | Metals | Copper, metal | 7440-50-8 | | 0.00082883 | g | 4999 | 0.4999 | | 472 | 0.0472 |
| Solder Balls - Lead Free | | Metals | Silver, metal | 7440-22-4 | | 0.00497383 | g | 29999 | 2.9999 | | 2837 | 0.2837 |
| Solder Balls - Lead Free | | Metals | Tin, metal | 7440-31-5 | | 0.15999734 | g | 965002 | 96.5002 | | 91291 | 9.1291 |
| Bonding Wire, PdCu | 0.0125 | | | | | | g | | | | | |
| Bonding Wire, PdCu | | Metals | Copper, metal | 7440-50-8 | | 0.01216231 | g | 972985 | 97.2985 | | 6939 | 0.6939 |
| Bonding Wire, PdCu | | Metals | Palladium, metal | 7440-05-3 | | 0.00033769 | g | 27015 | 2.7015 | | 192 | 0.0192 |
| Die Encapsulant, Halogen-free | 0.0986 | | | | | | g | | | | | |
| Die Encapsulant, Halogen-free | | Plastics/polymers | Other Epoxy resins | - | | 0.0049303 | g | 50003 | 5.0003 | | 2813 | 0.2813 |
| Die Encapsulant, Halogen-free | | Solvents, additives, and other materials | Carbon Black | 1333-86-4 | | 0.000148 | g | 1501 | 0.1501 | | 84 | 0.0084 |
| Die Encapsulant, Halogen-free | | Solvents, additives, and other materials | Other organic phosphorous compounds | - | | 0.0004929 | g | 4999 | 0.4999 | | 281 | 0.0281 |
| Die Encapsulant, Halogen-free | | Solvents, additives, and other materials | Other organic Silicon Compounds | - | | 0.0009859 | g | 9999 | 0.9999 | | 562 | 0.0562 |
| Die Encapsulant, Halogen-free | | Plastics/polymers | Other phenolic resins | - | | 0.00295761 | g | 29996 | 2.9996 | | 1687 | 0.1687 |
| Die Encapsulant, Halogen-free | | Glass | Silica, crystalline - quartz (SiO2) | 14808-60-7 | | 0.000197 | g | 1998 | 0.1998 | | 112 | 0.0112 |
| Die Encapsulant, Halogen-free | | Glass | Silica, vitreous | 60676-86-0 | | 0.08874029 | g | 900003 | 90.0003 | | 50633 | 5.0633 |
| Die Encapsulant, Halogen-free | | Plastics/polymers | Polyethylene Wax | - | | 0.000148 | g | 1501 | 0.1501 | | 84 | 0.0084 |
| Heat Spreader | 0.6549 | | | | | | g | | | | | |
| Heat Spreader | | Metals | Chromium, metal | 7440-47-3 | | 0.00039294 | g | 600 | 0.06 | | 224 | 0.0224 |
| Heat Spreader | | Metals | Copper, metal | 7440-50-8 | | 0.63191301 | g | 964900 | 96.49 | | 360579 | 36.0579 |
| Heat Spreader | | Nickel (external applications only) | Nickel | 7440-02-0 | | 0.02259405 | g | 34500 | 3.45 | | 12891 | 1.2891 |
| Pb-free Bumped Semiconductor D | 0.021 | | | | | | g | | | | | |
| Pb-free Bumped Semiconductor D | | Nickel (external applications only) | Nickel | 7440-02-0 | | 0.000105 | g | 5000 | 0.5 | | 59 | 0.0059 |
| Pb-free Bumped Semiconductor D | | Metals | Silver, metal | 7440-22-4 | | 0.00006615 | g | 3150 | 0.315 | | 37 | 0.0037 |
| Pb-free Bumped Semiconductor D | | Metals | Tin, metal | 7440-31-5 | | 0.00182385 | g | 86850 | 8.685 | | 1040 | 0.104 |
| Pb-free Bumped Semiconductor D | | Solvents, additives, and other materials | Other miscellaneous substances (less than 5%). | - | | 0.000189 | g | 9000 | 0.9 | | 107 | 0.0107 |
| Pb-free Bumped Semiconductor D | | Glass | Silicon, doped | - | | 0.018816 | g | 896000 | 89.6 | | 10736 | 1.0736 |

| LINKS | |
|---|---|
| MCD LINK | |
| NXP website | http://www.nxp.com |
| GENERAL ENVIRONMENTAL COMPLIANCE LINKS | |
| RoHS signed letter | http://www.nxp.com/files/corporate/doc/support_info/NXP-ROHS-DECLARATION.pdf |
| China RoHS | http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization/china-rohs:ENV_CHINA_ROHS_STRATEGY |
| REACH signed letter | http://www.nxp.com/files/corporate/doc/support_info/NXP-REACH-STATEMENT.pdf |
| ELV signed letter | http://www.nxp.com/files/corporate/doc/support_info/NXP-ELV-STATEMENT.pdf |
| Conflict Minerals statement | http://www.nxp.com/files/corporate/doc/support_info/NXP-STATEMENT-CONFLICT-MINERALS.pdf |
| NXP ENVIRONMENTAL INFORMATION | |
| Environmental Compliance website | http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization:ABUENVPRFPRDX |
| FAQ | http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization/eco-product-faqs:ENVIRON_FAQ |
| Technical Service Request | http://www.nxp.com/support/sales-and-support:SUPPORTHOME |
| LINKS TO BLANK IPC1752 FORMS | |
| Blank IPC1752 v1.1 Form | http://www.NXP.com/files/abstract/corporate/ehs_epp/IPC-1752-2_v1.1_MCD_Template.pdf |

IPC1752 XML LINKS

http://www.freescale.com/mcds/LS101MASN7DFA_IPC1752_v11.xml

http://www.freescale.com/mcds/LS101MASN7DFA_IPC1752A.xml