



SOIC 8 {S8,S8G} GaAs
Product Environmental Data Sheet

20 Alpha Rd
Chelmsford MA 01824
Tel: (978) 250-3343
Fax: (978) 250-3373

| | | | | | | | |
|----------------------------|----------------------------|---|--------------|--------------|---------|---------|--|
| Product Information | Date/Time Revision: | February 25, 2005 | | | | | |
| | Manufacture site: | Chelmsford MA | | | | | |
| | Product Number | Generic: SOIC 8, 8G Plastic Encapsulated Microcircuit | | | | | |
| | Product Name | Surface Mount GaAs Semiconductor | | | | | |
| | Product Mass | Grams: | Min 0.066987 | Max 0.081873 | Nominal | 0.07443 | |
| | Product Note | | | | | | |

Material Composition Information

| Component | Sub- Part Name | Material | Material Trade Name | Material Mass (g) Minimum | Material Mass (g) Maximum | Percent of product (%) Minimum | Percent of product (%) Maximum |
|-----------|-----------------------------------|--------------------------|------------------------------|----------------------------|----------------------------|----------------------------------|----------------------------------|
| A | Lead Frame | Metal | Copper Lead Frame | 0.0221 | 0.0295 | 33.0% | 36.0% |
| B | Mold Compound | Polymer | Sumitomo EME6600D | 0.0322 | 0.0418 | 48.0% | 51.0% |
| C | Epoxy, Die attach | 84-1LMIT1 | ABLESTIK | 0.0013 | 0.0033 | 2.0% | 4.0% |
| D | Semiconductor, GaAs | Non- metal, Non- polymer | Crystalline Gallium Arsenide | 0.0013 | 0.0033 | 2.0% | 4.0% |
| E | Bond Wire, Gold | Metal | Wire | 0.0003 | 0.0008 | 0.5% | 1.0% |
| F | Solder, Lead Finish | Sn/Pb | Plating Coat | 0.0013 | 0.0033 | 2.0% | 4.0% |
| Substance | Sub-part Name and Substance | Sub Part Substance CAS# | Substance Note | Substance Mass (g) Minimum | Substance Mass (g) Maximum | Percent of Substance (%) Minimum | Percent of Substance (%) Maximum |
| A | Copper Lead Frame | | | | | | |
| A1 | Cu | 7440-50-8 | n/a | 0.021443 | 0.028885 | 97.00% | 98.00% |
| A2 | Fe | 7439-89-6 | n/a | 0.000740 | 0.001002 | 2.30% | 2.40% |
| A3 | Zn | 7440-66-6 | n/a | 0.000001 | 0.000004 | 0.11% | 0.13% |
| A4 | P | 7723-14-0 | n/a | 0.000000 | 0.000001 | 0.02% | 0.04% |
| B | Mold Compound | | | | | | |
| B1 | Silica Fused | 60676-86-0 | n/a | 0.022508 | 0.037580 | 70.00% | 90.00% |
| B2 | Epoxy Resin | (Trade Secret) | n/a | 0.001608 | 0.005428 | 5.00% | 13.00% |
| B3 | Phenol Resin | (Trade Secret) | n/a | 0.000000 | 0.001044 | 0.00% | 2.50% |
| B4 | Phenol Novolac | 9003-35-4 | n/a | 0.000322 | 0.003340 | 1.00% | 8.00% |
| B5 | Antimony Trioxide | 1309-64-4 | n/a | 0.000161 | 0.001253 | 0.50% | 3.00% |
| B6 | Brominated Epoxy Resin | 68541-56-0 | n/a | 0.000048 | 0.001461 | 0.15% | 3.50% |
| B7 | Carbon Black | 1333-86-4 | n/a | 0.000032 | 0.000209 | 0.10% | 0.50% |
| C | Die Attach Epoxy | | | | | | |
| C1 | Silver | 7440-22-4 | n/a | 0.000938 | 0.002784 | 70.00% | 85.00% |
| C2 | 1,4-Bis (2,3-epoxypropoxy) butane | 2425-79-8 | n/a | 0.000013 | 0.000327 | 1.00% | 10.00% |
| C3 | Aromatic Amine | PROPRIETARY | n/a | 0.000013 | 0.000327 | 1.00% | 10.00% |
| C4 | Epoxy Resin | PROPRIETARY | n/a | 0.000134 | 0.000982 | 10.00% | 30.00% |
| D | GaAs Semiconductor | | | | | | |
| D1 | Ga | 1303-00-0/7440-55-3 | n/a | 0.000616 | 0.001637 | 46.00% | 50.00% |
| D2 | As | 1303-00-0/7440-38-2 | n/a | 0.000670 | 0.001768 | 50.00% | 54.00% |
| E | Bond Wire | | | | | | |
| E1 | Gold (Au) | 7440-57-5 | Die Attach, wirebond | 0.000335 | 0.000819 | 99.99% | 100.00% |
| F | Solder | | | | | | |
| F1 | Tin | 7440-31-5 | Tin, Lead solder | 0.001125 | 0.002816 | 84.00% | 86.00% |
| F2 | Lead | 7439-92-1 | Tin, Lead solder | 0.000188 | 0.000524 | 14.00% | 16.00% |

NOTE: CAS in not available for proprietary substances. All percentages are calculated from mass data declared. Material trade names are not applicable to some common materials for constant composition. When CAS is unavailable, vendor supplier comments such as PROPRIETARY or TRADE SECRET will be documented

Flammability

The plastic mold compound used for this device has been tested for flammability of plastic materials used for parts in devices and appliances and is classified as UL-94 V0.

Absence of Hazardous Substances

Our material composition policy is to declare all substances intentionally added in our products and documented by our vendors. Additionally we confirm the following regulated substances known to be in electronics are not intentionally added or knowingly present in our semiconductor products or product packaging: Cadmium and cadmium compounds, mercury and mercury compounds, hexavalent chromium compounds, polychlorinated biphenyl (PCB), polychlorinated naphthalenes (PCN), polybrominated diphenyl ether (PBDE), decabromodiphenyl ether (DecaBDE), short chain paraffins (CP) (C10-13) (Cl = 50 wt% or more), mirex (perchlordecone), TBBP-A-bis, organic tin compounds (tributyl tin compounds / triphenyl tin compounds) Asbestos, formaldehyde and Azo compounds.

Product Life Cycle Information

Our devices are often incorporated into printed circuit boards and then assembled with other parts into electronic systems. In the U.S.A., end-of-life printed circuit boards {waste}, are considered scrap metal by the Environmental Protection Agency {EPA} when they are recycled {USEPA Mgt. memo, Regulatory Status or Printed Circuit Boards, Aug 26, 1992}. If any of our products are disposed of as part of a printed circuit board, the entire assembly is treated as scrap metal. Approved printed circuit recycling companies either have proper facilities or have access to secondary metal smelters and refiners which can safely recycle scrap electronic components or assemblies

The information presented in this document is believed accurate and reliable. The information provided is a result of review of numerous sources including vendor submitted datasheets. Data is the most current available to Hittite Microwave Corporation at the time of preparation and is issued as a matter of reference information only. No warranty as to accuracy or completeness is expressed or implied. The information in this document is subject to change without notice.



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| | Product Name | Surface Mount GaAs Semiconductor | | |
| | Product Mass | Grams: | Min 0.066987 | Max 0.081873 |
| Product Note | | | | |

Material Composition Information

| Component | Sub- Part Name | Material | Material Trade Name | Material Mass (g) Minimum | Material Mass (g) Maximum | Percent of product (%) Minimum | Percent of product (%) Maximum |
|-----------|-----------------------------------|--------------------------|------------------------------|----------------------------|----------------------------|----------------------------------|----------------------------------|
| A | Lead Frame | Metal | Copper Lead Frame | 0.0221 | 0.0295 | 33.0% | 36.0% |
| B | Mold Compound | Polymer | Sumitomo G600 / G700L | 0.0322 | 0.0418 | 48.0% | 51.0% |
| C | Epoxy, Die attach | 84-1LMIT1 | ABLESTIK | 0.0013 | 0.0033 | 2.0% | 4.0% |
| D | Semiconductor, GaAs | Non- metal, Non- polymer | Crystalline Gallium Arsenide | 0.0013 | 0.0033 | 2.0% | 4.0% |
| E | Bond Wire, Gold | Metal | Wire | 0.0003 | 0.0008 | 0.5% | 1.0% |
| F | Lead Finish | Sn | Plating Coat | 0.0013 | 0.0033 | 2.0% | 4.0% |
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| A4 | P | 7723-14-0 | n/a | 0.000000 | 0.000001 | 0.02% | 0.04% |
| B | Mold Compound | | | | | | |
| B1 | Silica Fused | 60676-86-0 | n/a | 0.022508 | 0.039667 | 70.00% | 95.00% |
| B2 | Epoxy Resin | (Trade Secret) | n/a | 0.000643 | 0.004176 | 2.00% | 10.00% |
| B3 | Epoxy, Cresol Novolac | 29690-82-2 | n/a | 0.000000 | 0.001253 | 0.00% | 3.00% |
| B4 | Phenol Resin | (Trade Secret) | n/a | 0.000643 | 0.003340 | 2.00% | 8.00% |
| B5 | Carbon Black | 1333-86-4 | n/a | 0.000032 | 0.000209 | 0.10% | 0.50% |
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| F | Solder | | | | | | |
| F1 | Tin | 7440-31-5 | n/a | 0.001340 | 0.003275 | 99.99% | 100.00% |

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