



### Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 <a href="mailto:custreq@latticesemi.com">custreq@latticesemi.com</a>		Package: 324 csFBGA Total Device Weight 294.9 Milligrams		Package Code: MG324 Products: XO3L/LF		Assembly: ASEK Size (mm): 9 x 9 Lead pitch (mm): 0.5 MSL: 3 Reflow max (°C): 260		
May, 2020								
	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	2.95%	8.711	2.95%	8.711	Silicon chip	7440-21-3	100.00%	Die size: 4.452 x 4.364
Mold Compound	67.45%	198.886	8.09% 3.37% 50.59% 5.06% 0.34%	23.866 9.944 149.165 14.916 0.994	Epoxy Resins Phenol Resins Silica(Amorphous) Aluminum Hydroxide Carbon Black	- - 7631-86-9 21645-51-2 1333-86-4	12.00% 5.00% 75.00% 7.50% 0.50%	Sumitomo EME-G311SAC
Substrate	10.17%	30.000	3.15% 6.92% 0.10%	9.300 20.400 0.300	BT Resins Glass fiber Bisphenol A*	- 65997-17-3 80-05-7	31.00% 68.00% 1.00%	CCL-HL832NS
Foil	6.56%	19.335	6.039% 0.002%	17.805 0.005	Copper (Cu) OSP	7440-50-8 -	92.09% 0.03%	
Solder Mask	0.67%	1.977	0.16% 0.04% 0.10% 0.10% 0.12% 0.10% 0.06%	0.465 0.116 0.291 0.291 0.349 0.291 0.176	Solvent naphtha (petroleum) Naphthalene Phosphin oxide derivative Talc Dipropylene glycol monomethyl Ether Epoxy Resin Barium Sulfate	64742-94-5 91-20-3 - 14807-96-6 34590-94-8 85954-11-6 7727-43-7	23.52% 5.87% 14.70% 14.70% 17.63% 14.70% 8.88%	Solder mask PSR4000 AUS 320
Bump	0.25%	0.727	0.034% 0.001% 0.195% 0.010%	0.100 0.002 0.575 0.029	Tin (Sn) Silver (Ag) Nickel (Ni) Copper (Cu)	7440-31-5 7440-22-4 7440-02-0 7440-50-8	13.76% 0.28% 79.09% 3.99%	
Polyamic Ester	0.05%	0.142	0.024% 0.017% 0.002% 0.002% 0.002%	0.071 0.050 0.007 0.007 0.007	4-Butyrolactone Polyamide 1-Methoxy-2-propyl acetate Photo Active Compound Proprietary Additives	96-48-0 - 108-65-6 - -	50.00% 35.00% 5.00% 5.00% 5.00%	HD8820
RDL 1	0.003%	0.010	0.003%	0.010	Titanium (Ti)	7440-32-6	100.00%	
RDL 2	0.28%	0.811	0.28%	0.811	Copper (Cu)	7440-50-8	100.00%	
UBM	0.02%	0.049	0.003% 0.013%	0.010 0.039	Titanium (Ti) Copper (Cu)	7440-32-6 7440-50-8	20.41% 79.59%	
Solder Balls	11.60%	34.200	11.193% 0.348% 0.058%	33.003 1.026 0.171	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305

**Notes:** SVHC: \* 0.10% max. concentration (of total pkg wt.) of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.

Lattice regards this materials information to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Lattice subcontracts the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Lattice has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Lattice products.

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PCN#09A-19  
Rev. E



## Device Material Content

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Hillsboro OR 97124  
[custreq@latticesemi.com](mailto:custreq@latticesemi.com)

**Package:** 324 csfBGA  
**Total Device Weight** 0.1704 Grams

**Package Code:**

**MG324**

**Products:**

XO3

**Assembly:** ATP

Size (mm): 9 x 9

Lead pitch (mm): 0.5

MSL: 3

Reflow max (°C): 260

August, 2020

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	3.51%	0.0060	3.51%	0.0060	Silicon chip	7440-21-3	100.00%	Die size: 3.7 x 3.8 x 0.177mm
<b>Mold Compound</b>	46.46%	0.0792	8.36% 38.10%	0.01425 0.06492	Epoxy Resin Silica filler	- 60676-86-0	18.00% 82.00%	Hitachi(Nitto) GE-110BH83-FC
<b>Cu Pillar</b>	0.212%	0.00036	0.128% 0.084% 0.002%	0.00022 0.00014 0.0000026	Pillar: Cap: Copper (Cu) Tin (Sn) Silver (Ag)	7440-50-8 7440-31-5 7440-22-4	60.39% 39.42% 0.72%	Oval Type
<b>Sputter 1</b>	0.002%	0.000003	0.000% 0.001% 0.001%	0.0000001 0.0000012 0.0000013	Titanium (Ti) Tungsten (W) Copper (Cu)	7440-32-6 7440-33-7 7440-50-8	4.98% 44.84% 50.18%	
<b>Sputter 2</b>	0.015%	0.000026	0.001% 0.014%	0.0000002 0.0000024	Titanium (Ti) Copper (Cu)	7440-32-6 7440-50-8	7.74% 92.26%	
<b>RDL</b>	0.140%	0.000238	0.14%	0.00024	Copper (Cu)	7440-50-8	100.00%	
<b>Polyimide &amp; PBO</b>	0.095%	0.000162	0.086% 0.010%	0.000146 0.000016	Proprietary Polymer Additives	- -	90.00% 10.00%	
<b>Solder Balls</b>	19.91%	0.0339	19.21% 0.597% 0.100%	0.03274 0.00102 0.00017	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305
<b>Substrate</b>	14.30%	0.0244	4.43% 9.72% 0.14%	0.0076 0.0166 0.0002	BT Resins Glass fiber Bisphenol A	- 65997-17-3 80-05-7	31.00% 68.00% 1.00%	BT Resin CCL-HL832NS*
<b>Foil</b>	10.20%	0.0174	7.03% 2.57% 0.60%	0.0120 0.0044 0.0010	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	68.91% 25.22% 5.87%	
<b>Solder Mask</b>	4.70%	0.0080	2.64% 0.75% 1.03% 0.14% 0.02% 0.11%	0.00450 0.00128 0.00176 0.00024 0.00004 0.00018	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc Naphthalene Trade secret ingredients	14808-60-7 103429-90-9 7727-43-7 14807-96-6 91-20-3 -	56.20% 16.00% 22.00% 3.00% 0.50% 2.30%	Solder mask PSR4000 AUS 308

**Notes:**

\* 0.14% max. concentration (of total pkg wt.) of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.

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