



Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 custreq@latticesemi.com		Package: 121 csfBGA Total Device Weight 176.3 Milligrams		Package Code: MG121 Products: XO3L/LF		Assembly: ASEK Size (mm): 6 x 6 Lead pitch (mm): 0.5 MSL: 3 Reflow max (°C): 260		
November, 2020								
	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	3.61%	6.365	3.61%	6.365	Silicon chip	7440-21-3	100.00%	Die size: 4.452 x 4.364
Mold Compound	77.74%	137.045	9.33% 3.89% 58.31% 5.83% 0.39%	16.445 6.852 102.784 10.278 0.685	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	6.13%	10.800	1.96% 4.17%	3.456 7.344	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	CCL-HL832NS
Foil	4.20%	7.406	4.200% 0.002%	7.403 0.003	Copper (Cu) OSP	7440-50-8 -	99.96% 0.04%	
Solder Mask	0.37%	0.644	0.09% 0.02% 0.05% 0.05% 0.06% 0.05% 0.03%	0.151 0.038 0.095 0.095 0.114 0.095 0.057	Solvent naphtha (petroleum) Naphthalene Phosphinooxide 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	0.29%	0.507	0.028% 0.001% 0.239% 0.020%	0.050 0.001 0.421 0.035	Tin (Sn) Silver (Ag) Nickel (Ni) Copper (Cu)	7440-31-5 7440-22-4 7440-02-0 7440-50-8	9.86% 0.20% 83.04% 6.90%	
Polyamic Ester	0.06%	0.104	0.029% 0.021% 0.003% 0.003% 0.003%	0.052 0.036 0.005 0.005 0.005	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	0.004%	0.007	0.004%	0.007	Titanium (Ti)	7440-32-6	100.00%	
RDL 2	0.34%	0.593	0.34%	0.593	Copper (Cu)	7440-50-8	100.00%	
UBM	0.02%	0.035	0.004% 0.016%	0.007 0.028	Titanium (Ti) Copper (Cu)	7440-32-6 7440-50-8	20.00% 80.00%	
Solder Balls	7.24%	12.770	6.991% 0.217% 0.036%	12.323 0.383 0.064	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305

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. G



Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 custreq@latticesemi.com		Package: 121 csfBGA Total Device Weight 61.50 Milligrams			Package Code: <div style="border: 1px solid black; padding: 2px; display: inline-block;">MG121</div>	Assembly: ATP Size (mm): 6 x 6 Lead pitch (mm): 0.5 MSL: 3 Reflow max (°C): 260		
March, 2021					Products: <div style="border: 1px solid black; padding: 2px; display: inline-block;">XO3L/LF</div>			
	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	6.85%	4.2116	6.85%	4.2116	Silicon chip	7440-21-3	100.00%	Die size: 3.2 x 3.1 x 0.177 mm
Mold Compound	42.49%	26.1314	5.74% 36.75%	3.5277 22.6036	Epoxy Resin Silica filler	Trade secret 60676-86-0	13.50% 86.50%	Hitachi (Nitto) GE-110BH83-FC
Cu Pillar	0.255%	0.15683	0.191% 0.063% 0.002%	0.11732 0.03870 0.00122	Pillar: Cap: Copper (Cu) Tin (Sn) Silver (Ag)	7440-50-8 7440-31-5 7440-22-4	74.81% 24.68% 0.78%	Oval Type
Sputter 1	0.032%	0.01968	0.002% 0.030%	0.001523 0.018157	Titanium (Ti) Copper (Cu)	7440-32-6 7440-50-8	7.74% 92.26%	
Sputter 2	0.002%	0.00123	0.0001% 0.0009% 0.0010%	0.00006 0.00055 0.00062	Titanium (Ti) Tungsten (W) Copper (Cu)	7440-32-6 7440-33-7 7440-50-8	4.98% 44.84% 50.18%	
RDL	0.290%	0.17835	0.290%	0.1784	Copper (Cu)	7440-50-8	100.00%	
Polyimide & PBO	0.186%	0.11427	0.167% 0.019%	0.10284 0.01143	Proprietary Polymer Additives	Trade secret Trade secret	90.00% 10.00%	
Solder Balls	20.55%	12.6383	19.831% 0.617% 0.103%	12.19591 0.37915 0.06319	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305
Substrate	14.27%	8.7735	4.565% 9.701%	2.8075 5.9660	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	BT Resin CCL-HL832NS
Foil	10.17%	6.2574	7.02% 2.57% 0.58%	4.3152 1.5827 0.3595	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	68.96% 25.29% 5.74%	
Solder Mask	4.68%	2.8774	2.63% 0.75% 1.03% 0.14% 0.02% 0.11%	1.61712 0.46039 0.63304 0.08632 0.01439 0.06618	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc (containing no asbestiform fibers) 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

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Rev. G1