Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
custreq@latticesemi.com

June, 2022

Package: 144 csBGA
Total Device Weight 0.093 Grams

Package Code: MN144
Products: LC4kZE

Assembly: ASEM
Size (mm): 7 x 7
Lead pitch (mm): 0.5
MSL: 3
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	5.73%	0.0053	5.73%	0.0053	Silicon chip	7440-21-3	100.00%	Die size: 3.07 x 2.76 mm
Mold Compound	47.81%	0.0445	3.35%	0.0031	Epoxy Resin	-	7.00%	Mold Compound: Sumitomo G750SE
			2.39%	0.0022	Phenol Novolac	9003-35-4	5.00%	
			2.39%	0.0022	Metal Hydroxide	-	5.00%	
			0.24%	0.0002	Carbon Black	1333-86-4	0.50%	
			39.44%	0.0367	Silica Fused	60676-86-0	82.50%	
D/A Epoxy	0.93%	0.0009	0.74%	0.00069	Silver (Ag)	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.19%	0.00017	Esters & resins	-	20.00%	
Wire	1.23%	0.0011	1.21%	0.00113	Copper (Cu)	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.02%	0.00002	Palladium (Pd)	7440-05-3	1.50%	
Solder Balls	16.23%	0.0151	15.66%	0.0146	Tin (Sn)	7440-31-5	96.50%	SAC305
			0.49%	0.0005	Silver (Ag)	7440-22-4	3.00%	
			0.08%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	18.25%	0.0170	5.84%	0.0054	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A
			12.41%	0.0115	Glass fiber	65997-17-3	68.00%	
Foil	4.06%	0.0038	3.01%	0.00280	Copper	7440-50-8	74.07%	
			1.00%	0.00093	Nickel	7440-02-0	24.69%	
			0.05%	0.00005	Gold	7440-57-5	1.24%	
Solder Mask	5.77%	0.0054	3.24%	0.00301	Quartz	14808-60-7	56.20%	Solder mask PSR4000 AUS 308
			0.92%	0.00086	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
			1.27%	0.00118	Barium Sulfate	7727-43-7	22.00%	
			0.17%	0.00016	Talc (containing no asbestiform fibers)	14807-96-6	3.00%	
			0.16%	0.00015	Trade secret ingredients	-	2.80%	

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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Rev. R1

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Die	5.73%	0.0053	5.73%	0.0053	Silicon chip	7440-21-3	100.00%	Die size: 3.07 x 2.76 mm
Mold Compound	47.81%	0.0445	41.83% 3.11% 2.63% 0.24%	0.0389 0.0029 0.0024 0.0002	Silica Epoxy resin Phenol Resin Carbon Black	60676-86-0 - - 1333-86-4	87.50% 6.50% 5.50% 0.50%	Mold Compound: Kyocera KEG-2250LKDS
D/A Epoxy	0.93%	0.0009	0.74% 0.19%	0.00069 0.00017	Silver (Ag) Esters & resins	7440-22-4 -	80.00% 20.00%	Die attach epoxy: Henkel (Ablebond) 2100A
Wire	1.23%	0.0011	1.21% 0.02%	0.0011 0.0000	Copper (Cu) Palladium (Pd)	7440-50-8 7440-05-3	98.50% 1.50%	0.8 mil diameter; 1 wire per solder ball
Solder Balls	16.23%	0.0151	15.98% 0.16% 0.08%	0.0149 0.0002 0.0001	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	98.50% 1.00% 0.50%	SAC105
Substrate	18.25%	0.0170	5.84% 12.41%	0.0054 0.0115	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	BT Resin CCL-HL832NX-A
Foil	4.06%	0.0038	3.01% 1.00% 0.05%	0.00280 0.00093 0.00005	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	74.07% 24.69% 1.24%	
Solder Mask	5.77%	0.0054	3.24% 0.92% 1.27% 0.17% 0.16%	0.00301 0.00086 0.00118 0.00016 0.00015	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc (containing no asbestiform fibers) Trade secret ingredients	14808-60-7 103429-90-9 7727-43-7 14807-96-6 -	56.20% 16.00% 22.00% 3.00% 2.80%	Solder mask PSR4000 AUS 308

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